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A Pilot Study to Explore the Effect of Symptom Monitoring in Children and Adolescents with Posttraumatic Stress Reactions following Road Traffic Accidents

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Abstract. Each year a large number of children and adolescents develop significant posttraumatic symptoms after being involved in road traffic accidents (RTA). Consequently there is a need to develop effective interventions to prevent or minimize such reactions. The use of symptom monitoring with adults has found promising results. This pilot study explores the use of symptom monitoring with children and young people involved in RTAs. Twelve young people who met criteria on screening questionnaires for significant posttraumatic symptoms completed symptom monitoring diaries. Following completion of a diary once a day for 3 weeks, 3/12 children (25%) fell below criteria, suggesting significant posttraumatic symptoms. Feedback about self-monitoring was generally positive and suggests that symptom monitoring may be a helpful yet simple intervention for use with child trauma victims.

Keywords: Children and young people, posttraumatic symptoms, symptom monitoring, road traffic accidents.

Background

Significant posttraumatic reactions in children following an everyday trauma such as road traffic accidents (RTAs) are comparatively common. Approximately 30% of children have been found to develop posttraumatic stress disorder (PTSD) 4 weeks after an RTA, with 15–18% continuing to suffer up to 9 months later (Stallard, Salter and Velleman, 2004). These figures suggest a significant mental health problem that requires interventions to prevent or minimize possible adverse reactions.

In terms of prevention, there is little evidence to suggest that effective interventions are available. The provision of single session psychological debriefing for all those involved in traumatic events is not effective (National Institute of Clinical Excellence: NICE, 2005). More promising results have been found from early intervention studies where brief CBT has been provided within 3 months of the trauma and been targeted upon those displaying significant posttraumatic reactions The results with adults have been promising, although as yet no trials of early CBT with children have been undertaken (Bisson, Shepherd, Joy, Probert and Newcombe, 2004; Ehlers et al., 2003).

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In addition, there is a practical difficulty in providing CBT interventions to significant trauma groups such as child RTA survivors; they are large in number and the availability of specialist child CBT is limited. A recent UK survey found that the skill base in child focused CBT was limited and was the dominant approach of only 20% of specialist child mental health practitioners (Stallard, Udwin, Goddard and Hibbert, 2007). There is therefore a need to explore how simple and effective interventions requiring minimal skills can be provided for large groups of trauma survivors.

One approach that may be useful is that of symptom monitoring. Tarrier, Sommerfield, Reynolds and Pilgrim (1999) found that 11% of adults with chronic PTSD of at least 6 months duration improved after completing a daily self-monitoring diary for 4 weeks. These improvements were largely maintained over a 12-month follow-up period. Ehlers et al. (2003) found that 12% of adult RTA survivors who initially met diagnostic criteria for PTSD fell below the recommended cut-off on the Posttraumatic Diagnostic Scale (PDS) after self-monitoring for 3 weeks. Similarly, promising improvements were also noted by Smith et al. (2007) who found that 25% of young people no longer met criteria for PTSD after self-monitoring. None of these studies included a comparison control group and so it is not possible to determine whether these improvements are due to the passage of time or to the specific effect of self-monitoring. Nevertheless, the finding that significant levels of posttraumatic symptoms improve following symptom monitoring raises the question of whether self-monitoring could be an effective, simple intervention that could be widely available for trauma victims. The aim of this study is to explore the acceptability and feasibility of symptom monitoring with child RTA survivors and to explore initial outcomes.

Methodology

Participants

Ethical approval was obtained from the local ethics committee. Children aged 7–18 involved in road traffic accidents were recruited from the Accident and Emergency Department of the Royal United Hospital (RUH), Bath and Frenchay Hospital, Bristol.

Screening

Those who opted into the study completed the following two questionnaires to assess posttraumatic reactions. The Children's Impact of Events Scale – CIES (Smith, Perrin, Dyregrov and Yule, 2003) assesses the degree of subjective distress arising from a traumatic event. A score of 17 or more is indicative of a significant reaction. The Child PTSD Symptom Scale – CPSS (Foa, Johnson, Feeny and Treadwell, 2001) assesses each of the diagnostic symptoms of PTSD as defined by DSM-IV. A score of 11 or greater is associated with PTSD.

Symptom monitoring

Children who scored 17 or more on the CIES and/or 11 or more on the CPSS were invited to participate in symptom monitoring. Children completed a modified version of the symptom diary used by Tarrier et al. (1999) once a day for 3 weeks. They were asked to rate, using a 10-point rating scale, how often they had experienced dreams/nightmares, pictures and

Table 1. Summary of the average weekly scores of the symptom monitoring

Mean diary scores (range)	Dreams	Pictures	Thoughts	Upset
Week 1 ($n = 12$)	4.67 (0 - 19)	12.17 (0 - 26)	12.42 (0 - 34)	18.92 (0 - 46)
Week 2 ($n = 12$)	3.25 (0 - 20)	10.17 (0 - 29)	10.33 (0 - 31)	14.58 (0 - 47)
Week 3 ($n = 10$)*	3.10 (0 - 18)	11.80 (0 - 64)	8.90 (0 - 28)	12.30 (0 - 56)

*2 children did not fill in the diary for week 3.

thoughts about their accident over the previous 24 hours and how upsetting they were. The child received three brief telephone calls from the researcher during the course of symptom monitoring to monitor progress and address problems.

