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Research

Parents' perceptions of home injury risk and attitudes to supervision of pre-school children: a qualitative study in economically deprived communities

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Aim: The study sought to explore parents' views of the injury risks to young children at home and their perceptions of supervision, targeting families living in economically deprived areas, including those living in black and minority ethnic communities. **Background:** Unintentional injury is a leading cause of death and disability in young children; most injury occurs in and around the home, and children from more deprived families are more vulnerable. Inadequate supervision is often cited as an important risk factor in childhood injury. **Methods:** Qualitative semi-structured interviews were carried out with 34 families (23 white, 6 black, 5 South Asian) in economically deprived communities in Bristol, UK from September 2005 to July 2006. **Findings:** The four main interview themes were perceptions of risk, coping with kitchen hazards, attitudes to supervision, and learning strategies. No major differences were seen between different ethnic groups in perceptions expressed or methods used by parents to keep children safe. The common practice of barring children from entering the kitchen when cooking by using stair gates is discussed. Reduced use of safety equipment and a perceived risk of burns from irons in the South Asian communities are highlighted. Constant supervision and learning by experience are common strategies employed by these parents to keep their children safe in often adverse living conditions. Parents need to be aware of the link between child development and injury risk, and also of differences in injury rate as a function of the child's individual temperament and ability.

Key words: injury in preschool children; parental supervision; perceptions of risk; socio-economic deprivation

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Introduction

Unintentional injury is a leading cause of death and disability in young children; most injury occurs in and around the home, and children from more deprived families are more vulnerable (Edwards *et al*., 2006). Each year in the UK, approximately one million visits to Accident & Emergency Departments involve children who have an accident in their homes. Unintentional injury represents a significant burden to the National Health Service (NHS), to local government and to the families and individuals affected by it (Audit Commission, 2007).

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The scale of the problem of unintentional injury to children is not new, and despite progress in other areas of child health in recent decades, injuries remain a persistent health burden for children. A review of the literature from the last 15 years was undertaken (using PubMed, Web of Knowledge and BIDS (PsychInfo)) to produce a broad overview of papers documenting the environmental and personal risk of unintentional injury in pre-school children (see Emond, 2008). Those relating to family, child, and environmental factors illustrate the extent of the problem and are summarized here.

Parental supervision is the most basic behaviour used to protect children but little is known about either normal day-to-day supervision, the processes used by parents to make decisions about supervision of children of different ages, or how often inadequate supervision takes place. Inadequate supervision is often cited as an important risk factor in childhood injury, and has been associated with the parent's own lack of experience of parenting and developmentally inappropriate expectations of an individual child's abilities (Peterson *et al*., 1993; Peterson and Stern, 1997).

Morrongiello and colleagues in Canada have reported that parents do not appear to believe that childhood injuries are preventable or that they are responsible for preventing injuries (Morrongiello and Dayler, 1996; Morrongiello and Kiriakou, 2004). Rather, parents report that injuries are considered a natural consequence of childhood and that experience of injury allows children to learn about risk avoidance. While parents can identify injury consequences and alternative behaviours to prevent them, they also rationalize placing children at risk using explanations of convenience, stress reduction, their own priorities, and belief in their own efficacy for the child's safety (Morrongiello and House, 2004).

Perceived supervision requirements vary according to the age, gender and temperament of the child (Bijur *et al*., 1986; Plumert and Schwebel, 1997; Spady *et al*., 2004), and also as a function of the context, as some environments are considered to require more or less supervision than others. Other studies have suggested that mothers seem to make judgements about the child's perceived skills and knowledge when considering the risk of injury (Sellstrom *et al*., 2000; Morrongiello *et al*., 2007a).

Morrongiello and Dawber (1998) have identified three types of prevention strategies used by parents: those that encompass environmental factors (removing the hazard, using safety devices), parental factors (increased supervision, behaviour modification), and child-based factors (rules, prohibition).

