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A prospective study on paediatric traffic injuries: health-related quality of life and post-traumatic stress

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Objectives: To examine children's reports of their health-related quality of life (HRQoL) following paediatric traffic injury, to explore child and parental post-traumatic stress, and to identify children and parents with adverse outcomes.

Design: Prospective cohort study. Assessments: shortly after the injury, three months and six months post injury.

Setting: Department of Traumatology, University Hospital.

Subjects: Fifty-one young traffic injury victims aged 8–15 years.

Main measures: TNO-AZL Children's Quality of Life questionnaire and the Impact of Event Scale.

Results: Short-term adverse changes in the child's HRQoL were observed for the child's motor functioning and autonomy. At three months, 12% of the children and 16% of the parents reported serious post-traumatic stress symptoms. Increased stress at three months, or across follow-up, was observed among hospitalized children, children with head injuries, and children injured in a motor vehicle accident. Parental stress was related to low socioeconomic status and the seriousness of the child's injury and accident (hospitalization, head injury, serious injury, motor vehicle involved, others injured).

Conclusions: The children reported only temporary effects in their motor functioning and autonomy. Post-traumatic stress symptoms following paediatric traffic injury were not only experienced by the children, but also by their parents.

Introduction

Injuries constitute a major health problem among children and adolescents.¹ Traffic crashes have been particularly associated with severe and fatal

injuries and postinjury disabilities in children.^{2–4} For this reason, additional attention to paediatric traffic victims seems justified.

Paediatric injuries can result in a range of postinjury sequelae, including functional limitations, psychobehavioural changes, and cognitive problems.^{2–9} However, little is known concerning the effects of the injuries on a child's health-related quality of life (HRQoL).^{10,11} Furthermore, the above-mentioned studies solely relied on parental,

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clinicians' and teachers' reports. It remains uncertain as to whether the child would have reported the same type and number of consequences. Because parents and children may disagree about components of the child's functioning and well-being, it has been recommended that information should not only be obtained from the parents, but also from the children.¹²

Knowledge about the child's HRQoL is of significance, as it provides insight into the child's valuations of his or her physical and psychosocial health status. Additionally, for a full description of the impact of paediatric traffic injuries, psychological outcome measures also need to be applied to highlight traffic incident-related sequelae, such as post-traumatic stress symptoms.¹³⁻¹⁵ Finally, the effects of being involved in a traffic crash on the child's environment merits attention, as recent investigations have suggested that parents may also be at risk of suffering post-traumatic stress symptoms.^{14,16,17}

The objectives of this study are to describe the viewpoints of young traffic victims regarding their short-term HRQoL and to assess post-traumatic stress symptoms of the children and their parents. Furthermore, we aim to identify subgroups of young traffic victims and parents with a reduced HRQoL or increased post-traumatic stress who may need professional support.

Patients and methods

The study included all surviving traffic victims aged between 8 and 15 who were treated at the Department of Traumatology of the University Hospital Groningen, the Netherlands between April 2000 and April 2001. Participants in the study were limited to children who were identified by the researchers within two weeks of the accident and these children and their parents also had to be able to read and write Dutch. Traffic crashes corresponded to codes E810-E819 (motor vehicle traffic crash) and E826 (pedal cycle crash) of the International Classification of Diseases, 9th revision, Clinical Modification (ICD-9-CM)¹⁸ and included noncollisions. The study was approved by the Medical Ethics Committee of the University Hospital Groningen.

General and injury characteristics of the child including age, gender and injury diagnoses were obtained from medical records. To provide an overall severity score for patients with multiple injuries, the Injury Severity Score (ISS) was computed.¹⁹ The ISS was classified as ISS 1-3, ISS 4-8, and ISS ≥ 9 to indicate minor, moderate and serious injury severity, respectively.

