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Community based cognitive therapy in the treatment of post-traumatic stress disorder following the Omagh bomb

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Abstract

Studies in academic research centres with selected patients have shown that several cognitive behaviour therapies are effective in the treatment of PTSD following traumas affecting individuals or small groups. Little information is available on the extent to which these positive findings will generalize to more routine clinical settings with less selected patients or to a trauma that affects a whole community. The present study addresses these generalization issues. A consecutive series of 91 patients with PTSD resulting from a car bomb which exploded in the centre of Omagh, Northern Ireland in August 1998 were treated with cognitive therapy, along lines advocated by Ehlers and Clark (2000). There were no major exclusion criteria and 53% of patients had an additional axis I disorder (comorbidity). Therapists were NHS staff with heavy caseloads and modest prior training in CBT for PTSD. A brief training in specialist procedures for PTSD was provided. Patients received an average of eight treatment sessions. Significant and substantial improvements in PTSD were observed. Degree of improvement was comparable to that in previously reported research trials. Comorbidity was *not* associated with poorer outcome, perhaps because comorbid patients were given more sessions of treatment (average 10 vs 5 sessions). Patients who were physically injured improved less than those who were not physically injured. Overall, the results indicate that the positive findings obtained in research settings generalize well to a frontline, non-selective service. © 2002 Published by Elsevier Science Ltd.

Keywords: PTSD; Cognitive therapy; Cognitive behaviour therapy; Exposure therapy; Social support; Comorbidity; Treatment outcome; Efficacy; Dissemination; Bombings

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1. Introduction

Post-traumatic Stress Disorder (PTSD) is a common consequence of exposure to traumatic events such as assaults, natural disasters, severe accidents, bombings and other events. The main symptoms are repeated and unwanted re-experiencing of the event, hyperarousal, emotional numbing, and avoidance of stimuli that could act as reminders of the event. Many of the people who initially develop PTSD recover without the aid of treatment in the next few months but in a substantial subgroup (30–40%) the symptoms persist, often for many years (Kessler et al., 1995; Rothbaum et al., 1992).

A number of well-conducted, randomized controlled trials have demonstrated the effectiveness of cognitive-behavioural treatments in chronic PTSD (Keane, Fairbank, Caddell, & Zimering, 1989; Foa, Rothbaum, Riggs, & Murdock, 1991; Foa, Hearst-Ikeda, & Perry, 1995; Paunic & Ost, 2001; Resick & Schnicke, 1992; Marks, Lovell, Noshirvani, Livanou, & Thrasher, 1998; Tarrier et al., 1999). Cognitive-behaviour therapy has been shown to be superior to waiting list and relaxation training control groups. In addition, the gains achieved in therapy have been well-maintained in follow-ups of up to one year. The accumulation of evidence from randomized controlled trials has been recognized in the Practice Guidelines from the International Society for Traumatic Stress Studies (Foa, Keane, & Friedman, 2000) which state that "compelling and consistent evidence exists for demonstrating the efficacy of cognitive behaviour therapy for post-traumatic stress disorder…" (p. 102). Similarly, in a recent publication on treatment choice, the Department of Health (2001) recommended the use of psychological treatments for PTSD while concluding that there is "most evidence for cognitive behavioural methods." (p.37).

Despite recognition that post-traumatic stress disorder is a disabling and potentially chronic condition and acknowledgement that cognitive behaviour therapy is an effective treatment, many clinicians suspect that the excellent results obtained in research trials are unlikely to be achieved in routine clinical settings. Factors which could lead to less impressive results in routine settings are: lower levels of staff training and experience; heavier caseloads; more comorbidity and less case selection. The present paper addresses clinicians' understandable concerns about the transportability of CBT outcomes from research trials to routine clinical settings by reporting a large, consecutive case series in which National Health Service (NHS) clinicians in a frontline clinical service used cognitive therapy to treat PTSD following a single highly traumatic event. As well as addressing the issue of whether improvements similar to those reported in research trials can be obtained in routine settings, the paper constitutes what we believe is the first report on the effectiveness of cognitive therapy as a treatment for PTSD following a single traumatic event which affected a whole community.