As a child gets older and close physical supervision becomes more difficult, effective injury prevention rules become more important. An association has been shown between families with more safety rules and children having fewer accidents (Peterson and Saldana, 1996), but this cannot be taken as a causal relationship since a similar association has also been found with those families that use more safety equipment (Kendrick *et al*., 2005a). Supervision also seems to vary as a function of parental resources, in that those who are anxious or depressed may be distracted and less aware of or less concerned about the risks to which their child may be exposed (Peterson and Stern, 1997; Ramsey *et al*., 2003).

A variety of different family factors are associated with unintentional injury in pre-school children, including the mother's age and marital status, her education, and the number of children in the family (Bijur *et al*., 1988; Fleming and Charlton, 1998; Nathens *et al*., 2000; O'Connor *et al*., 2000). While some of these factors may clearly be associated with childhood injury (such as being supervised by an older, incompetent sibling or trying to copy one's siblings and overestimating one's ability), others are difficult to untangle from issues concerning poverty and lack of resources.

Environmental factors associated with unintentional injury are strongly related to levels of deprivation (Jarvis and Towner, 1998; Kendrick and Marsh, 2001; Haynes *et al*., 2003) with a steep social gradient for exposure to unintentional injuries (Reading *et al*., 1999; Kendrick *et al*., 2005b). There has been little research into the attitudes of parents in deprived areas about injury risk and supervision, particularly in minority ethnic communities.

This exploratory descriptive study with parents of pre-school children living in economically deprived areas (including those living in black and minority ethnic (BME) communities) sought to explore their views of children's home injury risk and perceptions of supervision. This qualitative study was part of a wider project to develop and evaluate a home safety assessment tool, for use by health professionals, based on a quantitative analysis of data from the Avon Longitudinal Study of Parents and Children (ALSPAC) (Emond, 2008).

Methods

Semi-structured interviews were carried out with families who lived in areas of economic and social deprivation in and around Bristol. Sure Start areas, classified as being in the bottom quartile according to the Index of Multiple Deprivation (http://www.apho.org.uk), were chosen. Sure Start is a UK Government funded programme based in areas of greatest deprivation, which aimed to achieve better outcomes for children and parents by improving service development and giving financial support to parents to increase childcare provision (http://www.surestart.gov.uk). Southmead Research Ethics Committee gave ethical approval for the study in August 2005, on the basis that health visitors would approach families on behalf of the researchers and obtain written consent for their details to be passed to the researchers. Health visitors from six health centre bases purposively selected families. They approached families on their caseload with a pre-school child over nine months of age and if possible with a range of injury experiences. Families were contacted by telephone, or approached at their next routine contact, or more opportunistically at clinic sessions. On receipt of the written consent, a researcher recruited families by telephone and made an appointment to visit them at home. As recruitment proceeded, the sample was reviewed to ensure maximum diversity in terms of ethnicity and ages of children, and health visitors were asked to approach families to fill the gaps. The main carer of the children was contacted during the day; at this time many fathers were at work and so appointments were usually made with mothers. For those who did not speak English, a link worker accompanied the researcher to ask the questions and translate the responses.

Prior to each interview, the researcher assured each family that the interview would be confidential and obtained written consent to audio-record the interview. Interview topics arose from analysis of the ALSPAC data and a review of the literature (see Appendix 1). They included some general demographic information about the neighbourhood and how many adults lived in the house, questions about age-specific behaviour for each pre-school child, and the type of safety equipment and its use. A discussion on supervision explored the risky situations inside and outside the home, how parents protected them in these situations, and when they would feel happy about leaving children alone unsupervised. The interviews were digitally recorded and transcribed. The transcripts were subject to thematic analysis, by identifying codes and building these up into themes, using a traditional approach whereby the researcher reads and re-reads the transcripts, drawing out themes and sub-themes (Silverman, 2000). A thematic framework was developed and each participant was charted in a table to explore any patterns or connections within the data (Pope *et al*., 2000). Patterns were examined for each ethnic group to illustrate any similarities or differences between them. The themes generated from the interviews were also discussed and validated by a group of health visitors and mothers who met to discuss wider aspects of the project.

