The relationship between childhood injuries and family type

Using data on the 4-5 year old children participating in the Growing Up in Australia study, this examination of the relationship between family structure and incidence of child injury indicates that children in sole-parent families – but not stepfamilies – were over-represented among the 17 per cent of children who sustained an injury, although the increased risk for injury associated with living in a sole-parent household was no longer apparent once socio-economic indicators were taken into account.

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Injury is the leading cause of death among children in Australia. According to the Australian Institute of Health and Welfare, in 2003, injury was the cause of death of 231 Australian children aged 1-14 years, representing 40 per cent of child fatalities in that period (AIHW 2005). Children are susceptible to injury and non-fatal injuries can have prolonged effects (such as disability), which can impair a child's development and future wellbeing. In 2002-2003, approximately 66,000 children aged 1-14 years (around 1.5 per cent of this age group) received an injury that required hospitalisation (AIHW 2005).

The Australian Government Department of Health and Ageing developed the Draft National Injury Prevention Plan to provide national strategic direction for future injury prevention efforts in Australia. In this plan, child injury was identified as a key issue for research and prevention efforts (Pointer, Harrison and Bradley 2003). As such, there is a considerable need to develop an understanding of the risk factors for child injury in order to improve prevention efforts.

Although it is still the case that most children live with their (married) biological parents, there has been a significant increase in recent decades in the number of Australian children being raised in non-traditional families such as de facto couples, sole-parent families, and two-parent blended or stepfamilies (de Vaus and Gray 2004). There has been much concern surrounding how changes to family structure may affect parenting and children's wellbeing (Tower 1989). Relative to children of intact families, children living in single-parent families or stepfamilies tend to display higher levels of behavioural, emotional, and academic problems (Pryor and Rodgers 2001; Wise 2003). Research suggests that the mechanisms underlying this connection are likely to involve various disadvantages and adverse circumstances experienced by these families compared to intact families. These include: increased financial adversity, increased stress related to changes in family relationships and conflict in previous couple relationships, reduced access to emotional and instrumental support, and disruption to parent–child relationships (Pryor and Rodgers 2001; Wise 2003).

There has been extensive research on the relationship between family type and children's socio-psychological adjustment; however, further investigation of the physical health of children in diverse families is needed (O'Connor, Davies, Dunn and Golding 2000; Pryor and Rodgers 2001). Research into the causes of child injury has indicated that there is a range of factors that are associated with child injury (Peterson and Brown 1994). Several international studies have found that family structures other than two biological parents are included among risk factors for child injury (for example, Dawson 1991; O'Connor et al. 2000; Ely, West, Sweeting and Richards 2000; Wadsworth, Burnell, Taylor and Butler 1983; Weitoft, Hjern, Haglund and Rosen 2003).

For instance, Weitoft et al. (2003) used the Swedish national registers to access demographic (for example, socio-economic status, household composition) and health and welfare information (for example, mortality, severe morbidity and hospitalisation) of approximately one million Swedish children and their families. Health and welfare (including injury) information was examined over a nine-year period. Boys living in sole-parent families were found to be 12 and 15 per cent more likely than boys in intact families to have experienced injury as a result of falls and poisoning, and traffic incidents, respectively. Compared to their counterparts living in intact families, girls living in sole-parent families were found to be 20 and 16 per cent more likely to have experienced injury as a result of falls and poisoning, and traffic incidents, respectively.
O’Connor et al (2000) used data from approximately 10,000 English families participating in the Avon Longitudinal Study of Parents and Children to examine the relationship between family type and child injury requiring medical attention, as reported by the child’s mother. They found that, compared with children from intact families, children in sole-parent families were 50 per cent more likely to have experienced a burn or scald, 40 per cent more likely to have sustained a long-term disability or scar from an accident, and 34 per cent more likely to have sustained multiple accidents.

Findings regarding the relationship between child injury and membership in a stepfamily are less consistent than findings concerning membership in sole-parent families. Dawson (1991) examined self-report data from the United States National Health Interviews Survey in which basic health and demographic information on approximately 17,000 children were collected. Data on the child were provided by an adult in the household, usually the child’s mother. Children of stepparent families were 20 per cent more likely than children of intact families to have experienced an injury in the previous 12 months. On the other hand, O’Connor et al (2000) did not find that stepchildren were at increased risk of injury compared with children in intact families.

The literature indicates that there are many child, parent, family and neighbourhood characteristics, besides family structure, that are associated with child injury (See Table 1 for examples and for fuller accounts, Peterson and Brown 1994; Soubhi, Parminder and Dafna 2002). Notably, Blakemore (2005) identified risk factors for injury sustained by 4-5 year old children using data from the first wave of the Growing Up in Australia study. Risk factors that were found to predict child injury included economic hardship, proximity to heavy traffic, age of the parent informant (usually the mother), child gender (male), and child hyperactivity.