1.1. Context

On the 15th August 1998 a car bomb exploded in the centre of Omagh, a small market town in Northern Ireland with a population of 26,000. Twenty-nine people and two unborn twins were killed and over 370 people were injured. The bomb came at a time when people believed that major paramilitary violence had ended and a Peace Process was well established. Within a week of the bombing the local NHS Trust established the Community Trauma and Recovery Team which had the task of assessing the needs of the community and putting in place appropriate

responses (Sperrin Lakeland Health and Social Healthcare Trust, 1998). Central to the work of this multi-disciplinary team was the development of a range of personal therapeutic services, including a cognitive therapy programme targeted at PTSD.

2. Method

2.1. Overview

The aim of the present study was to assess symptomatic change in a consecutive series of patients with PTSD who were treated with cognitive therapy by the Community Trauma and Recovery Team in Omagh. The five clinicians who delivered cognitive therapy came from a range of professional backgrounds (psychiatry, nursing, social work) and were temporarily seconded to the Team from their routine clinical posts on a part or full-time basis. None had previously specialized in the treatment of trauma. All had heavy caseloads and none had worked as research therapists. The Community Trauma and Recovery Team offered a range of therapeutic interventions and was required to provide treatment without delay. If patients met criteria for PTSD, the decision to allocate them to cognitive therapy was mainly determined by whether a suitable therapist was available with the additional proviso that the more severe cases tended to take precedence.

2.2. Participants

Participants were 91 patients (64 female, 27 male) who met DSM-IV (American Psychiatric Association, 1994) criteria for PTSD as a result of the Omagh bombing. Thirty of the patients (33%) had been physically injured by the bomb, 38 (42%) were present when the bomb exploded but were not been physically injured ('witnesses') and 11 (12%) were emergency personnel who attended the scene and/or cared for the injured in hospital. Diagnoses were based on a clinical interview with a community psychiatric nurse or psychiatrist and subsequent review led by the team's consultant psychiatrist (KG) at the weekly intake meeting. The median interval between the bombing and the start of cognitive therapy was 10 months (range 1–34 months). Sixty-nine patients (76%) had chronic PTSD (>3 months duration) and 22 patients (24%) had acute PTSD (<3 months duration). Forty-nine patients (54%) were diagnosed as suffering from one or more additional axis I disorders. The most common additional axis I disorders were: major depressive disorder (43 patients); alcohol abuse or dependence (5 patients); and panic disorder and/or agoraphobia (4 patients). Twelve patients (13%) had a concurrent general medical condition. Thirty-six patients (40%) were taking psychotropic medication. Twenty-nine patients (32%) had been prescribed anti-depressants (mainly SSRIs), 3 (3%) had been prescribed anxiolytics and 4 (4%) were taking a combination of anti-depressants and anxiolytics. Thirty-four patients (37%) had received previous psychological intervention for their bombing related symptoms. Of these 24 (25%) had received counselling with or without critical incident debriefing and 10 (11%) had received critical incident stress debriefing alone. Fifty-one patients (58%) had previously experienced one or more traumatic events (road traffic accident, death of a loved one, miscarriage, witnessing other aspects of the troubles), with 12 patients (13%) having previously experienced

multiple traumas. Seventy-one patients (78%) reported having someone they could confide in and were judged to have a supportive relationship. At the start of treatment, 27 patients (30%) reported suicidal ideation and 13(14%) were considered to be high suicide risks. The median age of the patients was 36 yr (range 17–73).