The study design included the following three assessments: a baseline measurement shortly after the accident and two follow-up assessments at three months and at six months following the incident. As soon as the child was medically stable, the parents and the children were invited to participate in the study and were sent baseline questionnaires. The parental baseline questionnaire covered details of the incident and the highest educational level of the mother as an indicator of socioeconomic status (SES). The SES was categorized as low (primary school, lower vocational education), middle (secondary school, intermediate vocational education), and high (higher vocational education, university education). The baseline child questionnaire included the child form of the TNO-AZL Children's Quality Of Life (TACQOL) questionnaire.²⁰ The children were asked to complete this questionnaire about their preinjury HRQoL. The TACQOL is a generic HRQoL instrument that assesses impairment in health status items and the emotional response of the patient to this impairment. The TACQOL questionnaire includes seven 8-item scales: physical complaints, motor functioning, cognitive functioning, social functioning, autonomy, and positive and negative emotions (see Appendix). The items are scored on a scale from 0 to 4 and the item scores within each scale are added to a scale score. The first five scales range from 0 to 32. The two emotional scales range from 0 to 16. Higher scores on the scales indicate a better HRQoL. To obtain an overall HRQoL index, we added all scales and divided this sum by 1.92 to acquire a HRQoL sumscore within a 0-100 range. The psychometric properties of the TACQOL child form were found to be satisfactory,^{21,22} and reference data of the TACQOL reported by 2383 counterparts in the general population aged between 8 and 15 was available.²⁰

The follow-up child questionnaires contained the TACQOL child form to assess the child's

postinjury HRQoL. Furthermore, both child and parental questionnaires included the Dutch translation of the Impact of Event Scale²³ to detect post-traumatic stress symptoms. The Impact of Event Scale is a 15-item self-report instrument and was developed to assess intrusive re-experiencing of the trauma and avoidance of trauma-related stimuli. All items combined provide a total score within a 0–75 range. Higher scores represent more post-traumatic stress symptoms. In a study on the psychometric properties of the Dutch Impact of Event Scale, the Dutch version proved reliable and valid.²⁴ Although the Impact of Event Scale was initially developed for adults, it has proven useful for children aged 8 and older.^{25–27} According to the Dutch translators of the Impact of Event Scale, the total score can be interpreted according to the following classification of degree of post-traumatic stress symptoms: 0 (no symptoms), 1–7 (mild symptoms), 8–25 (moderate symptoms), and 26–75 (serious symptoms of clinical concern).

Statistical analysis

The groups of participating and nonparticipating children were compared with respect to general and injury characteristics using Student's *t*-test and χ^2 tests. Univariate analyses of covariance (ANCOVAs) were applied to compare the study sample's preinjury HRQoL with the HRQoL of the reference group, taking children's age and gender into account.

To assess changes in the patients' HRQoL over time, we applied repeated-measures analyses of variance (MANOVAs) with the preinjury and the follow-up HRQoL scores as dependent variables. Additionally, we examined group differences over time in postinjury HRQoL. In these analyses the children's three and six months follow-up HRQoL scores were entered as dependent variables and the children's preinjury HRQoL scores were included as a covariate (repeated-measures MANCOVAs). The between-subject factors (i.e., the grouping variables), concerned age, gender, SES, ISS, head injury, extremity fracture, need for hospitalization and accident characteristics (crash with motor vehicle involvement, other persons also injured). Likewise, we looked at the parent and child follow-up Impact of Event Scale scores of subgroups of young traffic injury victims. Finally, post-hoc

comparisons with Bonferroni correction (BC) for multiple comparisons were performed. A *p*-value < 0.05 was considered to be statistically significant.

Results

One hundred and forty-three young traffic victims met the inclusion criteria of the study. Eventually, 51 children and parents participated at all three assessments (Figure 1). These 51 patients did not differ from the group of children who did not participate at the baseline or follow-up assessments with respect to their mean age and the distributions of gender, hospitalization, extremity fractures and the ISS. However, compared with the nonparticipating children, the 51 respondents did incur proportionally more intracranial head injuries (*p* = 0.003).

The participating children had a mean age of 12.2 ± 2.1 years at the time of the accident and 53% concerned boys. More than half of the children were injured as bicyclists (*n* = 29; 57%). A motor vehicle was involved in nearly half of all the incidents (*n* = 24; 47%). A quarter of the children sustained serious injuries (ISS ≥ 9 ; *n* = 13; 26%) and 29% (*n* = 15) of the young patients required hospitalization. Fifteen children (29%) sustained an intracranial head injury, 17 children incurred a fracture of the upper extremity (33%), and four children had a lower extremity fracture (8%).