Non-intact families have been found to have higher incidences of many of these characteristics and it is plausible that higher risk for injury in these families occurs because of these other risk factors (Pryor and Rodgers 2001; Wise 2003). For instance, single parents are more likely to have lower economic resources (Harding and Szukalska 1999) and be younger and less educated (Peterson and Brown 1994),

<p>| Table 1 | Examples of child, parent, family and neighbourhood characteristics that have been found to be associated with child injury |</p>
<table>
<thead>
<tr>
<th>Neighbourhood</th>
<th>Family</th>
<th>Parent</th>
<th>Child</th>
</tr>
</thead>
<tbody>
<tr>
<td>economic disadvantage</td>
<td>low socio-economic status</td>
<td>low maternal education</td>
<td>difficult temperament</td>
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<tr>
<td>hardship</td>
<td>low family cohesiveness</td>
<td>low parental monitoring of child behaviour</td>
<td>hyperactivity</td>
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<td></td>
<td>social isolation</td>
<td>low maternal education</td>
<td>aggression</td>
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<td></td>
<td>family stress</td>
<td>low emotional coping</td>
<td>male gender</td>
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which are factors that have been found to increase the risk of poor child social and emotional outcomes (Dunn et al. 1998) and child injury (Soubhi et al. 2002). Research on child wellbeing has shown that much of the difference between children of diverse family types can be accounted for by lower socio-economic status among non-intact families (Pryor and Rodgers 2001; Wise 2003). In the case of child injury, O’Connor et al 2000 found that the increased risk for child injury among children of sole parents was accounted for by socio-economic circumstances (for example, financial strain, lower education, overcrowded housing), in addition to psychosocial stress (for example, maternal depression, high child activity levels, adverse life events). On the other hand, Weitoft et al (2003) and Dawson (1991) found that risk remained much the same after accounting for socio-economic resources.

Overall, there has been little examination of risk of injury in diverse family types (Pryor and Rodgers 2001). Moreover, there also appears to be an absence of studies that have examined the relationship between family type and child injury in an Australian context. The large representative sample of Australian children in Growing Up in Australia – the Longitudinal Study of Australian Children (LSAC) – provided an excellent opportunity to examine issues surrounding the relationship between family type and child injury.

In this article, the authors examine the relationship between family structure and the incidence of child injury by examining the incidence and types of child injury among 4-5 year old children participating in the Growing Up in Australia study. We compared the incidence and the types of injury sustained by children in three different family structures: intact, step and sole-parent families. This included examination of whether differences in the incidence of child injury in diverse family types would still be apparent after socio-economic indicators were taken into account.

### The study

The Growing Up in Australia study is a national prospective longitudinal survey designed to measure child wellbeing, health, and development. The Australian Institute of Family Studies, on behalf of the Australian Government Department of Family and Community Services, conducted the first wave of the study in 2004. The sample of Australian children includes: an infant cohort (children aged between 3 months and 1 year 7 months) and a child cohort (children aged between 4 years 3 months, and 5 years 7 months).

Data were collected using a variety of measures including face-to-face interview, self-complete questionnaires, direct assessment, and observational measures. Information used in this analysis was mostly obtained from the person most knowledgeable about the child. This respondent (usually the mother) provided demographic information about all household members, socio-economic information about her/himself and her/his spouse, and extensive information about the selected child.

Data on the 4-5 year old child cohort were used in the current study. This cohort consists of 4,976 children, of whom 2,532 were boys (50.9 per cent) and 2,444 were girls (49.1 per cent).

Three broad categories – family type, injury and socio-economic status – were used.

### Family type

Children living with both their biological parents were classified as belonging to intact families. Children were classified as belonging to stepfamilies if they were living with a biological parent and an adult who was identified as a stepparent. Children were classified as belonging to intact or stepfamilies irrespective of whether the relationship between the adults was cohabitation (de facto) or legal marriage. Children who were living with a single biological parent were classified as living in a sole-parent family. A small number of children, not included in this analysis, lived in different family types such as foster or adopted families (n = 57, 1.1 per cent).

### Injury

Parents indicated the number of times their child was hurt, injured, or had an accident that needed medical attention from a doctor or hospital in the past 12 months and the type of injury or accident involved. The following choices were available (respondents could select as many items as relevant):

- Broken or fractured bones;
- Concussion or internal head injury;
- Burn or scald;
- Internal injury (not head);
- Dislocation;
- Dental injury;
- Sprain or strain;
- Accidental poisoning;
- Cut or scrape;
- Other.

Parents were also asked whether their child had stayed in hospital for at least one night because of any injuries or accidents that had occurred in the previous 12 months.