2.3. Measures

Severity of PTSD was assessed using the Post-trauma Diagnosis Scale (PDS; Foa, Cashman, Jaycox, & Perry, 1997) and/or the Revised Impact of Events Scale (RIES; Horowitz, Wilner, & Alvarez, 1979). The PDS has a 17 item symptom severity scale which exactly corresponds to the symptoms specified in DSM-IV. Scores range from 0 to 51. The RIES is a 15-item symptom scale with scores ranging from 0 to 75. The items are not identical to the (17) DSM-IV symptoms but taken together they cover all three DSM-IV symptom clusters (intrusion, avoidance/numbing, hyperarousal). The PDS and RIES correlate highly with each other (Foa et al., 1997).

Severity of Depression was assessed with the Beck Depression Inventory (BDI; Beck, Rush, Shaw, & Emery, 1979).

General Psychiatric Symptomatology was assessed with the General Health Questionnaire (Goldberg & Williams, 1988).

2.4. Training and supervision

Within a month of the tragedy, links were established with Professor David M Clark and his Anxiety Disorders Group at the University Department of Psychiatry, Warneford Hospital, Oxford and a fast-track training in the use of Cognitive Therapy for PTSD was initiated. The training consisted of (i) several telephone conversations identifying key procedures and discussing how they might be applied to the problems emerging in the bomb victims; (ii) a lecture on PTSD and cognitive models; (iii) a two day training workshop in Omagh led by David Clark, Ann Hackmann, Freda McManus and Melanie Fennell; and (iv) the later innovation of regular (initially monthly, tapering to six weekly) case supervision by video-conferencing with David Clark and/or Ann Hackmann. More frequent local supervision was provided by KG.

2.5. Treatment

The model used was that of Ehlers and Clark (2000). This model suggests that PTSD becomes persistent when individuals process the trauma in a way that leads to a sense of serious, current threat. The sense of threat arises as a consequence of (1) excessively negative appraisals of the trauma and/or its sequaele and (2) a disturbance of autobiographical memory characterized by poor elaboration and contextualization, strong associative memory and strong perceptual priming. Change in the negative appraisals and the trauma memory are prevented by a series of problematic behavioural and cognitive strategies.

The treatment implications of the model are (1) that the trauma memory needs to be elaborated and integrated into the context of the individual's preceding and subsequent experience in order to reduce intrusive re-experiencing; (2) problematic appraisals of the trauma and/or its sequelae that maintain the sense of current threat need to be modified; and (3) dysfunctional behaviour

and cognitive strategies that prevent memory elaboration, exacerbate symptoms or hinder re-assessment of problematic appraisals need to be dropped.

Some form of reliving of the traumatic event is involved in most cognitive behavioural treatments for PTSD. Imaginal exposure in which the patient visualizes the traumatic event and relives it in the present tense including thoughts and feelings (see Foa & Rothbaum, 1998) was the main method used to achieve this, supplemented where necessary by direct exposure e.g. visiting the scene of the bomb, the hospital or other places which were closely connected with the person's traumatic memories of the event.

Equal emphasis was placed in treatment on eliciting and re-evaluating the negative appraisals associated with the event itself and/or its aftermath. The need for this was reinforced by findings from a Community Study carried out in the Omagh area 7–8 months after the bombing. The findings from this study demonstrated significant associations between particular negative appraisals and severe PTSD. Particular individuals' key beliefs were not always easily accessed, because of their personal and idiosyncratic nature, and often required persistent challenging using a range of cognitive and behavioural techniques (see Ehlers & Clark, 2000). For example, one patient who arrived on the scene in the immediate aftermath of the bomb asked a young passer by to assist with the injured. Afterwards he held the belief that he had "ruined" this young person's life and had vivid, intrusive images of the "terrified young face". A second patient felt intensely guilty because she had not stayed with a person who was killed in the explosion. She appraised her role in a very negative way and concluded that she was "a bad, neglectful person". A third patient initially interpreted his PTSD symptoms as a "psychosis" and believed that he would never be able to work again. As his PTSD symptoms reduced he became preoccupied with the belief that he must be "weak" to have been affected in this way by his traumatic experience.