HRQoL

The preinjury HRQoL scores of the young traffic victims did not differ from the HRQoL scores of the healthy reference group on five scales. Differences only emerged for the physical complaints and positive emotion scales on which the traffic victims reported better scores (ANCOVAs; physical complaints: *p* = 0.001, positive emotions: *p* = 0.003).

The repeated-measures MANOVAs that were applied to investigate changes in the young traffic injury victims' perceptions of their HRQoL over time revealed significant time effects for motor functioning, autonomy and negative emotion scales (Table 1).

Post-hoc comparisons between the three assessments for the motor functioning scale indicated

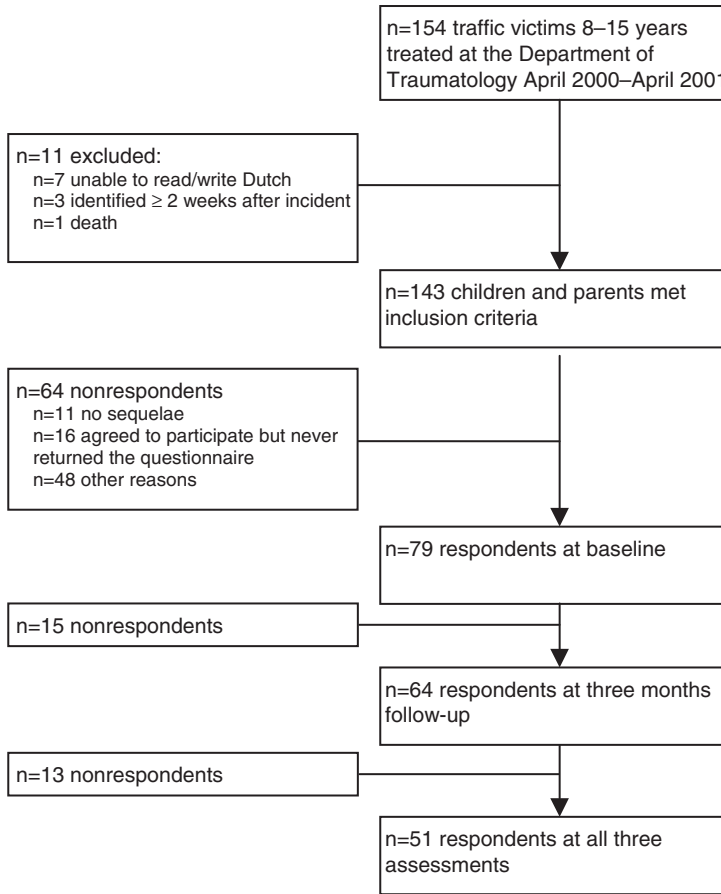


Figure 1 Flow diagram of the study.

Table 1 HRQoL reported by the young traffic victims

	Range	<i>n</i>	Pre-injury	T1	T2	Time-effect ^a	
			Mean (SD)	Mean (SD)	Mean (SD)	<i>F</i>	<i>p</i> -value
Sumscore	(0–100)	49	90.10 (8.71)	88.84 (11.12)	91.50 (6.39)	2.97	0.064
Physical complaints	(0–32)	51	26.78 (4.94)	25.98 (5.71)	27.00 (4.23)	1.08	0.349
Motor functioning	(0–32)	51	30.47 (2.75)	28.95 (4.64)	30.68 (2.43)	6.93	0.003
Autonomy	(0–32)	50	31.38 (1.68)	30.53 (2.87)	31.76 (0.66)	7.27	0.004
Cognitive functioning	(0–32)	50	28.78 (4.71)	29.65 (4.32)	29.52 (3.45)	0.94	0.397
Social functioning	(0–32)	50	29.69 (3.00)	29.86 (3.46)	30.42 (1.99)	2.47	0.096
Positive emotions	(0–16)	50	14.40 (2.15)	13.82 (2.46)	14.03 (2.65)	2.54	0.089
Negative emotions	(0–16)	50	11.62 (2.45)	12.01 (3.09)	12.43 (2.67)	3.18	0.050

^aRepeated-measures analysis of variance.