Results

Demographics of the families in the study

The interviews took place between September 2005 and July 2006. A total of 42 families were contacted and 34 families (81%) agreed to be interviewed for the study, including 23 white (68%), 5 black and 6 from South Asian ethnic groups. Most lived in or around the city of Bristol, but five families from rural settings in Wiltshire were also interviewed. The black and South Asian families lived in two areas of the city and the proportion interviewed was representative of the ethnic mix in the city (10% of Bristol's population are from BME communities (ONS, 2007)). Eight families were not interviewed for a range of reasons: some declined because they were too busy (3) or away for a long period (2), others cancelled the interview as their children were ill (2), or were repeatedly not in when the researcher called (1).

There were 80 children in the 34 families ranging in age from 2 months to 15 years. The focus of the interviews was on pre-school children and there were 63 of those: 21 under 15 months, 24 aged 16 months to 3 years, and 18 between 3 and $4\frac{1}{2}$ years. All the interviews were carried out in the presence of the mothers. Fathers were also present for two interviews, and grandmothers or another family member at five interviews.

Further demographic information is given in Table 1, which shows that 50% of the children had suffered an injury requiring medical attention,

and twice as many boys than girls had been involved in accidents. Table 2 shows the type of safety equipment used by the families. Compared to the white families, the South Asian families were less likely to use stair gates, highchairs, and cupboard locks, and the black families in the study were less likely to use highchairs, socket covers, and cupboard locks.

Interview themes

There were four main themes arising from the interviews: perceptions of risk, coping with kitchen hazards, attitudes to supervision, and learning strategies. The quotes shown in Tables 3–6 are typical illustrations of the views of the parents in the study.

Table 1 Demographic details of the 34 families interviewed

No partner support (lone parent)	4 (12%)
Maternal age (mean)	28.6 years (range 21–42)
Paternal age (mean)	31 years (range 24–48)
Housing tenure	16 council or housing association (47%); 4 privately rented (12%); 14 owner occupiers (41%).
Neighbourhood	19 inner city urban (56%); 10 suburban council estate (29%); 5 rural area (15%).
Grandparents living in the house	5 (15%)
No one around to ask for help	4 (12%)
Child had previously had an accident requiring medical attention	17 (50%)
Type of accident experienced	16 falls (mostly down stairs), 1 burn, 1 ingestion
Children experiencing accidents	12 boys; 6 girls

Parental perceptions of risk

Parents were asked what they thought were the greatest risks to their children at home, and their assessment of risk was often based on previous accidents or near misses combined with the age and character of each child. Despite 15 mothers reporting that their children had recently had falls, only 12 subsequently worried about falling being the greatest risk of injury to their child (Table 3, 3.1). Eleven mothers were most worried about children getting burnt in a variety of situations including in the kitchen, by hot radiators or wood-burning stove, or from an iron, which was mentioned by all the South Asian mothers (Table 3, 3.2). Nine mothers were most worried about their child ingesting something or choking on a small object, including snails in the garden, small pieces of toys, grapes, or drinking medicines (Table 3, 3.3). Five mothers reported concerns about their children escaping through the front door either when it was left open or because they had learned how to open it, and subsequently running onto the road (Table 3, 3.4). Two mothers, who lived in rural locations, were worried about dogs that lived in the house or garden that may be overprotective towards the children or uncontrolled in certain situations. However, others felt that they had no control over the risks to their children as they were due to their adverse living conditions and they protected their children by trying to minimize their contact with hazardous situations (Table 3, 3.5).