A distinctive feature of the treatment was the close integration of imaginal reliving and the re-appraisal work. When the meanings associated with a 'hot spot' in the trauma memory was identified and reappraised, the new meanings were introduced into imaginal exposure either by patient self-talk at the relevant spot in the reliving or by various imagery transformation techniques.

A further important element of therapy involved addressing the cognitive and behavioural avoidance which clients saw as their survival strategy. Typically, people used thought and emotional suppression, scanned the environment for cars similar to the colour and type of the one which held the bomb, or refused to enter the town centre. Each of these were systematically tackled with relevant behavioural experiments in which patients specified their feared outcomes if the avoidance was reversed and tested out whether the outcome occurred.

2.6. Procedure

Clients presented to the Community Trauma and Recovery Team for advice/treatment through a number of routes. The most common were self-referral, followed (in declining frequency) by family, general practitioner and other referral sources. The Team dealt with the full range of psychological reactions to the bombing, was able to offer a range of psychological and psychosocial interventions, and was required to provide treatment without delay. If assessment indicated that a patient was suffering from PTSD, allocation to cognitive therapy occurred if one of the Team's five cognitive therapists had an available slot with the additional proviso that more severe

cases were given precedence when slots were scarce. Cognitive therapy usually started within one to two weeks. Patients were seen individually and received a variable number of sessions, as required.

2.7. Data collection

The Community Team evolved from an immediate Emergency Response Team to a Trauma Treatment Team. In the initial stages of this evolution, audit was not a high priority and so some initial cases were not given the standardized measures of PTSD that were introduced more systematically later. Of the 91 patients treated with cognitive therapy, 13 (14%) did not complete a PDS or RIES. For these, outcome was retrospectively rated on a 5 point scale ('worse', 'no improvement', 'slight improvement', 'moderate improvement', 'full recovery-asymptomatic') based on review of the therapy notes and other medical records. The remaining 78 (86% of patients) completed a PDS or RIES before the start of treatment and several times during treatment. For these patients, the main outcome measure is the difference between their pre-treatment and last available scores. The PDS was used with 60 patients and the RIES alone with 18. To create a single PTSD symptom score, RIES scores were converted to PDS scores using the formula: PDS score=RIES score$\times$(51/75), where 51 represents the available range of scores on the PDS and 75 represents the available range of scores on the RIES. The conversion was considered acceptable because (i) Foa et al. (1997) reported a high intercorrelation ($r = 0.78$) between the PDS and RIES, (ii) we obtained a similarly high intercorrelation ($r = 0.79$, $P < 0.001$) in 22 patients who had completed both measures, and pre–post treatment effect sizes for each measure were almost identical (ES = 2.2 for PDS and 2.3 for REIS, using the same effect size formula as Van Etten & Taylor, 1998). Therapists administered the BDI and GHQ less consistently than the PTSD scales and so the sample sizes for these measures are less substantial.

3. Results

3.1. Number of treatment sessions

The median number of cognitive therapy sessions received was 8 (range 2–73). Fig. 1 shows the distribution, which is highly skewed. Thirty-four patients (37%) were treated in five or less sessions, 59 (64%) in ten or less sessions, 69 (77%) in 15 or less sessions and 78 (87%) in 20 or less sessions. Patients with additional comorbid diagnoses received more sessions (non-comorbid patients median number of sessions=5.0; comorbid patients median number of sessions=10.5; Mann–Witney $U = 557.5$, $Z = 3.65$, $P < 0.001$). This was partly because the PTSD treatment tended to take longer to apply with comorbid patients and partly because therapists also treated the comorbid disorder with the relevant CBT procedures.

