QUEENSLAND INJURY SURVEILLANCE UNIT

INJURY BULLETIN

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Child Trampoline Injuries

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Summary

- QISU recorded 668 child trampoline injury presentations in 1998 and 1999
- The Queensland trampoline presentation rate for 5 to 14 year-olds was 158/100,000
- More than half of the injuries were to 5 to 9 year-old children
- 40% of the injuries were fractures, most often to the arm
- 93% of the injuries occurred at home
- Almost one-fifth of the injuries resulted in hospital admission
- There are estimated to be 15 injuries per 1000 trampolines in the South Brisbane Region each year
- There is no Australian Standard for trampolines
- Trampolines need to be portrayed as sports equipment not play equipment

Background

Falls are a major reason for presentation at Emergency Departments for children. In 1998-99 falls made up 41% of all ED presentations amongst those aged under 15 years. Amongst injuries involving play equipment, which comprise 6% of child injury presentations 85% were attributed to falls. A common piece of play equipment found in Queensland backyards is the trampoline.

Recently there has been a call by some involved in child injury research and prevention to restrict the private sale and use of trampolines as a result of an increasing body of evidence implicating them in serious injury to children. In late 1999 the International Society for Child and Adolescent Injury Prevention (ISCAIP) released a draft policy statement calling for a total ban on recreational, school and competitive paediatric use of trampolines. This call has largely been the result of recent studies in New Zealand and particularly the US which show the rate of trampoline injury in children has more than doubled in the last decade[1-7]. This *Bulletin* attempts to describe and measure the current magnitude of child trampoline injury in Queensland.

* QISU data is based on emergency department presentations to the following hospitals: Mater Children's Hospital, Mater Adult Hospital, Mater Private Emergency Care Centre, Queen Elizabeth II Jubilee Hospital, Redland Hospital, Logan Hospital, Royal Children's Hospital, Mt Isa Hospital, Mackay Base Hospital , Proserpine Hospital, Sarina Hospital,

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Results

During 1998 and 1999 Queensland Injury Surveillance Unit collected data on 668 trampoline related injuries to children presenting at participating Emergency Departments in Queensland. This represents 16% of all play or sports equipment related injuries and 2% of all child injuries.

More than half of the trampoline injuries were to children aged five to nine years with almost as many males as females injured (Figure 1). Almost all trampoline injuries occurred at home with only 7% occurring at other locations, including schools (3%), recreation and sports facilities (3%) and other (1%).

More than three-quarters of trampoline injuries involved falls with the remaining injuries mostly involving being struck by or collision with an object or person. Fall injuries were evenly divided between falling off the trampoline onto the ground and falling on the trampoline and its surround. The injuries resulting from *colliding* or being *struck by another person* were almost always the consequence of having more than one person on the trampoline at one time. The *collision* or *struck by object* injuries almost invariably involved striking the surround or objects such as eaves or branches overhanging the trampoline.

The most frequent injury sustained was fracture (40%) followed by sprain or strain (24%) and open wound (11%) (Figure 2). The part of the body most commonly injured was the forearm or elbow (35%) followed by the head or face (19%). Fractures to the forearm or elbow were the most frequent injury overall comprising 28% of all injuries followed by open wounds to the face or head (9%). There were six vertebral fractures (1%) reported of which half were to the neck but none involved injury to the spinal cord. QISU did not identify any serious spinal injuries or deaths in Queensland in the last ten years.

Nearly twenty percent of child trampoline injuries were admitted to hospital compared with 16% overall. This difference can be largely attributed to the higher proportion of fractures.

Incidence

Within the 5 to 14 years age group the rate of trampoline injuries varied from 112 per 100,000 for males in the South Brisbane Region to 283 per 100,000 for males in Mackay (Table 1). Compared with trampoline injury rates for the same age group observed elsewhere Queensland has a similar rate to the US but a considerably lower rate than that observed in New Zealand in 1989-90[5,8].

