Child pedestrian injuries in the Cape metropolitan area — final results of a hospital-based study

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Over a 12-month period 430 children under 14 years of age presented to Red Cross War Memorial Children's Hospital in Cape Town having been injured as pedestrians, and 106 children who died from such injuries were registered at the regional state mortuary. Information about the circumstances surrounding injury was obtained from the parents or guardians of all children reporting to hospital and 48 (45.3%) of the fatalities.

Analysis of results revealed a strong relationship between pedestrian injury and children playing or running errands in residential areas during daylight hours, particularly in the later part of the afternoon. Only 24.3% of all children were supervised by an adult at the time of injury. The pattern of behaviour described must be acknowledged in the planning of future road safety measures. The inconsistency of parental supervision highlights the need to include adults in educational and awareness campaigns.


In South Africa, the rapid pace of both motorisation and urbanisation have produced an environment which is particularly hostile to children. At present, road traffic injuries (RTIs) are the single most important cause of injury-related morbidity and mortality in South African children over 4 years of age and pedestrians account for 46% of all casualties in this group as well as 25% of years of potential life lost from all traffic-related deaths. As would be the case with any public health problem of similar magnitude, successful prevention of pedestrian injuries depends upon intimate knowledge of the factors underlying the "disease" process.

In December 1990, we began to interview the parents or other primary caretakers of children presenting to the Red Cross War Memorial Children's Hospital trauma unit with pedestrian RTIs about the exact circumstances of the injury. The provisional results of the hospital study were analysed after 6 months and identified a fairly consistent pattern of behaviour preceding injury. This paper reports on the data

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accumulated over 12 months from both hospital attendances and pedestrian deaths under 14 years registered at the Regional State Mortuary.

**Patients and methods**

**Hospital attendances.** Between 1 December 1990 and 30 November 1991, the parents or guardians of children injured as pedestrians who presented consecutively to the trauma unit were interviewed about the circumstances of the child's injury. All interviews were conducted in person prior to discharge and no child was discharged before an interview was obtained. Information sought in the interview was documented on a standard proforma and included: (i) name, age and sex of child; (ii) time and place of collision; and (iii) the child's activity and nature of supervision at the time of injury.

**Pedestrian deaths.** Examination of police records at the Salt River Police Mortuary yielded the identities of all children under 14 years of age who had died from pedestrian injuries on the Cape Peninsula during the study period. Cross-checking of names and addresses obviated duplication of hospital and mortuary data. A questionnaire identical to that used in the hospital study was mailed to the parents of all children who had died from their injuries. Only one attempt was made to contact each family and no telephone interviews were conducted.

**Results**

During the study period, 430 children (275 males, 155 females) reported to the trauma unit with pedestrian RTIs; parental interviews were completed in all instances. Police mortuary records revealed 106 fatal pedestrian RTIs but completed questionnaires were returned by only 48 families (45.3%).

Preliminary inspection revealed no appreciable difference between hospital and mortuary data apart from the nature of injuries sustained. Other than that, the distribution in terms of place, time, activity and supervision was proportionally identical. The following results, therefore, refer to all 478 pedestrian casualties for whom completed data were available.

**Age and supervision.** The average age of the children was 7 years (range 2 - 14 years) and 358 (75%) were aged between 4 and 9 years. Nevertheless, only 116 (24.3%) of all children were under direct adult supervision at the time of collision (Fig. 1).

**Time, place and activity (Figs 2 - 4).** Four hundred and thirty-two collisions (90.4%) occurred during daylight hours with a peak incidence between 16h00 and 17h00 on all days of the week. Four hundred and twenty-two (88.3%) collisions occurred either directly outside the child's home (197) or elsewhere in the same neighbourhood (225). Only 29 injuries (6%) were sustained on main roads or commercial thoroughfares, where children were more often than not supervised by an adult (Fig. 3). There was no evidence of RTIs occurring in 'clusters' in any particular suburb or other locality. At the time of collision, 321 (67.2%) children were either playing or running errands in the immediate vicinity of their own homes or nearby (Fig. 4). Of note is that the majority of those injured going to or coming from school were hit by cars within their own residential areas, i.e. closer to home than to school.
nature of injuries. Among the 430 hospital patients, the injury was to soft tissues only in 190 (44.2%), but 240 (55.8%) sustained craniofacial and orthopaedic injuries requiring in-patient management. The main causes of death registered in children reaching the state mortuary were severe brain injury (35, 72.9%) and injury to the heart and great vessels (10, 20.8%).

Discussion

Red Cross War Memorial Children's Hospital is a teaching and service hospital funded by the State and serves the underprivileged communities of metropolitan Cape Town. The hospital's Trauma Unit accepts and treats both referred and unreferral casualties including approximately 50% of paediatric RTIs occurring on the Cape Peninsula.5 As has been shown in the UK,6 we believe that both coroners' records and metropolitan hospitals can provide a unique opportunity for the collection of injury-related data which may otherwise be unavailable. The poor response to our mailed questionnaires on fatalities was disappointing but can be attributed to the high mobility among the community at risk and the difficulties associated with delivering mail within the informal settlements.

The results of this study describe a pattern of behaviour and events which is largely consistent with findings published from other centres.6 However, the implication of these data for preventive strategies cannot be generalised but must rather be interpreted in the context of the social and physical environment where the injuries occur.