Several commentators (for example, Ehlers & Clark, 2000) have noted that PTSD patients tend to miss (DNA) occasional scheduled sessions (perhaps because of the disorientation resulting from sleep disturbance and also hesitancy about processing painful memories) and this phenomenon needs to be dealt with sympathetically. In line with this comment, 41 patients (45%) DNA'd at least once (23% once, 11% twice, 11% three or more times).
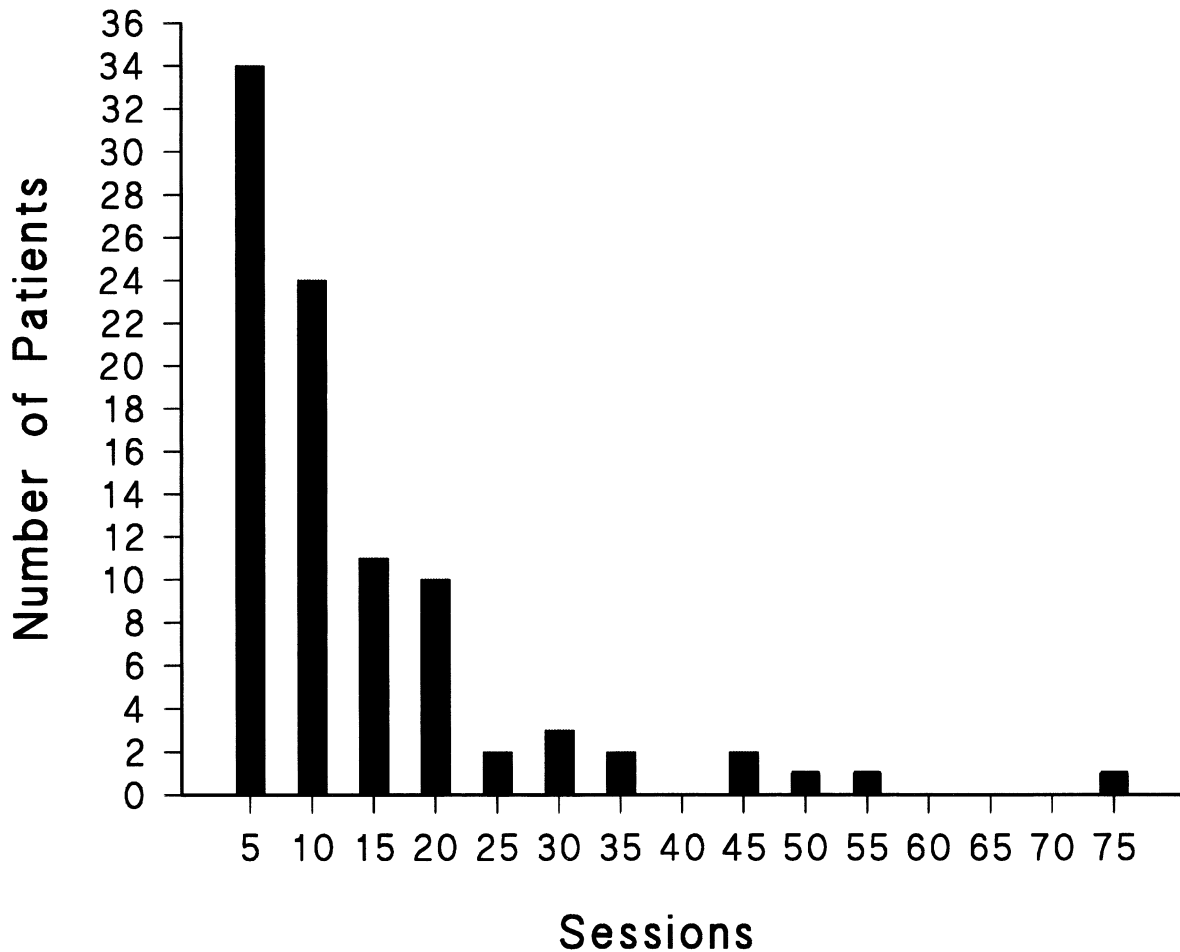
Fig. 1. Distribution of number of therapy sessions.