T1, three months post injury; T2, six months post injury; SD, standard deviation.

Note: TACQOL scale scores can be calculated up to two missing items. Two children had more than two items missing on respectively two and three scales.

that the children reported a significantly lower score at three months compared with the preinjury score ($p = 0.040$, BC). Furthermore, the children noted an improvement in their motor functioning ($p = 0.003$, BC) and on the autonomy scale ($p = 0.004$, BC) between three and six months. The scores on these scales at six months post injury did not differ significantly from the respective preinjury scale scores. The post-hoc pair-comparisons for the negative emotions scale only revealed a significant decrease in the emotions between the preinjury and six months reports ($p = 0.042$, BC).

To examine whether reduced motor functioning or autonomy could be observed for specific groups of children, we performed repeated-measures MANCOVAs. Post-hoc comparisons for the variables with significant group effects in these analyses revealed that during the follow-up period the inpatients reported on average significantly lower scores on the motor functioning ($p = 0.006$) and autonomy scales ($p = 0.039$) compared with the outpatients. Furthermore, the children with lower extremity fractures reported on average less motor functioning and lower autonomy scores compared with the children with upper extremity fractures (motor: $p = 0.020$, BC; autonomy: $p < 0.001$, BC), or without an extremity fracture (motor: $p = 0.026$, BC; autonomy: $p < 0.001$, BC). Finally, children had lower motor functioning scores during the follow-up period if a motor vehicle had been involved in the incident compared with the children who were not injured in a motor vehicle crash ($p = 0.006$).

Post-traumatic stress symptoms

The Impact of Event Scale was applied to explore the post-traumatic stress reactions of the children and their parents (Table 2). Six children (12%) and eight parents (16%) suffered serious post-traumatic stress symptoms at three months post injury. At six months these percentages were respectively 12% and 6%. Three children reported serious stress symptoms at both assessments.

The child and parent Impact of Event Scale scores were significantly correlated (three months: Pearson's $r = 0.65$, $p < 0.001$; six months: Pearson's $r = 0.55$; $p < 0.001$). However, the children and their parents did not always experience the same degree of post-traumatic stress symptoms. For instance, four parents reported serious post-traumatic stress symptoms at three months, whereas their children reported mild or moderate symptoms. The opposite was also observed.

To address the question whether groups of children or parents experienced different levels of post-traumatic stress following paediatric traffic injury repeated-measures MANOVAs were applied. The mean Impact of Event Scale scores for the variables with significant group or group \times time interaction effects are presented in Table 3 (children) and Table 4 (parents).

It appeared that children with head injuries and children injured in a motor vehicle crash reported significantly higher Impact of Event Scale scores during the follow-up compared with their counterparts. Furthermore, at three months, the hospitalized children noted significantly increased Impact of Event Scale scores compared with the nonhospitalized children.

Table 2 Child and parent post-traumatic stress symptoms

		Child		Parent	
		T1 <i>n</i> (%)	T2 <i>n</i> (%)	T1 <i>n</i> (%)	T2 <i>n</i> (%)
No symptoms	IES 0	12 (24%)	23 (45%)	20 (40%)	23 (46%)
Mild symptoms	IES 1–7	16 (33%)	13 (25%)	8 (16%)	10 (20%)
Moderate symptoms	IES 8–25	15 (31%)	9 (18%)	14 (28%)	14 (28%)
Serious symptoms	IES \geq 26	6 (12%)	6 (12%)	8 (16%)	3 (6%)
Total		49 (100%)	51 (100%)	50 (100%)	50 (100%)

IES, Impact of Event Scale; T1, three months post injury; T2, six months post injury.

Note: The IES total score can only be calculated if all 15 items are completed. Two children did not fully complete the IES at three months and one parent did not answer all items at both assessments.