The efficacy of 'active' strategies, i.e. health education and legislation, in promoting the safety of child pedestrians is highly contentious.10-14 Educational campaigns in particular are costly if launched on a national scale and must be appropriately tailored to the various age groups targeted.10 Whatever scepticism exists about the ability of road safety education to bring about safe behaviour, there is growing awareness that parents (and all adults charged with the daytime supervision of children) must be included in the educational process.11-14 The lack of adult supervision of three-quarters of our study subjects attests once again to how few caretakers fully appreciate or acknowledge the vulnerability of young children in traffic.15,18 It is possible that much more can be achieved by empathetic campaigns which address adult misperceptions than by teaching safety drill to children who continue to receive conflicting messages from their role-models. Similar considerations also mean that statutory legislation and enforcement, while entirely appropriate for motorists, may fail to influence children whose appreciation of personal safety owes far more to parental attitudes than to what is preached outside the family circle.14

In South Africa, environmental approaches may provide the most cost-effective and far-reaching opportunity for increasing the safety of young pedestrians. The vast majority of injuries described in this study occurred on residential streets, which children appear to regard as an extension of their home territory. In such areas as the Cape Peninsula where high-density or informal housing predominates, it is more realistic to accept this behaviour as normal than to seek ways of keeping children off the street. Authorities in the UK19 and Europe20 have accepted the important role of residential streets in providing space for social interaction where the pedestrian should enjoy priority over the motorist and not vice versa.20 In South Africa, acceptance of this philosophy will be integral to the successful deployment of physical measures to protect children in particular. The areawide distribution of pedestrian RTIs in children indicate that ad hoc traffic-calming devices such as speed-humps, chicanes and pedestrian crossings may not provide the best solution. Rather, town planning as a whole will have to incorporate strategies which inhibit the passage of motorised traffic through residential areas, thereby reducing the overall exposure of children to this hazard.

Finally, in South Africa, cognisance will have to be taken of the sociopolitical atmosphere in which the problem of traffic-related injuries is confronted. Socially disadvantaged communities where the risk of pedestrian injury is highest, may appear to regard the protection of child pedestrians as a low priority, being preoccupied with issues more intimately connected with their day-to-day survival. Such resistance should not be misconstrued as a lack of interest, however, but rather as a challenge to the resources of health, traffic and educational authorities, all of whom are responsible for translating research data into workable preventive strategies.

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REFERENCES

Postnatal depression — an examination of psychosocial factors

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Postnatal depression (PND) has been underreported in South Africa. This retrospective study investigated factors which appear to predispose women to PND. Two groups, one consisting of women who suffered from PND and the other of women free of this complaint, provided information on a number of biological, psychological and social factors. In line with current opinion it was found that no single causative factor could be isolated but that a variety of factors may contribute to the problem. Among the factors which distinguished the two groups were the mothers’ emotional health during pregnancy, complications after birth, marital relations, relationship with their own mothers, social support and preparation for motherhood. An alarming finding was that a large proportion of the PND sufferers had not known of the disorder’s existence before their own diagnosis.

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Postnatal depression (PND) is a depressive illness that develops up to 1 year after the birth of a child. It varies in intensity, but is distinguished from ‘baby blues’, which is a mild depressive state usually associated with the onset and establishment of lactation. PND is also distinguished from postpartum psychosis, which is a severe condition that usually includes hallucinations or other psychotic symptoms. It is a widespread phenomenon, affecting women of all social classes. The disorder seriously interferes with a woman’s ability to function and has profound effects on the infant, the family and the woman herself. Prevalence studies estimate that 10 - 15% of postpartum mothers are affected. Despite considerable research, no single causative factor has been isolated, but current thinking suggests that there is an interaction between biological factors, psychodynamic issues, cognitive patterns and situational stress.

The link between biological factors and PND remains controversial. It is proposed that changes in hormone levels postpartum may be a factor, although the evidence remains inconclusive. Premenstrual syndrome, and breastfeeding and weaning may also play a role.

The possibility of a genetic basis for postnatal depression was suggested by a number of studies which found that there is a one-in-three risk of developing postnatal mental illness if there is a previous history of psychiatric disorder in the family, particularly in the mother. Other authors, however, suggest that there may be an interplay of genetic factors (of biological origin) and other psychodynamic factors related to the birth situation that predispose mothers to depression.

Psychodynamic factors essentially involve the woman’s relationship with her own mother. If the woman herself was inadequately mothered, she may experience conflict in her own maternal functioning. This conflict may cause the woman to question her own desire or ability to mother her infant satisfactorily. The hostility experienced by the new mother in this situation may then be projected onto her infant. Again, results are inconclusive; some authors found no association between the nature of a woman’s relationship with her own mother and her PND. However, women who have experienced physical, sexual or emotional abuse in the past tend to be vulnerable to depression postpartum.

The cognitive theory of ‘learned helplessness’ has been proposed as an explanation of depression. The new mother who is unsuccessful in comforting her baby may believe that she is incapable and useless. Learned helplessness and evidence of passive coping and external locus of control have been observed in depressed mothers. It has been suggested that depression occurs because the mother has a negative perception of the environment and of herself. This becomes a self-perpetuating cycle, affecting cognition, affect and behaviour.

Cognitive theorists also propose that personality characteristics predispose certain women to PND. Anxious, perfectionist, controlling and compulsive individuals are considered to have unrealistic expectations about their parenting ability, and when they fail to meet these expectations they may experience feelings of guilt, failure and inadequacy.Trait anxiety and fear of the birth process during pregnancy have also been found to predict...