3.2. Outcome

Table 1 shows the mean pre- and post-treatment PDS scores for the 78 (86%) patients who completed a standardized measure of PTSD. There was a highly significant pre- to post-treatment improvement ($P < 0.001$). Fig. 2 is a histogram plotting the number of patients who achieved various percentage improvements in PTSD symptomatology. Clinicians are often concerned that the detailed reliving of traumatic events which occurs in cognitive-behavioural treatment may lead to deterioration in some patients. At least in the context of our overall cognitive therapy programme, this did not appear to be the case. No patients were worse at the end of treatment although some had shown transient increases in stress during the course of treatment.

Table 1 also shows the mean pre- and post-treatment scores for the subset of patients who completed the BDI and/or the GHQ in addition to a PTSD measure. As with the PTSD measure, there were highly significant improvements in both the BDI ($P < 0.001$) and the GHQ ($P < 0.001$).

Table 1
Mean pre-treatment and post-treatment scores on measures of PTSD, depression and general psychiatric symptomatology (with standard deviations in parentheses)

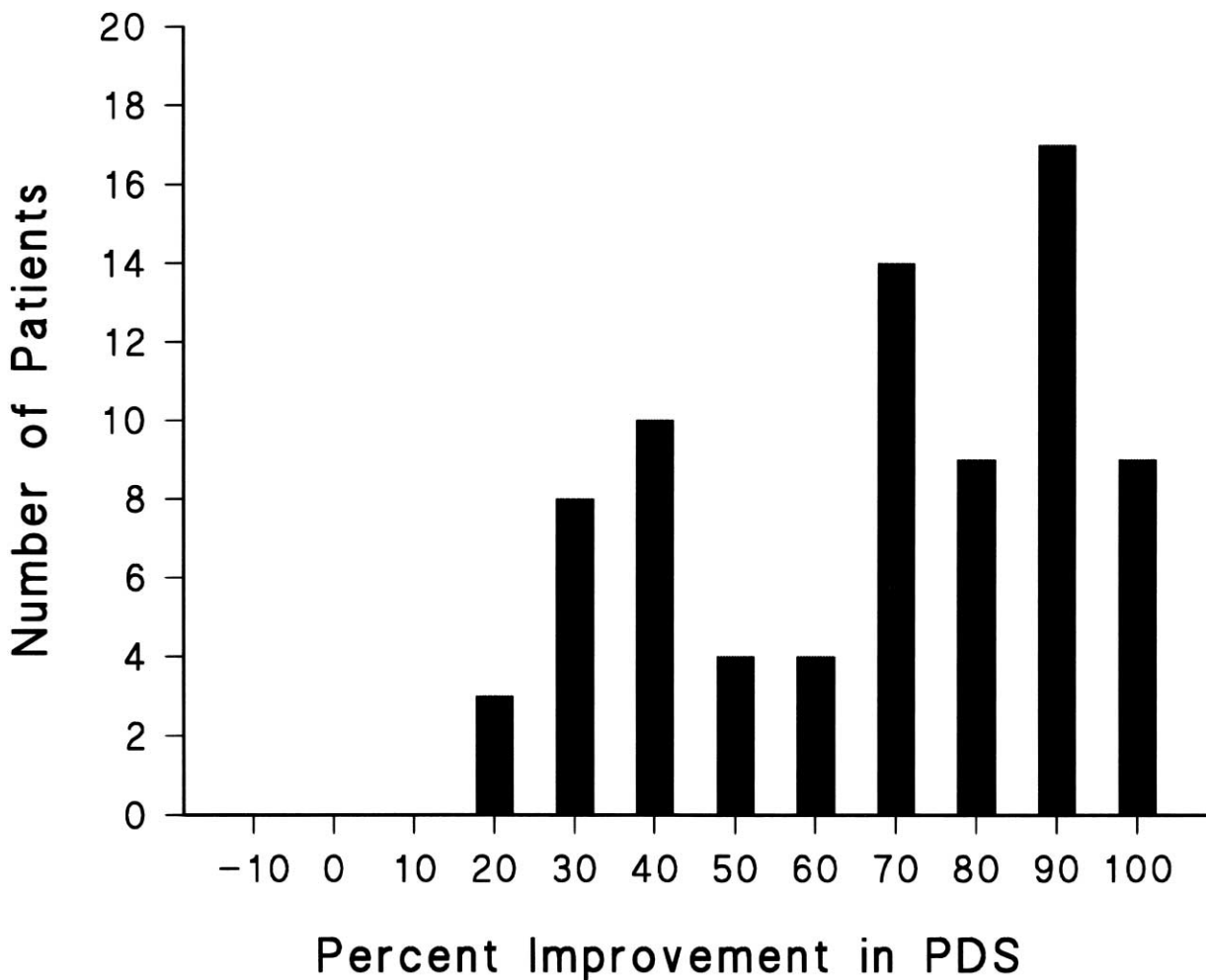| Measure	N	Pre-treatment	Post-treatment[a]	t	P
Post-traumatic Diagnosis Scale (PDS)	78	33.4 (8.5)	11.9 (8.9)	18.9	<0.001
Beck Depression Inventory (BDI)	33	28.6 (11.8)	8.2 (9.1)	11.1	<0.001
General Health Questionnaire (GHQ)	37	48.6 (15.5)	20.9 (10.5)	9.6	<0.001

