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## Child Abuse & Neglect



### Monitoring child abuse and neglect at a population level: Patterns of hospital admissions for maltreatment and assault<sup>☆,☆☆</sup>

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#### ABSTRACT

**Objectives:** To investigate the prevalence, trends, and characteristics of maltreatment and assault related hospital admissions and deaths among children; and identify common injuries and conditions associated with these admissions using routinely collected morbidity and mortality data.

**Methods:** A retrospective cohort study of all children aged 0–17 years in Western Australia from 1980 to 2005 was identified from linked de-identified population level data. Annual trends in prevalence of assault and maltreatment related admissions were calculated and child characteristics were investigated using logistic regression models.

**Results:** Assault admissions more than doubled from 2.8 per 10,000 children in 1981 to 6.1 per 10,000 in 2005 ( $p < 0.0001$ ) and maltreatment admissions rose from 0.7 per 10,000 children in 1981 to 1.3 per 10,000 in 2005 ( $p < 0.0001$ ). Males aged greater than 12 years were at greater risk of an assault, while children aged less than 6 years were more likely to be at risk of maltreatment as well as those from greater disadvantaged backgrounds. Aboriginal children were more likely to be identified with assault and maltreatment compared to non-Aboriginal children. Common indicators of assault admissions included injuries of the skull and facial bones, intracranial, wrist, hand, and abdominal injuries. Children with maltreatment-related admissions were more likely to have superficial head or abdominal injuries and a high proportion had infectious and parasitic diseases, particularly intestinal infections. Many of these cases were associated with factors influencing health status, particularly socioeconomic and psychosocial circumstances.

**Conclusions:** There has been a steady increase in the prevalence of assault and maltreatment related admissions. Specific child characteristics and injuries associated with child assault and maltreatment-related admissions have been identified using routinely collected morbidity data and may be utilized as potential indicators for identifying and monitoring child abuse and neglect.

**Practice implications:** Broadening child maltreatment surveillance to children's admissions for assault and maltreatment is an important public health initiative which can be improved by the increased use of external cause codes. Health data is collected using international coding standards enhancing comparability across states and countries and has clinical implications in highlighting injuries associated with child abuse and neglect.

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## Introduction

Australia has reported a substantial increase of more than 50% in child protection notifications from 2002–2003 to 2006–2007 (Australian Institute of Health and Welfare, 2008). There has also been a 45% increase in the number of notifications that are substantiated as child abuse and neglect (Australian Institute of Health and Welfare, 2008). This is in contrast to trends in the United States where declines in physical and sexual abuse substantiations have been observed (Finkelhor & Jones, 2006). Policymakers and researchers predominantly rely on the number of cases reported and substantiated by child protection agencies to monitor trends. However, there are a number of limitations to using such cases for accurate monitoring. Child protection databases were not designed for the purpose of public health monitoring and each Australian state's Child Protection Agency has a different definition of a notification or substantiation of maltreatment. The increase in notifications and substantiations in Australia could also be due to the broadening of child abuse and neglect definitions used by child protection agencies (Australian Institute of Health and Welfare, 1999). These differences make both national and international comparisons an even greater challenge (O'Donnell, Scott, & Stanley, 2008). The study of child abuse and neglect needs accurate, reliable, and repeatable measures of the occurrence to ascertain trends, risk, and protective factors.

There has been a call to broaden the scope of national data collections used to investigate the burden of violence against children. In 1998, Facchin, at the WHO Meeting on Strategies for Child Protection, discussed the importance of using health indicators of child abuse rather than just legal or judicial statistics. In the 2002 "World Report on Violence and Health," the World Health Organization (WHO) also stressed the importance of investigating abuse and neglect using mortality and morbidity data. These data collections have the advantage that they are routinely collected, have standard diagnostic classifications which are internationally accepted (International Classification of Disease codes, WHO), and specific coding criteria. This enhances comparisons of child abuse and neglect indicators over time and between states and countries, allowing monitoring of trends. To date, child homicide and non-accidental injuries, specifically head trauma and fractures, have been investigated (Bechtel et al., 2004; Chang et al., 2004).

The objectives of this study were to investigate the prevalence of maltreatment and assault related hospital admissions and deaths in Western Australian children and to determine what injuries and conditions were associated with these admissions using linked de-identified population level morbidity and mortality databases. The linked data also allows us to examine the characteristics of children admitted for assault and maltreatment admissions compared to the rest of the population. This study also investigated the prevalence of potential indicators of child abuse and neglect and how they are associated with coded assault and maltreatment related admissions.

## Method

There have been three phases to this research. The first phase was a literature review of common injuries and illnesses associated with child abuse and neglect, grouped into physical, sexual abuse, and neglect. Using this review, the second phase was to seek the opinion of clinicians as to the likelihood that these identified injuries and illnesses would be associated with abuse and neglect. Three doctors from the Emergency Department and Child Protection Unit of Princess Margaret Hospital, the main tertiary pediatric hospital in Western Australia, were asked to provide input. Most of the injuries and illnesses were identified by the clinicians as being likely or highly likely to be associated with child abuse and neglect. This process therefore identified potential medical indicators of child abuse and neglect (Appendix A). The third phase was to use these medical indicators to investigate the proportion associated with coded assault and maltreatment related admissions. Admissions relating to these indicators for which the external cause was transport related (i.e., motor vehicle) were excluded.

### Datasets

There were 2 study population used in these analyses. The first was a cohort of all children aged 0–17 years from 1980 to 2005 in Western Australia (WA), using de-identified routinely collected health data linked across datasets. This cohort was used to investigate trends in prevalence rates of maltreatment and assault-related admissions, as well as age-specific rates. The second was a cohort of children born in WA from 1980 to 2005. This cohort was used to assess whether gender, Aboriginality, and socioeconomic disadvantage were associated with risk of assault or maltreatment related admission.

The Health datasets included Hospital Morbidity, Death Registrations, Midwives Notifications, and Birth Registrations. The Hospital Morbidity data collection contains information on all hospital admissions (public and private) with corresponding diagnostic and procedural information using the International Classification of Diseases (ICD) coding system recorded for each episode of care for children from 1980 to 2005. For each admission, a child could have up to 21 diagnostic codes and 4 external cause codes recorded. All ICD codes were recoded to ICD-10 (Australian Modification).

The WA Death Register contains information on all deaths in Western Australia from 1980 to 2005, including coding for cause of death. The Midwives Notifications and Birth Registrations include information on maternal characteristics, pregnancy conditions, delivery details, and infant outcomes for all births from 1980 to 2005 and were used to identify characteristics of the child including year of birth, gender, Aboriginality, and socioeconomic disadvantage.

Each of the datasets is linked by the WA Data Linkage Unit by matching the identifiers common to the sets of records such as name, address, gender, and other available data (Kelman, Bass, & Holman, 2002). Only a unique project identifier and the individual's clinical information is provided to the researcher and all identifying information, such as name and address information is removed.

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