Table 3 Child post-traumatic stress symptoms: risk groups

	<i>n</i>	T1 Mean IES (SD)	T2 Mean IES (SD)
Treatment [†]			
Inpatients	15	18.60 (19.35)	8.40 (10.25)
Outpatients	34	8.82 (13.94)	7.41 (14.46)
Head injury*			
Head	15	20.40 (22.02)	11.20 (15.96)
Nonhead	34	8.03 (11.37)	6.18 (11.75)
MV involved*			
Yes	23	19.26 (19.71)	13.78 (16.91)
No	26	5.23 (8.24)	2.35 (4.46)

Note: Not included in the table: the variables without significant group or time × group interaction effects in the repeated MANOVAs: age; gender; SES; ISS; extremity fracture and other persons also injured in the incident.

*Significant group main effect ($p < 0.05$).

[†]Significant group × time interaction effect ($p < 0.05$).

T1, three months post injury; T2, six months post injury; IES, Impact of Event Scale; MV involved, motor vehicle involved; SD, standard deviation.

Regarding the parents' post-traumatic stress reactions, significantly higher Impact of Event Scale scores during follow-up were reported by the parents of the following children: hospitalized children, seriously injured children (ISS ≥ 9), children who sustained a head injury, children injured in an accident with a motor vehicle involved, and children injured in an accident in which other people also incurred injuries. Finally, low SES parents noted significantly higher Impact of Event Scale scores compared with the middle and high SES parents.

Discussion

The current study, with a prospective study design, addressed paediatric traffic victims' perceptions of their HRQoL and parent and child post-traumatic stress symptoms following pediatric traffic injury. For the interpretation and generalizability of the results the response rate needs to be considered. Several previous studies on outcomes of paediatric traffic injuries also encountered difficulty in achieving high participation rates.^{13,17,28,29} Likely factors influencing the participation rate in our study concerned the absence or short-term char-

Table 4 Parental post-traumatic stress symptoms: risk groups

	<i>n</i>	T1 Mean IES (SD)	T2 Mean IES (SD)
SES*			
Low ^a	10	24.90 (19.36)	12.80 (14.26)
Middle	28	8.68 (14.37)	6.36 (9.53)
High	12	9.25 (13.21)	3.33 (4.56)
Treatment*			
Inpatients	15	19.67 (18.82)	11.27 (12.36)
Outpatients	35	8.80 (14.08)	5.06 (8.54)
ISS*			
1–3	19	11.37 (17.64)	5.89 (9.85)
4–8	18	7.17 (11.52)	3.89 (6.00)
≥ 9 ^b	13	19.85 (17.91)	12.62 (13.09)
Head injury*			
Head	15	21.20 (17.47)	13.20 (11.64)
Nonhead	35	8.14 (14.22)	4.23 (8.19)
MV involved* [†]			
Yes	24	22.29 (17.99)	13.17 (11.48)
No	26	2.62 (5.14)	1.15 (2.75)
Others injured* [†]			
Yes	9	22.89 (21.97)	10.56 (10.89)
No	41	9.68 (13.95)	6.12 (9.91)

Note: Not included in the table: the variables without significant group or time × group interaction effects in the repeated MANOVAs: age; gender; and extremity fracture.

*Significant group main effect ($p < 0.05$).

[†]Significant group × time interaction effect ($p < 0.05$).

^aPost-hoc comparisons: across T1–T2: significant difference low versus middle and low versus high ($p < 0.05$, BC).

^bPost-hoc comparisons: across T1–T2: significant difference ISS ≥ 9 versus ISS 4–8 ($p < 0.05$, BC).

IES, Impact of Event Scale; MV involved, motor vehicle involved; T1, three months post injury; T2, six months post injury; SD, standard deviation.

acter of residual effects, as was indicated by a number of nonparticipating parents. The participants in our study only differed from nonparticipants with respect to a higher proportion of children with head injuries. In our study the presence of a head injury was not associated with the child's HRQoL, but was related to higher levels of parental or child post-traumatic stress symptoms.