The rates for South Brisbane in the 0 to 4 and 5 to 9 years age group were compared with

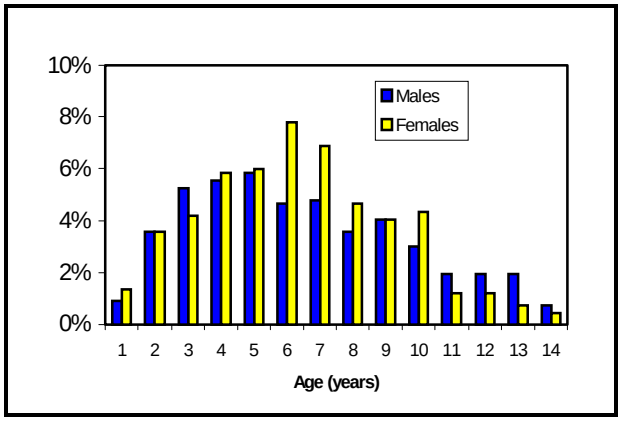

Figure 1 Child trampoline injuries presenting at participating ED's, by age and gender, 1998–99

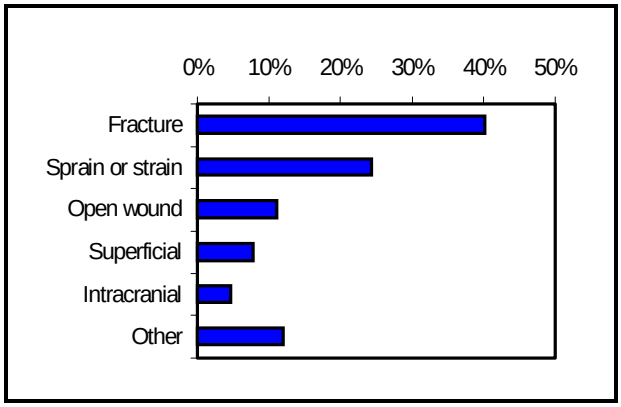

Figure 2 Child trampoline injuries presenting at participating ED's by nature of injury, 1998-99

rates observed in this region in 1985-91 (Table 2). An increase of 33% in the rate for males and 50% for females was seen in the 5 to 9 years age group, while in the younger age group the corresponding increases were 60% and 40%. For children aged 0 to 4 years, where comparable figures are available, South Brisbane has a higher rate of injury than the US but a much lower rate than NZ[5,8].

Discussion

Although the rate of trampoline injury in children in Queensland has increased in recent years the in-

Estimate of exposure: QISU obtained estimates of trampoline ownership from a major trampoline manufacturer who provided data based on their own research using Australian Bureau of Statistics and market research data. These figures suggest 27% of homes with children aged 3 to 9 (market target group) own a trampoline (in current use) equating to 400,000 trampolines nationally. Using these figures it is estimated that there are approximately 12,000 trampolines in active use in the South Brisbane Region giving an annual paediatric injury rate of 15/1000 trampolines.

Region	Males	Females	Persons
South Brisbane	112	168	136
Mackay	283	246	256
Mt Isa	242	209	224
Total Queensland Regions	145	183	158
US (1998)			169
NZ(1989-90)			501

Table 1: Emergency department presentation rates[1] for trampoline injuries by QISU Region and gender, 5-14 years, 1998

[1] per 100,000 persons

	5-9 years		0-4 years			
	1985-91	1998	1985-91	1998	US(1998)	NZ(1989-90)
Males	115	154	50	80		
Females	159	236	67	93		
Persons	137	195	58	86	48	203

Table 2: Emergency department presentation rates[1] for trampoline injuries by gender, South Brisbane Region, 0-9 years, 1985-91 and 1998

[1] per 100,000 persons

crease has not been of the magnitude observed in the United States. The reason for this difference could be due to trends in trampoline ownership in the two countries. In the US trampolines reached their heyday in the 1950s and 60s, but during the 1970s increasing reports of trampoline injuries and a call from the American

Academy of Pediatrics (AAP) for their banning led to their removal from school physical education programs. Because of declining sales and risk of product liability lawsuits the largest manufacturer of trampolines in the US halted sales by the end of the 1970s[7].