At the end of symptom monitoring posttraumatic symptoms were re-assessed using the questionnaires described above. In addition, the young people's views about the acceptability of self-monitoring were sought.

Results

Participants

Seventeen children opted into the study and returned screening questionnaires an average of 12.8 days after their accident. One child did not reach the cut-off on either trauma screening questionnaires and was not therefore appropriate for the research. Of the remaining 16 children one did not provide their contact details, two changed their mind about participating, and one responded too late to be included.

Of the 12 participants, 8 were female, 8 were aged 16–18 years, and the majority were in a car that crashed (11). In 8 of the RTAs someone else was injured and 5 involved another family member. The children sustained relatively minor physical injuries. Only one was admitted to hospital, none sustained fractured/broken bones, with 9 receiving a Triage rating of 3 or below (indicating that they should be seen within one hour or more).

Symptom monitoring

Table 1 summarises the average weekly scores of the symptom monitoring. ANOVA was undertaken to explore changes in symptom ratings across the monitoring period. There was a significant reduction in the frequency of accident related thoughts ($F\,(2, 18) = 4.288$, $p = .030$) and the degree of upset the memories caused ($F\,(2, 18) = 4.262$, $p = .031$). Inspection of the data relating to trauma images identified one child in week 3 who scored very differently from the others ($x = 64$ compared with the next highest score of $x = 21$). Excluding this outlier and repeating the analysis resulted in a significant reduction in the number of trauma images experienced ($F\,(2, 16) = 4.933$, $p = .021$).

Acceptability and feasibility

Children's views about symptom monitoring were generally positive. Seven rated the diary as helpful or very helpful with 11 feeling that the diary had not made their symptoms worse. In

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terms of feasibility, none of the children felt that the diary was too time consuming, with 6 completing the diary each day for 3 weeks. A further 4 missed between 1–3 days, with 2 not completing the third week.

Posttraumatic symptoms

A *t*-test analysis was undertaken to compare posttraumatic symptoms before and after monitoring. There was a non-significant reduction in total scores on the CIES and PTSS and one significant sub-scale difference with intrusion, as assessed by the CIES, reducing from an initial mean of 13.50 ($SD = 6.11$) to 8.00 ($SD = 6.15$) ($t = 2.742$, $df = 11$, $p = .019$). These findings were replicated in an intention to treat analysis of the whole group ($n = 17$). There was a non-significant reduction in total scores on both measures, with a significant reduction on the intrusion sub-scale of the CIES ($t = 2.54$, $df = 16$, $p = .022$).

The status of 3 participants (2 girls, 1 boy; aged 7, 17, 18) changed after self-monitoring, falling below the cut-off scores on both the CIES and CPSS. The initial scores of the recovered group on the CIES and CPSS were lower than those who continued to display significant symptoms, although this difference was only statistically significant on the CIES ($t = 2.466$, $df = 10$, $p = .033$).

Discussion

The findings of this pilot study are consistent with research involving adults, and highlight the potentially positive effect of symptom monitoring on posttraumatic symptoms. A quarter of the children fell below questionnaire cut-off scores after self-monitoring, a figure that is consistent with the findings reported by Smith et al. (2007) with children and young people. Those who improved had significantly lower initial scores on the CIES and the improvement was particularly marked on the intrusion sub-scale. These results are also consistent with adult studies where approximately 11% of those with significant posttraumatic reactions improve following symptom monitoring (Tarrier et al., 1999; Ehlers et al., 2003).

The improvement in this study was obtained with minimal contact with the researcher. The researcher visited briefly once to explain the procedure and then provided 2–3 brief follow-up telephone calls, averaging in total approximately 30 minutes contact per child. This limited the non-specific therapeutic factors associated with assessment or contact with the research team and suggests that positive change may be possible for a small group of children with significant posttraumatic reactions with only minimal contact. This requires replication in a larger study with an appropriate comparison group but suggests that a brief minimal self-monitoring intervention may have the potential to help significant numbers of children involved in RTAs. Similarly, self-monitoring might be of value to a small group of young people whilst on waiting lists for specialist treatment. In no case did self-monitoring intensify symptoms. Symptom monitoring appeared acceptable to children and was not considered too time consuming. In terms of feasibility, overall rates of diary completion were high. In addition, the finding that those with lower levels of initial symptomatology responded better to self-monitoring provides a practical way of identifying those who will require more specialist interventions.

This is a pilot study and as such the findings need to be interpreted within this context. The sample size is small, most participants are girls, and the age range is narrow, with two-thirds

being over 16. The effects of symptom monitoring on young adolescents and children are not clear and similarly it is not known whether the diary format is acceptable and feasible with this age group. Similarly, in the absence of a no-contact comparison group it is not possible to conclusively assign these benefits to self-monitoring. These findings may reflect a natural recovery process that would have occurred irrespective of symptom monitoring. Finally, this study has focused upon the immediate benefits and as such it is not clear whether these improvements will be maintained over time. However, these encouraging results suggest that a larger study with an extended follow-up period is indicated. If these results are substantiated, then self-monitoring might provide a practical, brief and beneficial first line intervention for a small group of children with significant posttraumatic reactions involved in RTAs.

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