Consequently, our results may give an overestimation with respect to the post-traumatic stress experienced by young traffic injury victims and their parents. Furthermore, the large number of loss to follow-up is likely to have affected the statistical power in our study (i.e., some effects

may not have reached significance due to the small number of children and/or parents). Finally, the fact that the children's preinjury HRQoL was measured retrospectively may be seen as a study limitation. In our study the preinjury reports were made on average two and a half weeks after the incident. The fact that the study population reported a preinjury HRQoL that was highly comparable to the HRQoL of the reference sample, suggests that the traffic victims were able to make a realistic estimation of their preinjury well-being.

HRQoL

To our knowledge, only two previous studies have assessed child viewpoints of their HRQoL after an injury.^{10,30} These studies have reported on the child's long-term HRQoL, whereas this study focused on the short-term HRQoL. Our study population experienced significantly adverse changes in their motor functioning and autonomy during the first three months after the injury. In other words a number of the children had more difficulty in one or more of the health status items of the motor functioning and autonomy scale of the TACQOL questionnaire (see Appendix) and was bothered by having such a health status problem.

Our results revealed that worse motor and autonomy follow-up scores were especially reported by the hospitalized children and the children with lower extremity fractures. Furthermore, the children injured in a crash with a motor vehicle reported lower motor functioning. The variable motor vehicle involvement was strongly associated with severity of the injuries. Eventually, the reduced functioning in the motor and autonomy HRQoL scales were short-lived, as the children's scores at six months post injury were comparable to their preinjury scores.

Noteworthy is the absence of significant deterioration in the psychosocial HRQoL scales, although 29% of the children incurred minor head injuries. Moreover, nonhead injuries also have the potential to display psychobehavioural dysfunction.^{6,7,9} Either the children did not perceive deterioration in their psychosocial functioning or the TACQOL child survey, that is a generic HRQoL instrument, fails to detect psychosocial changes following paediatric injuries. Our findings may infer the latter, since a large number of the

young traffic victims did report one or more post-traumatic stress symptoms. However, the subgroup of children with serious post-traumatic stress symptoms was probably too small in the present study to cause a significantly reduced psychosocial HRQoL for the total study sample.

Post-traumatic stress symptoms: children and parents

In addition to the HRQoL, the study also addressed parent and child post-traumatic stress symptoms. It is only in the past decade that the psychological sequelae of traffic crashes in children have become subject of study.³¹ The identification and treatment of children with post-traumatic stress disorder (PTSD) seems important, as symptoms of PTSD may disrupt a child's functioning and development.^{29,32-34} The Impact of Event Scale used in our study to assess the post-traumatic stress reactions of the children and their parents does not measure the hyperarousal symptoms included in the DSM IV criteria for the diagnosis of PTSD.³⁵ Consequently, the Impact of Event Scale is not a PTSD diagnostic measure.³⁶ Nevertheless, the scale correlates well with the diagnosis of PTSD and the usage as a screening measure for PTSD has been advocated.^{37,38}

Various cut-off scores for the Impact of Event Scale have been used to identify patients at high risk for having PTSD. We applied a cut-off score of 26, as suggested by the translators of the Dutch IES. For a period of three months and six months following the incident, approximately one out of every eight children (12%) scored above the cut-off, thus indicating high post-traumatic stress levels. Although di Gallo *et al.*,³⁹ Mirza *et al.*,⁴⁰ and McDermott and Cvitanovich²⁹ used other instruments, they reported comparable rates of traffic-injured children exhibiting a severe degree of PTSD at approximately three months (6-11%) and six months (12%) after a traffic incident.

The present study identified the following subgroups of young traffic victims with an increased degree of post-traumatic stress symptoms: children with head injuries, hospitalized children and children injured in an accident with a motor vehicle. Of these, the subgroup of children with head injuries constitutes an interesting subgroup. The possibility of PTSD developing after a traumatic brain injury (TBI) has been the subject

Clinical messages

- Young traffic victims judge their short-term HRQoL rather positively with only temporary reductions in motor functioning and autonomy.
- Physicians should be aware of the likelihood of post-traumatic stress symptoms in young traffic victims. Moreover, the parents are secondary victims and are also likely to suffer stress reactions.

of considerable debate.⁴¹ The traditional view argued that due to impaired or loss of consciousness occurring with a TBI, the traumatic experience cannot be encoded and prevents subsequent re-experiencing. However, increasing empirical studies on PTSD in adult and child populations indicate that PTSD and TBI can coexist.^{39,41–43}

The child's personal appraisal of the event seems important in the development of post-traumatic stress. Children who perceived threat and distress at the time of the traffic crash or immediately after the incident were more likely to develop PTSD in previous studies.^{13,29,39} Children injured in a motor vehicle crash are likely to perceive the incident as more life threatening compared with children who were injured in a traffic accident without motor vehicle involvement. This may result in more post-traumatic stress symptoms, as demonstrated in our study.