Table 2 Use of safety equipment in the 34 families (in order of prevalence)

Equipment	Total using it (%)	South Asian	Black African
Smoke alarm	30/34 (88)	6/6 (100)	4/5 (80)
Stair gate	21/26[a] (81)	2/5[a] (40)	1/1[a] (100)
Window locks	23/34 (68)	4/6 (67)	3/5 (60)
Highchair	19/29[a] (66)	2/5[a] (40)	2/5 (40)
Socket covers	20/34 (59)	5/6 (83)	1/5 (20)
Kitchen cupboard locks	15/34 (44)	1/6 (17)	0
Fireguard	11/28[a] (39)	1/5[a] (20)	1/2[a] (50)
Reins	11/33[a] (33)	0	1/2[a](50)
Cooker guard	0	0	0

[a] Lower denominators for stair gate, fireguard and highchair are because some families lived in a flat (no internal stairs), had no fires, or their children were too old for high chairs (one child was also not walking, so reins not applicable).

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Table 3 Perceptions of risk from the mothers' point of view

3.1: **Falls**: *'Our stairs are very narrow, they're awful and I think every single one of the children have fallen down at one time or another, in fact the two year old fell down about three weeks ago, but he's never done it since. It's frightening. I find that really frightening.'* *(white mother, eight children, youngest being three years, two years, three months)*
3.2: **Burns**: *'In our Asian families, children they often burn themselves on the iron, and why, because most families they don't use the iron board. This mother does it away from the children in another room and the children are with someone else.'* *(link worker translation for South Asian mother with two children aged 3.5 and one year)*
3.3: **Ingestions**: *'For the baby having the older ones toys around, I have to keep reminding them to pick up Lego and stuff like that, because she does put everything in her mouth.'* *(white mother, three children aged four years, two years and eight months)*
'My brother took her (four year old) out and it was, she ate two snails, she drank water from a dirty old bottle and found an old tissue on the road and blew her nose with that, she'll lick slugs, she'll put anything in her mouth.' *(white mother with one child)*
3.4: **Running off**: *'It's just the road, because the road is close and near the front door. It is always kept locked and everybody here is very much aware of it, but when someone comes, just in case they leave the door open, the children are very fast, so they keep their eyes and ears open.'* *(link worker translation for South Asian mother with two children aged 3.5 years and one year)*
3.5: **Adverse conditions**: *'In the council flat, I was on the fourth floor, so it was double buggy up and down the stairs…there was no lift, so the only thing I could do was strap one child to the railings by her reins so I could bring the buggy and then go up and carry the other down. But every flat had a dog and they used to come out and she was defenceless, you know, I'm scared of dogs myself, so that was it. The glass going up the stairs, the rubbish on the stairs, the spit, the needles, you know tons of stuff.'* *(white mother, two children aged three and two years)*
'The drugs – I worry about them getting outside and finding drugs. Just outside the children's bedroom window, we looked out and there was this guy injecting himself. You go out there and there are syringes and brown stuff all over the windowsill.' *(black mother, four children aged three, two, one years and two months)*

Coping with hazards in the kitchen

Most parents felt that the kitchen was particularly full of hazards and they had a range of ways of keeping their children safe from them. The most common piece of equipment, used by 10 families in the study (30%) mainly when they were cooking, was putting a stair gate across the kitchen door to keep the children out (Table 4, 4.1). Others said they had a 'rule' that the children had to stay outside the kitchen door when they were cooking. This was particularly mentioned in six families where there were older children around. With younger children, a few also used highchairs or playpens when they were cooking to keep them safely in one place (Table 4, 4.2).

In most of the South Asian households interviewed, and other families where grandparents were living as part of the family, mothers always made sure that there was another adult around to look after small children. Grandparents supervised children in the kitchen area or occupied them elsewhere in the house, as well as assisting at mealtimes. Several mothers who did not have this help said that they could only cook when the children were asleep or at nursery (Table 4, 4.3). Mothers were particularly concerned about children getting burnt or scalded in the kitchen, since some had personal experiences of family members being burnt (Table 4, 4.4). Some of them felt that their children (two to three years old) understood about the oven being hot from a children's television programme. Another mother had a picture book, which she used to help her child understand about the oven and what to do in the kitchen (Table 4, 4.5).

In five families where there were children over four years of age, mothers were happy for them to help to prepare vegetables and make cakes in the kitchen to learn about cooking. However, they were also wary about how sharp the knife was and tried to make sure that the children understood when it was safe to be in the kitchen.

