

# **Whiplash associated disorder in children attending the emergency department**

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FROM ABSTRACT:

**Aims:** To determine the incidence, severity, and clinical course of whiplash associated disorder (WAD) in children aged 4–16 years involved as passengers in car crashes.

**Methods:** Prospective surveillance of all paediatric attendances to three English urban emergency departments after car crashes over an eight-month period.

An initial structured telephone interview at day 2 after the car crash was performed.

This was followed by clinical review of symptomatic patients on day 5 after the crash using the Quebec Task Force criteria for outcome assessment, with subsequent clinical review at 14, 28, and 56 days or until earlier symptom resolution.

**Results:** 105 children were identified as having been involved in car crashes as passengers.

Forty-nine children (47%) experienced symptoms of a WAD.

Twenty-nine children developed symptoms within 24 hours with the remainder developing symptoms by 48 hours.

Forty children experienced a WAD grade 1 and nine children suffered a WAD grade 2 injury.

The mean duration of symptoms was 8.8 days (range 3–70).

WAD grade 2 symptoms lasted significantly longer than WAD grade 1 symptoms.

**Conclusions:**

The incidence of WAD in children in this study was higher than in other studies.

The clinical course was more favorable than that reported for adults.

THESE AUTHORS ALSO NOTE:

Up to 62% of adults have suffered from whiplash.

Most WAD literature has largely pertained to adults.

“Some insurance claim evidence suggests a 41% rate for WAD in children after involvement in a car crash.

[Brown B, Pedder J, Pasco D. Existing child restraint data—does it define the problem. 42nd Annual Proceedings of the Association for Advancement of Automotive Medicine 1998:15–28].

This study was designed to look exclusively at the problem of WAD in children.

The objective of the study was to determine the incidence, severity, and clinical course of WAD in children aged 4–16 after involvement in car crashes as passengers.

Children requiring resuscitation or inpatient admission for their injuries were excluded.

**[This means that that actually numbers of injury in this study are low].**

“If no symptoms of pain, discomfort or decreased motion were elicited on direct questioning then, in accordance with the Quebec Taskforce criteria, a grade of WAD grade 0 was given.” [Perhaps, an examination of these asymptomatic children would have revealed alterations of segmental range of motion, a subluxation].

The Quebec Task Force criteria for whiplash associated disorder:

Grade 0 = Nil symptoms

Grade 1 = Complaint of pain on motion but no pain on physical examination

Grade 2 = Complaint of pain on motion with pain on physical examination

Grade 3 = As grade 2 but with neurological symptoms

Grade 4 = Fracture or dislocation

## RESULTS

39% of the children studied were front seat passengers.

61% were rear seat passengers.

91% were suitably restrained by restraints.

18% were in side impacts.

32% were involved in frontal impacts.

50% were in rear impact car crashes.

“The overall incidence of WAD was 47% (49 of 105).”

“60% (29 of 49) of the children with WAD were symptomatic on the day of presentation to the emergency department with the remaining 40% of children with WAD becoming symptomatic the following day.”

"55% (27 of 49) of the WAD affected children were girls."

"All cervical spine radiographs were reported as showing no abnormality."

"Clinical examination of the WAD group demonstrated 9 children with Quebec Task Force WAD of grade 2 and 40 children with a WAD of grade 1."

"No children reached the accepted criteria for chronicity of WAD, namely pain lasting more than two months."

## DISCUSSION

"This study is the largest clinically assessed group of children with WAD to date."

"The well known time delay before the onset of symptoms in adults was reflected also in our paediatric population."

[Otremski I, Marsh JL, Wilde BR, et al. Soft tissue cervical spinal injuries in motor vehicle accidents. *Injury* 1989;20:349–51].

"40% of children with WAD experienced the onset of symptoms over 24 hours after the car crash."

"As before it is not fully understood why such a delay in onset of symptoms should occur but may reflect the soft tissue injury aspect of WAD with late muscle stiffness and pain."

"Applying the Quebec Task Force guidelines for radiography in WAD would significantly increase the number of radiographs performed in children as it suggests that all patients with a WAD grade 2 or above should have cervical spine radiographs performed." **[IMPORTANT]**

"The clinical course for WAD in children would seem to be much more favourable than that in adults."

"Recent work has shown that children are susceptible to and do experience significant psychological trauma after being involved in a car crash."

[Stallard P, Velleman R, Baldwin S. Prospective study of post-traumatic stress disorder in children involved in road traffic accidents. *BMJ* 1998;317:1619–230].

## KEY POINTS FROM DAN MURPHY

- 1) In this study, 47% of children riding in cars that were involved in crashes developed WAD. This study did not count children who were resuscitated or inpatient admitted to a hospital for their injuries. Consequently, the number of injured children would be greater than 47%.
- 2) Children and adults commonly experience a delay in the onset of symptoms after whiplash injury.
- 3) All patients with a WAD grade 2 or above should have cervical spine radiographs performed, including children.
- 4) The clinical course for WAD in children is much more favorable than that in adults. No children experienced pain for more than 70 days in this study (abstract).
- 5) Children experience significant psychological trauma after being involved in a car crash.
- 6) This study did not look at children younger than age 4.