### Socio-economic indicators

Several socio-economic indicators were selected on the basis of previous research (see Table 1) to examine whether differences in the incidence of child injury in diverse family types would still be apparent after socio-economic status was taken into account. These indicators included: maternal level of education, maternal age, economic hardship (a scale constructed of items such as difficulty in paying bills or mortgages and needing welfare assistance), and neighbourhood liveability (a scale comprising items such as neighbourhood safety, access to parks and playgrounds, street lighting). To enhance interpretation, measures were converted into categorical binary measures: maternal age below/above 26 years; level of education obtained (Graduate/Postgraduate; Diploma/Certificate; Year 12; Year 11 or below); below/above the 25th percentile for economic hardship; and below/above the 25th percentile for neighbourhood liveability.

### Results

Of the 4,983 children, 883 (17.7 per cent) were reported by their parent to have sustained an injury during the past 12 months that required medical attention and/or hospitalisation (Figure 1). Very few sustained multiple injuries, with just under 5 per cent having experienced two or more injuries in the past 12 months.

Figure 2 displays the types of injuries that children sustained. Of the 883 parents who reported that their child had experienced an injury, the form of injury most commonly experienced was an abrasion (usually a cut or scrape) with approximately 46 per cent of children who sustained an injury experiencing an injury of this nature. Approximately
13 per cent of children who sustained an injury experienced a fracture, while injuries such as sprains, concussions, and burns were less common (10 per cent or fewer). Over one-quarter of children who sustained an injury experienced “other” unspecified types of injuries.

Overnight hospital stays may indicate the seriousness of the injury sustained. Very few children were reported to have stayed in hospital for at least one night because of their injuries (n = 77; 8.7 per cent of those who sustained an injury and 1.5 per cent of the total sample).

Family type and injury

The majority of children were currently part of an intact family (n = 4128; 82.8 per cent). Relatively few children were in sole-parent families (n = 693; 13.9 per cent), and very few were part of a stepfamily (n = 105; 2.1 per cent). This was to be expected given data that indicate the vast majority of parents’ relationships remain intact in the first 4-5 years of a child’s life (de Vaus and Gray 2003). Compared to the incidence of child injury among children of intact families (17.1 per cent), the incidence of injury was higher for children of stepparent and sole-parent families (19 and 21 per cent, respectively). A chi-square test of independence indicated these differences were significantly different to that which would be expected by chance; however, the magnitude of these differences was weak.

Further examination of the group differences revealed that children in single-parent families were slightly but significantly over-represented among those who sustained injury. The proportion of step children reported to have been injured was not significant.

Figure 3 displays the types of injuries sustained for children from different family types. As can be seen, children living in intact, sole-parent and stepfamilies experienced a similar profile of injury types.

Research suggests that the higher risk for negative child outcomes such as injury in non-intact families may be accounted for by their typically lower socio-economic status. Significant differences were found between intact and non-intact families on the socio-economic indicators (Table 2). Compared to intact families, more mothers of sole and stepparent families than mothers of intact families had not completed a graduate or postgraduate qualification, dropped out of secondary school before year 12, or were below 26 years of age. In addition, more sole-parent households, but not stepfamilies, were below the 25th percentile of economic hardship, and a greater proportion of sole and stepparent families were below the 25th percentile of neighbourhood liveability.

Given these differences between family types on socio-economic indicators, these effects were statistically controlled in analyses examining whether membership in a non-intact family is a risk factor for child injury. Logistic
regression was used to investigate the differences between the groups in the incidence of child injury with maternal age and education, economic hardship and neighbourhood liveability included to control for their effect. Neither membership in a stepfamily, nor membership in a sole-parent family, significantly predicted child injury in this analysis, which suggested that the elevated risk for injury associated with membership in a sole parent household could be fully explained by the lower socio-economic status of sole parent households.

**Discussion**

In this examination of the relationship between family structure and the incidence of child injury it was found that approximately 17 per cent (or almost one in five) of 4-5 year old children were reported by their parents to have sustained at least one injury in the past 12 months that required medical attention or hospitalisation. According to these reports, most children experienced only one incident, but a small proportion experienced multiple incidents of injury. The literature indicates that injury can result in a number of deleterious consequences for wellbeing (e.g., Caffo and Belaise 2003; Tarnowski and Rasmak 1994). Although it is likely that many of the injury incidents reported may have been relatively trivial, the physical and other costs experienced by some children and the general impact on their wellbeing may have at times been substantial.