Table 4 Coping with kitchen hazards

4.1: **Stair gates**: *'When I'm cooking I put the gate up because I don't even like B (four year old) in the kitchen, she knows not to touch it, but I wouldn't have her in the kitchen when I'm cooking. Its not just them that can touch it, it's hazards to yourself, if you're taking something hot out and turning round and there's a child there, d'you know what I mean, you fall over they'll be scolded or.'* *(white mother, two children aged four years and 16 months)*
4.2: **Rules**: *'They know they're not allowed to play in the kitchen and they know they are not to come in the kitchen if I'm cooking. She (baby) doesn't understand, so I have to watch out when I step back that I'm not about to tread on her, but the other two are usually quite good and you can usually tell when she is in the kitchen because they will be telling her off.'* *(white mother, three children aged four years, two years and eight months)*
4.3: **Another adult**: *'He come in the kitchen but I was very careful. My mother-in-law would hold him while I did cooking to keep him safe. There was always somebody else to help.'* *(Indian mother with two children aged six and three years)*
4.4: **Previous experience**: *'My brother had a very nasty burn when he was little; my parents always said don't let them anywhere near the cooker or anything hot so we are very careful about that.'* *(white mother, two children aged four and three years)*
4.5: **TV and books**: *'I've got a story book about a little girl who is helping her grandma to bake and there's a picture of an oven and when I'm in the kitchen I'll let her, not touch the door, but let her put her hands near, so she feels the heat and when the oven's on she'll stand back and point and say ''hot mummy, hot'', so she knows not to touch it.'* *(black mother, two children aged two years and 10 months)*

Table 5 Parental attitudes to supervision of preschool children

5.1: **'Be vigilant'**: *'I was always very careful and watched him, so all the ''petit petit items'', the small things that he could put in the nose or ears, I made sure that I put them away. If he takes something that I was not aware of I just took it away from him and there was not any accidents.'* *(black mother, two children aged four and three months)*
5.2: **'Where they are'**: *'The gate's shut upstairs, they've got the run of the whole hallway upstairs and the bedrooms, so I will sort of leave them up there with the gate shut while I come down and just put the washing machine on and talk to them up through the stairs, that's the only sort of time when they get left unsupervised really.'* *(white mother, two children aged three and two years)*
'We've got a travel pen, a baby den, in the living room, which he goes in if I've got to go upstairs with E (baby). Its like a safety den, so if I ever have to leave him to do E's nappy or to go and get something, then O (23 months) will go in there, in the play pen. He likes it in there, he's got toys in there, it's not a punishment, quite often he'll go in there and I put the television on.' *(white mother, two children aged two years and five months)*
5.3: **'Supervised opportunity'**: *'I think one of the things we've done is like we've allowed them to climb the stairs under supervision, but they hadn't felt the need to do it when its not safe, so there's opportunities for them to do it but it's always sort of 'supervised opportunity' not preventing them from doing it.'* *(white mother, two children aged five and two years)*
5.4: **Other family members**: *'There was somebody always with her, and that's why we had no accidents, because she was like, first grandchild, everybody, you know, kept a good eye on her…my dad and my mum was really over-protective, because they had us and they knew what can happen and so there were lots of adults looking after her. That's quite common in Indian households, where there are lots of people around.'* *(Indian mother, two children aged eight years and four months)*
'When they come back from school, the older ones keep an eye on the little ones while I'm getting tea. The older ones tend to look after the younger ones.' *(white mother, eight children)*
5.5: **Temperament**: *'She thinks that her son who is three and a half, he's a bit mature, cos he's got a very good understanding, if mum says look you're not allowed to do this, he will listen to mum. So if she goes in the bathroom and leaves him in the bedroom she can leave him for a short time until she has finished…same thing if he is having a bath and she can leave him in the bath for a few minutes.'* *(South Asian mother through link worker, children aged 3.5 and one year)*