[a] Last available score.

Fig. 2.   Individual analysis of PDS percentage improvement scores.

For the 13 patients (14%) who did not complete standardized measures of PTSD, a similarly good outcome was observed. None were rated as 'deteriorated'. Two were rated as 'not improved'. Three were rated as 'slightly improved', one was rated as 'moderately improved' and seven were rated as 'fully recovered'.

In order to compare the improvement observed in the present series with data from randomized controlled trials, the treatment effect size obtained with the 78 patients who were assessed with standardized measures of PTSD was calculated using the formula: Effect size=(mean PDS at pre-treatment−mean PDS at post-treatment)÷pooled SD. The observed value of 2.47 compares favourably with the mean effect size (1.27) in Van Etten and Taylor (1998) meta-analysis of CBT controlled trials in PTSD. It is also similar to the effect size obtained by the Oxford Group in a recent randomized controlled trial which used the same treatment as in this study in a research setting with chronic PTSD resulting from a variety of traumas (Clark, 2001).

Predictors of improvement. Several analyses were conducted to identify possible predictors of improvement in PTSD symptomatology. Comorbidity did not influence treatment response. Patients with a comorbid disorder had higher initial scores on the PDS (non-comorbid median pre-treatment PDS=30; comorbid median pre-treatment PDS=36; Mann–Witney $U = 506$, $Z = 2.4$, $P < 0.05$) but the percentage improvement in PDS was similar for patients with and without comorbidity (non-comorbid median improvement in PDS=67.4%; comorbid median improvement in PDS=69.2%; Mann–Witney $U = 701$, $Z = 0.42$, $P = 0.68$). This result may have been observed because therapists were unrestricted in the number of sessions that could be offered and patients with comorbidity received significantly more sessions than those without comorbidity. The presence or absence of a supportive relationship also failed to predict treatment response. Patients with and without a supportive relationship had similar initial scores on the PDS (median pre-treatment PDS=34 and 33, respectively) and showed similar amounts of improvement (median improvement in PDS=69.2% and 66.7%, respectively). To determine whether the nature of an individual's involvement on the day of the bombing influenced treatment response, we compared the three largest categories (the injured, witnesses who were not injured, and emergency personnel) using the Kruskal–Wallis test. The three groups did not differ in terms of pre-treatment PDS scores ($P = 0.71$) but there was a significant difference in percent improvement on the PDS ($P = 0.006$). Paired comparisons indicated that individuals who were physically injured improved significantly less than witnesses who were not injured ($P = 0.01$) or emergency personnel ($P = 0.006$). Witnesses and emergency personnel did not differ in degree of improvement. (Median improvements in PDS were: 59.3% for patients who had been physically injured; 77.0% for witnesses who had not been physically injured; and 84.5% for emergency personnel). Finally, there was a non-significant trend for patients who were treated later to improve more than those who were treated early (Spearman's $\rho = 0.21$, $P = 0.07$). This is the opposite pattern to that which would be expected in the absence of treatment as spontaneous recovery is highest in the initial months after a trauma (Kessler et al., 1995; Rothbaum et al., 1992).