There is no evidence of a similar situation having arisen in this country. While rates in South Brisbane have risen significantly over the last ten years there has not been an increase as dramatic as the 130% observed in the US in the period 1991-98[1,8] where injuries appear to have mirrored a recovery in sales following a lull in the 1980s. The injury rates observed in the US recently are similar to those observed in South Brisbane and much lower than those seen in NZ indicating that trampoline ownership in the US may now have reached a similar level to that in Queensland.

The move to have trampolines banned should not ignore the positive affects they afford in terms of physical activity. While children's lifestyles are increasingly inactive, with long periods of time spent on computer games and television, activities they enjoy that also encourage exercise should be supported. Other popular recreational items for children also incur a degree of risk. For example, bicycles result in three times the rate of injury to children[9]. However the risk involved in both trampolining and bicycling can be reduced through greater awareness and safety initiatives. What is needed is an analysis of the risks and benefits of child trampoline use.

An issue not addressed by previous research is the role of trampoline size on risk of injury. This issue needs to be explored further in developing an Australian standard for trampolines. An anecdotal observation by one manufacturer of full size trampolines was that a significant number of injuries are occurring on 'small' trampolines of the type usually sold by department and toy stores for home use, and that very few injuries occur on full size trampolines.

A major problem which makes trampoline injury prevention more difficult is the perception amongst consumers which is reinforced by retailers and manufacturers that trampolines are play equipment. Trampolines should be regarded as sporting equipment.

According to trampoline retailers more parents are asking about safety features and many customers choose safety over price as a determining feature. As a result some retailers are now offering trampoline packages which include protective padding at a discounted price.

Prevention Initiatives

There are measures that parents and carers can take to reduce the risk of injury to children using a trampoline. Parents need to address the likelihood of their being able to meet such measures when considering buying a trampoline for their children.

QISU recommends that:

an Australian standard for trampolines be developed, as is the case in NZ and the US, to incorporate requirements for protective padding, minimum dimensions and adequate labelling for the proper installation and use of the equipment trampolines not be portrayed as play equipment by retailers and manufacturers.

References

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TRAMPOLINE SAFETY

Do not buy a trampoline unless you can comply with these safety measures.

Buying and installing a trampoline:

- When you buy the trampoline also buy safety pads to cover the steel frame and springs
- Try to place the trampoline in a hole in the ground so that the jumping surface is as close to the ground level as possible
- Make sure that the surface under and around the trampoline (the safe fall zone) is soft – use pine bark, woodchips or sand as you see in playgrounds
- The safe fall zone should be at least two meters wide on all four sides of the trampoline
- The safe fall zone should also be free from hazards such as walls, toys, furniture, and overhead objects such as trees, wires and building structures
- Regularly check the trampoline to make sure that the mat does not have holes, the frame is not bent, the springs are securely attached, and the leg braces are securely locked

Using the Trampoline:

- Children under six years need adult supervision at all times
- Older children need strict guidelines on proper use
- Only one child at a time should use the trampoline
- Keep toddlers away from the trampoline when it is being used – they may go underneath it
- Teach your child to jump in the centre of the mat and to climb on and off the trampoline rather than jumping off it
- If your child wants to try high-risk skills like somersaults take them to a gymnasium where they can be taught and supervised by trained professionals

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QISU Web site

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QISU Data

QISU collects and analyses data from emergency department injury presentations on behalf of Queensland Health. Participating hospitals (acknowledged on page 1) represent three distinct regions of Queensland. QISU publications and data are available on request for research, prevention and education activities.

QISU Injury Bulletin

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