Increasing trends in the frequency of sports injuries treated at an Australian regional hospital

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Regional and rural Australians have higher rates of injury death and hospital admissions and experience poorer health outcomes than their metropolitan counterparts.^{1, 2} Understanding the injury burden and how it is changing is important for effective healthcare provision.

Regional hospitals are already experiencing high workloads and ED overcrowding,³ including that associated with treatment of sports injuries. In New South Wales, the highest rates of hospital-treated sports injuries are in regional and rural areas.⁴ Victoria has experienced increasing numbers of sports injuries requiring hospital treatment statewide.⁵ This paper investigates the frequency of hospital-treated sports injuries in one large Victorian regional hospital to quantify trends in a regional area and to assess the impact of these injuries on a regional hospital.

Participants, methods and results

The following data for one regional hospital covering the financial years 2003/04-2011/12 inclusive was extracted by the Victorian Injury Surveillance Unit:

- (i) Hospital admissions from the Victorian Admitted Episodes Dataset coded to the International Classification of Disease, Version 10 - Australian Modification (principal diagnosis of an injury (S00-T98) and an activity code (U50-U71));

- (ii) Emergency department (ED) presentations from the Victorian Emergency Minimum Dataset (activity code indicating sports or a sports activity mentioned in the “description of injury event” text).

Trends in injury frequency were analysed by log-linear negative binomial regression.

Overall, 5,671 children and 12,244 adults required treatment of a sports injury at this hospital (Table 1). The frequency of hospital-treated sports injury increased significantly by 77%, corresponding to an average annual increase of 6.5% (95%CI 5.0%-7.6%). The frequency of hospital-treated sports injury increased more sharply than did the frequency of hospital-treated injury for all other causes. Approximately 11% of all sports injuries presenting to the ED were subsequently admitted for further treatment. There were significant increases in both the number of sports injury hospital admissions and ED presentations over time (Table 1).

Comment

This study clearly demonstrates that the healthcare impact of sports injuries increased significantly over time at this regional hospital. The rate of increase in hospital-treated sports injury was greater than the rate of increase in hospital-treated injury for all other causes suggesting that it is not related to population growth alone.

The reasons for the increasing trends in sports injuries are likely to be multifaceted, including changes in the risk of injury, sports participation or data completeness/ accuracy over time. The rate of increase in ED presentations was greater than that for hospital admissions, suggesting that increasing numbers of hospital-treated sports are not due to increasing injury severity, but probably reflect an increasing need for healthcare treatment for sports injuries.

It is possible that the increase in sports injury hospital admissions could be related to changes in hospital admission practices. The increasing number of sports injury ED presentations could be due to changes in referral procedures or people with sports injuries choosing to use the ED as a primary healthcare provider for injury treatment. A better understanding of the factors influencing peoples' treatment choices is needed for the planning of appropriate and accessible care, particularly if the sports injury could have just as easily been treated by another healthcare provider.

Physical activity (including sport) has important health, social and economic benefits. However, with increasing participation comes a greater risk of injury and the

growing number of sports injuries presents new challenges for hospitals in regional areas. Further research is needed to understand the burden of hospital-treated sports injury in regional centres more fully (e.g. direct hospital costs, hospitalised bed-days). Strategic planning is now needed for regional hospitals to meet the demands for healthcare treatment created by increasing numbers of hospital-treated sports injuries.

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Table 1 Trends in the frequency of hospital-treated[^] injury at a regional hospital in Victoria, 2003/04-2011/12

	2003/ 2004	2004/ 2005	2005/ 2006	2006/ 2007	2007/20 08	2008/ 2009	2009/ 2010	2010/ 2011	2011/ 2012	% annual change (95%CI)	% change over whole period (95%CI)
Total number of hospital-treated sports injury cases											
Child (<15 years)	445	574	586	649	585	592	779	695	766	5.5 (3.0, 7.6)*	61.3 (30.2, 94.0)*
Adult (15+ years)	979	1142	1210	1238	1294	1397	1604	1598	1782	7.0 (5.9, 7.7)*	84.6 (67.5, 95.3)*
Total	1424	1716	1796	1887	1879	1989	2383	2293	2548	6.5 (5.0, 7.6)*	76.9 (55.6, 94.1)*
Total number of "all other cause" hospital-treated injury cases											
Child (<15 years)	2616	2538	2836	3002	2931	3173	3288	3373	3482	4.0 (3.2, 4.6)*	45.2 (32.8, 49.9)*
Adult (15+ years)	7804	8068	8665	9040	9455	10009	10530	10841	11044	4.7 (4.2, 5.0)*	51.1 (45.0, 54.7)*
Total	10420	10606	11501	12042	12386	13182	13818	14214	14526	4.5 (4.0, 4.8)*	49.0 (42.7, 52.9)*
Sports injury hospital admissions only (all ages)	130	181	209	215	213	239	250	191	268	5.9 (2.1, 9.3)*	67.0 (20.2, 123.3)*
Sports injury ED presentations only (all ages)	1294	1535	1587	1672	1666	1750	2133	2102	2280	6.6 (5.2, 7.7)*	78.1 (57.3, 94.3)*

[^] The number of hospital-treated injury cases was calculated by summing the total number of hospital admissions and non-admitted ED cases to avoid double counting of some cases (i.e. when an ED presentation led directly to an admission at the same hospital, the case was counted only once). Readmissions to the same hospital and transfers within and between hospitals were excluded in the admissions data.

*p<0.05.

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