The studies on PTSD after paediatric traffic injury have focused primarily on the degree of post-traumatic stress symptoms in the directly traumatized children. However, diagnostic descriptions of what constitutes a traumatic event suggest that the knowledge of the exposure of a loved one to a traumatic event or the witnessing of the event can also be traumatizing, even though these people were not physically harmed or threatened themselves.⁴⁴ Following this notion we explored the degree of post-traumatic stress symptoms for parents after paediatric traffic injury. Three months and six months after their child's involvement in a traffic incident more than half of the parents reported one or more

post-traumatic stress symptoms. Moreover, a small percentage of parents were at high risk for PTSD. Previously, de Vries *et al.* indicated that 15% of parents of a comparable sample of traffic-injured children had diagnostic PTSD at 7–12 months.¹⁴ Furthermore, the acute psychological impact on parents was recently illustrated by Winston *et al.*¹⁷ Our results and these previous reports indicate that it is likely that a substantial number of parents will suffer significant distress following their child's traffic injury.

Which parents are at highest risk of post-traumatic stress? Identification of these parents is important for the parents as well as for their children, because parental psychological distress may influence child symptoms and interfere with the parents' ability to support the child.^{45–47} In addition to the SES, we found the severity of the child's injuries and details of the accident to be related to the parental post-traumatic stress symptoms. The association between increased parental post-traumatic stress symptoms and the children being injured in a traffic crash with a motor vehicle is consistent with previous studies.^{14,17} Furthermore, the parents of the more severely injured children may think of the incident as a threatening event, due to the seriousness of the injuries and the time needed for recovery. However, previous studies have not found the child's ISS^{14,17} and the child's hospital admittance¹⁴ to be related to the degree of parental post-traumatic stress. Evidently, future studies are needed to further examine potential origins of parental post-traumatic stress following paediatric traffic injury. These studies should include severity indicators of the child's injuries as well as the question whether or not the parent witnessed the child's incident. Unfortunately, we were unable to evaluate this latter factor as we did not specifically ask after the parents' presence at the accident scene.

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Appendix – Fifty-six items of the TACQOL child form

Physical complaints Did you have/ have you felt...	Motor Did you have difficulty with...	Autonomy Did you have difficulty with...	Cognition Did you have difficulty with...	Social I was ...	Positive emotions I felt ...	Negative emotions I felt ...
Ear aches or sore throats	Running	Going to school on your own	Paying attention, concentrating	Able to play or talk happily with other children	Joyful	Sad
Stomach aches or abdominal pain	Walking	Washing yourself	Understanding schoolwork	Able to stand up for myself with other children	Relaxed	Aggressive
Headaches	Standing	Getting dressed on your own	Understanding what others said	Other children asked me to play with them	In good spirits	Angry
Dizziness	Walking downstairs	Going to the lavatory on your own	Arithmetic	At ease with other children	Happy	Short-tempered
Sick/nauseous	Playing	Eating or drinking on your own	Reading	Able to play or talk happily with my parent(s)	Contented	Worried
Tired	Running or walking long distances	Sports or going out to play on your own	Writing	Incommunicative or silent with parent(s)	Cheerful	Jealous
Sleepy	Balance	Doing hobbies on your own	Learning	Restless or impatient with parent(s)	Enthusiastic	Gloomy
Dozy/lethargic	Doing things easily or quickly	Riding a bicycle	Saying what you meant	Defiant with parent(s)	Confident	Anxious

The time frame of the TACQOL is 'in recent weeks'.

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