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Table 6 Learning strategies employed by parents to teach their children about risk and danger

6.1: **Learning by experience**: *'Where it seems where he's not going to get hurt. But a little shock doesn't do him any harm I don't think. I think we've got to try and teach him and if he has a little accident in the process all well and good, because hopefully remember that, and not to do it again.'* *(white mother, two children aged two years and three months)*
'They understood, because my cousin's daughter, her mum was cooking chips and she burnt her foot, so I told them that, you can burn your foot. I brought my cousin's daughter down and said, ''look, she burnt her foot like that, if you want your foot to go like that, then…come in the kitchen''. So they got kind of scared.' *(South Asian mother, three children aged eight, four and one year)*
6.2: **'Don't touch' rules**: *'They know they are not allowed to go into that cupboard under the sink so even if I forget to put the catch…they know they are not allowed in there and most of the things in there, like the sprays you can turn the switch so they turn off, and all the lids have the child caps on.'* *(white mother, three children aged four, two years and eight months)*
6.3: **Teaching early**: *'I just tell them, warn them, from an early age and they just seem to grasp the idea then don't they?'* *(white mother, two children aged five and two years)*
'When he started school, I let him come in the kitchen, cos of the risk factors, specially the oven. I taught him what all the different dangers were, because I thought he was old enough then to understand it. And he helps me in the kitchen now.' *(white mother, three children aged seven and 2.5 year old twins)*

Attitudes to supervision

The most common approaches to supervising small children suggested by parents was to be vigilant and keep an eye on them at all times, which was mentioned by half of the parents, or never to leave their children alone (Table 5, 5.1). Several parents felt that the supervision needed depended on where the children were, and that it was fine to leave them watching television or playing upstairs in a bedroom, as long as they could hear them. On the other hand, a few parents used a playpen or den containing toys when they were not in the room to keep their child safe (Table 5, 5.2). Views differed on safety of young children in the bath, with some happy to leave slightly older children alone for short periods and others not.

Some parents said that they tried to be aware of the next stage in their child's development when they had 'almost had an accident', so were one step ahead of them, or they offered the child 'supervised opportunities' to try new things, such as learning to climb the stairs safely. Four of the five mothers who described these approaches had higher levels of education and training than other mothers in the study (Table 5, 5.3). Others relied on having grandparents, siblings, or other family members around to help with supervision and to look after children when they were busy doing something else. This was particularly mentioned in the interviews with the South Asian families, where they all had other family members living in the house, or in larger families where older children were asked to supervise the younger children (Table 5, 5.4).

Several parents talked about levels of supervision depending on the maturity or temperament of the child, and felt that some quite young children understood about safety and so could be left unsupervised for short periods of time. Those who had several children commented about this, as they had noticed how each child developed, but there was a common misconception that if a child could speak about a danger, he/she knew how to behave safely (Table 5, 5.5).

Two parents mentioned that a difficult time for them was when they had a new baby who was breastfed, and that older children were more difficult to supervise whilst they were breastfeeding. One mother, who was also a nursery nurse, felt that young mothers were often not made aware enough of the risks of leaving children unsupervised, and another had attended a parenting course which had helped her cope with her son's difficult behaviour in risky situations.

Learning strategies

The most common strategy reported by parents was learning by experience, both by the child experiencing the danger first hand, such as falling down the stairs or putting their hand against a hot oven, or seeing the experience of others, either

the results of an accident or the reactions of others. Most felt that this was a fast way of learning, as the child did not usually repeat the activity that had scared them (Table 6, 6.1).

Others talked about having rules about what children could not do. These were mostly 'don't touch' rules in the kitchen, particularly things that would cause burns (ovens, fires, radiators, hot water, hot drinks, kettles, sockets, irons) or ingestions (rubbish bins, small objects). This strategy was common in the South Asian households interviewed and also in families where there were older children (four years and older) who, they felt, could understand the rules and be expected to behave accordingly (Table 6, 6.2).