The incidence of reported injury among children in the *Growing Up in Australia* study is consistent with that provided by Australian national data on childhood injury (approximately 1.5 per cent of children aged 1-14 years) (AIHW 2005). National injury data compiled by the Australian Institute of Health and Welfare are based on injuries that result in an episode of hospital admission. The incidence of injury that resulted in an overnight hospital stay (i.e., an admission) among children in the *Growing Up in Australia* study replicated this incidence rate. Moreover, it has been estimated that one hospital admission for every seven injury cases presenting to hospital emergency departments, and that at least as many injury cases again consult a General Practitioner rather than present to a hospital (Harrison and Steenkamp 2002). This estimate is reasonably consistent with the finding that 17.7 per cent of children in the *Growing Up in Australia* study were reported by their parent to have sustained an injury during the past 12 months that required hospitalisation or medical attention (that is, visits to a general practitioner). This consistency reflects the value of the current study in providing an estimate of injuries not captured in the nationally compiled statistics that are based on administrative data.

The findings indicated that children in sole-parent families, but not stepfamilies, were over-represented among those who sustained an injury; however, once socio-economic indicators were taken into account the increased risk for injury associated with living in a sole-parent household was no longer apparent. This is consistent with research on child wellbeing that has found that many of the differences between children of diverse family types can be explained by socio-economic disadvantages experienced by non-intact families (Fryor and Rodgers 2001; Wise 2003).

Research suggests that the mechanisms linking lower socio-economic status to child injury are likely to be complex. It is thought that socio-economic disadvantage is linked to poor psychosocial functioning, which in turn increases risk for injury. For instance, Ramsay (2003) speculated that lower socio-economic status, particularly financial stress and limited education, contributes to social isolation, which in turn may limit parents from learning what poses a risk to their child’s safety and how to prevent injury. On the other hand, socio-economic disadvantages may be more directly linked to child injury because hardship is associated with physical hazards in the environment (for example, old or faulty household products, lack of smoke detectors, and proximity to heavy traffic) (Burgess 1995). Future research must examine the pathways through which the lower socio-economic status of sole parent families is associated with increased risk of child injury.

Although the incidence of child injury was higher for children in sole parent families, it also is important to note that the *Growing Up in Australia* study does not provide an objective measure of injury, but rather reflects parents' judgement of injuries that required medical attention. This relates to parental sensitivity to symptoms and most particularly help-seeking behaviour. Research suggests that decisions as to whether a perceived injury requires medical attention involves general vigilance about health issues, confidence in dealing with injuries, and levels of social support (Weston and Lazzarini 1995). For single mothers in particular who have fewer opportunities to share responsibility for caring for a sick child, the GP may be an important source of social support. The Australian Living Standards Study, conducted by the Australian Institute of Family Studies, showed that single mothers were significantly more likely to visit a GP (for themselves), irrespective of self-reported health status (such as chronic illness) and other influences on GP use (Weston and Lazzarini 1995). If children of single parents are more likely to be admitted for less serious conditions, their relative risks will be overestimated. Future research examining child injury risk in diverse families will be strengthened by the use of data that include information about the severity of injury, which would help reduce self-reporting biases.

Data from the current study suggest that children from stepfamilies are not at an increased risk of injury. This was not
surprising given that a relationship between membership in stepfamilies and child injury has not been consistently found (e.g., O’Connor et al. 2000). It should be noted, however, that at this early stage of Growing Up in Australia, there were very few stepfamilies. Research suggests that the association between adverse child outcomes and separation or membership in a non-intact family can vary over a child’s life course (Pryor and Rodgers 2001). It may be that the effects of membership in stepfamilies on child injury and other outcomes may not emerge until later childhood or adolescence. The risk of injury in stepfamilies must be re-examined when later waves of Growing Up in Australia data become available. The longitudinal nature of the study allows the long-term outcomes of separation and membership in stepfamilies on child injury to be examined over the course of the child’s life.

To summarise, the current paper provides an examination of the relationship between family structure and the incidence of child injury. Approximately 17 per cent of 4-5 year old children participating in the Growing Up Australia study were reported to have experienced at least one injury requiring medical attention in the past 12 months. Children in sole-parent families were slightly but significantly over-represented among those who sustained an injury, whereas the increase in risk for stepchildren was not significant. Analyses indicated that the higher risk was accounted for by socio-economic differences between sole-parent and intact families. Thus, it is likely that any higher risk for child injury in non-intact families occurs because such families are more likely to possess child, parent, family and neighbourhood characteristics that are risk factors for child injury.

**Endnote**

1 These data are first compiled by the health authorities of the different states and territories, as well as by the Department of Veterans’ Affairs. The Australian Institute of Health and Welfare receives the collections from various agencies and maintains the data in National Hospital Mortality Database (NHMD) Harrison, J. & Steenkamp, M. (2002). Technical Review and Documentation of Current NHIPA Injury Indicators and Data Sources, Australian Institute of Health and Welfare, Canberra.

**References**


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