Several mothers talked about the importance of teaching their children, from an early age, about how to be safe and to be careful in particular situations. This included teaching them how to climb the stairs safely and to keep away from the fire or hot radiators. A children's television programme was mentioned by some mothers as being helpful in teaching young children about hot ovens in the kitchen. Others with older children felt that they recognized when their children were old enough to understand some of the dangers (Table 6, 6.3). Two couples, who did not have much experience of babies or children, felt that they were 'learning on the job' and hoped that they were getting it right.

Discussion

This study has highlighted some current parental attitudes to risk in pre-school children for families living in economically deprived communities in the UK, and especially those in BME families. In particular, although many parents were aware of the risks of injury to their children in a range of different environments, not all understood the association of injury risk with a child's temperament or developmental progress. Constant supervision and learning by experience were common strategies employed by parents to keep their children safe, often in adverse conditions. These strategies were similar to those employed by parents in the wider population, but there were some cultural differences reported. Specific issues raised included the methods used to keep children out of the kitchen when cooking, particularly by using stair gates, and concern about the increased risk of burns from irons in the South Asian families.

The limitations of the study are that the sample did not represent all ethnic groups; for example, we were not able to recruit many Afro-Caribbean families to be interviewed and did not include any of the other more recently settled minority ethnic groups, such as the Polish and Somali communities. We only had four lone parents in the sample and despite others being approached by the health visitors, they were not willing or able to be interviewed. The strategy of having to use health visitors to recruit the families was sometimes problematic, since it relied on them having time to ask parents and it curtailed our ability to include as wide a range of parents as we had hoped. Also, we did not interview fathers without their partner present, and those that were present at the interviews did not offer any different opinions from the mothers. Our findings report mothers' views, as we were not able to explore fathers' perceptions.

The interviews gave insight into current attitudes towards supervision of pre-school children. Many parents utilized other family members to help with supervision, including other children. The risk of using older siblings to supervise young children has been discussed by Morrongiello and colleagues (Morrongiello *et al*., 2007b). However, in the South Asian families, grandparents and other family members were usually living in the household and provided valuable additional supervision for pre-school children, rather than using older siblings.

The strong association between single parenthood and risk of childhood injury is well established from epidemiological studies (Wadsworth *et al*., 1983; Larson and Pless, 1988). Young and single-parent families are likely to have fewer resources than more traditional families who are older and more established and may, therefore, be less able to provide the level of supervision required. If this is the case, then associations between maternal factors and injury may be indirect and due to a range of factors including poverty (Fleming and Charlton, 1998; O'Connor *et al*., 2000). Our study included four single-parent families, all of which regularly involved other family members in supervision of the children.

Parental supervision has been shown to differ in different rooms in the house, which was emphasized in our study by mothers focusing on

hazards in the kitchen. The bathroom and kitchen are thought to be more dangerous than the bedroom or living room (Morrongiello and Dawber, 1998). Other studies have reported that supervision increases in line with perceived requirements (Morrongiello *et al*., 2004). Our study has also shown that many parents use stair gates to exclude their children from the kitchen while they are cooking. Whilst this provides a safe barrier to the hazards in the kitchen (for children up to the age of 24 months), it may leave children free to roam around the rest of the house unsupervised. Morrongiello (2005) refers to 'risk compensation' strategies employed by parents, which may increase risk-taking as a result of environmental modifications made to reduce risk. The use of stair gates in this context could be described in these terms, since parents, in trying to reduce kitchen hazards, may inadvertently increase the risks of lack of supervision in other parts of the house. It was not clear from the interviews where this advice had come from, rather than using playpens or other means of keeping children safe in the same room as the parent. A few families in our study reported that they used a playpen or highchair in the kitchen, but perhaps others may not have been able to fit a playpen into a small kitchen area or not have been able to afford one.

Other studies have shown that ethnic minority families are less likely to have access to information about the availability and fitting of safety equipment, and less likely to engage in safety practices (Mulvaney and Kendrick, 2004). Our study also showed a lower frequency of some safety equipment use in the ethnic minority groups; perhaps information and education about use of safety equipment could be delivered through the link workers who often provide health promotion advice for these communities.

The interviews also gave insight into parents' understanding of the relationship between injury risk and child development, and the way in which supervision changed with the child's age. The temperament and maturity of individual children were commented on by several mothers as being the reasons why they might give them more responsibility for safety at home. Twice as many boys than girls in the study had previously had a serious injury, and children described as being very active and adventurous were more likely to have been involved. Boys are generally over-represented in unintentional injury statistics (Bijur *et al*., 1988; Morrongiello and Hogg, 2004; Spady *et al*., 2004), which may be because their cognitive skills do not develop in synchrony with their motor skills. Hyperactivity and impulsivity are also associated with injury risk (Davidson, 1987), and impulsivity affects estimation of physical ability (Schwebel *et al*., 2004).

The transition from environmental protection to teaching safety rules has been reported by others, and there is some evidence that parents begin to withdraw physical interventions, such as stair gates, at around two to three years, implying that the child should 'know the rules' by then (Peterson and Stern, 1997; Mulvaney and Kendrick, 2004). However, there is a lag between the time when a child can recite safety rules and the time when he or she will comply with them. To learn rules successfully, a child must be able to identify hazards, know the appropriate safety response, and be rewarded for safe responding (Peterson *et al*., 1987). These skills are less likely to be found in pre-school children, and some parents talked about using 'supervised opportunity' as a way of teaching children appropriate safety skills, which would need to be reinforced many times before it would be safe to assume that a child understood the implications.

Implications for policy, practice, and further research

The Children's Plan 2007 from the Department for Children, Schools and Families in England highlighted the need to reduce accidents at home, particularly within vulnerable families, and the UK government is committed to setting out a comprehensive plan to improve children's safety in the Staying Safe Action Plan. Our results suggest that there is a need for educational interventions to improve parents' appreciation of the relationship between injury risk and child development, and of the supervision strategies that can be adopted to reduce risk. Such anticipatory guidance can be delivered in primary care settings, either opportunistically or as part of health needs assessments. The expansion of Children's Centres in England also provides an opportunity to mount interventions involving educational activities and the provision of safety equipment for the households most

at risk. We support the prevention of injury to young children in the home environment as part of the educational and outreach programme of Children's Centres.

A further practical implication of our research findings is the need to utilize link workers to engage with non-English speaking ethnic minorities, and to provide these link workers with training in the risk factors for unintentional injury in young children, and ways in which they could be reduced. Link workers could also promote the use of home safety equipment in those ethnic minority families, who have a lower uptake of this equipment.

The findings from this research need to be tested elsewhere in the UK, including other ethnic groups and recent immigrants, to determine whether there are any differences in attitudes and supervision practices in other minority groups.

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Appendix 1: Interview topics

General demographic information

1) a) Parents' ages, gender and ages of children, postcode, neighbourhood (is it a good place to live?).
   b) Do you have any animals in the house?
2) a) How many other adults live here with you? Are they the child's grandparents or adult children or someone else?
   b) Do you have other adults who can help out if you need a hand or things go wrong?
   c) Does s/he go to a crèche/nursery school?
   d) Have they had an accident? (when, where?)

Age specific behaviour

3) a) Can the child move about under his/her own steam? (crawl/walk/run/climb)
   b) Does the child try to do things on his/her own – will s/he 'have a go' at something new or is s/he quite scared of doing new things?

Safety equipment

4) a) What kind of safety equipment do you have in the house (list to prompt)?
   b) How many do you use all the time?
   c) Do you have a garden/outdoor play area?

Supervision

5) a) What do you think might be risky situations for your child inside and outside the home? –prompts to include hot drinks, sharp objects, cooking, rubbish, stairs, water & baths, small objects, plastic bags, medications, cleaning materials, plants, machinery.
   b) What do you do to protect your child from these situations?
   c) When do you think it is ok to leave a child alone unsupervised – both inside and outside?