4. Discussion

A substantial body of evidence indicates that a variety of cognitive behaviour therapies are effective in treating PTSD when given to selected patients by research therapists in academic

settings. This evidence is largely based on studying PTSD arising from traumatic events which affected single individuals or small groups (e.g. road traffic accidents, rape, muggings, physical assault, witnessing a death, etc.). The present study investigated the generalizability of these positive findings to treatment in a more routine clinical service and to PTSD following a single highly traumatic event—a car bomb—that affected a whole community.

A consecutive series of 91 patients who developed PTSD following the Omagh bomb were treated with a cognitive therapy programme based on Ehlers and Clark (2000) recent cognitive model of the maintenance of PTSD. Treatment was delivered by NHS therapists with a range of experience and training in general cognitive therapy skills but no specialist training in cognitive therapy for PTSD prior to the event. A relatively modest, but focused, training programme was organized. Apart from occasionally giving precedence to severe cases over mild cases when therapist slots were scarce, there were no exclusion criteria. PTSD patients with other comborbid disorders and/or severe suicide risk were accepted.

The main finding of the study is that the positive results for CBT previously reported in more restricted settings appear to generalize well. Largely unselected patients suffering from PTSD following the Omagh bomb showed highly significant and substantial improvements in PTSD when given cognitive therapy in a community setting by NHS therapists. Encouragingly, the treatment effect size on the main PTSD measure was substantially higher than the average effect size for CBT programmes reported in Van Etten and Taylor (1998) meta-analysis of randomized controlled trials and was almost identical to the effect size obtained with the same cognitive therapy programme in a randomized controlled trial recently completed in Clark and Ehlers' specialized anxiety disorders treatment centre.

In a recent conference presentation, Foa (2001) reported an as yet unpublished study of PTSD following rape which found that rape counsellors with modest training in the specific techniques of CBT for PTSD obtained results which were as good as those acheived by research therapists in an academic setting. Taken together with the present results, this finding suggests that good effects of CBT in academic research centres can transfer to more routine settings with several types of trauma.

Analysis of individual change data in the present study indicated that no patients were worse after the treatment, three (3%) showed no improvement, and 88 (97%) showed varying degrees of improvement, with the most common improvements being in the 70% and 90% range. The finding that no patients showed an overall deterioration is important as focusing on trauma memories within a treatment session can produce intense negative affect and clinicians are often concerned that this may have an overall deleterious effect. The procedure which novice therapists are particularly concerned about is imaginal reliving of the trauma. We used this technique with most patients and had the impression that it was a very good way of accessing problematic meanings, challenging beliefs such as, "if I allow myself to think about the bombing, I will fall apart/go mad", and helping develop a coherent narrative. However, the greatest emphasis in treatment was on cognitive restructuring with imaginal reliving occurring in less than half of the sessions (average 3–4 sessions). The finding that it appears possible to obtain excellent results with the relatively circumscribed (but valuable) use of this high affect technique is good news for clients.

The lack of an effect of comorbid disorders on the extent to which patients' PTSD symptoms improved is interesting. In the case of comorbidity, it is possible that treatment in a routine setting

may have advantages over treatment in a research trial as most trial protocols specify a fixed number of sessions, whereas therapy can be extended as required for comorbid cases in a routine setting. The finding that presence or absence of a close supportive relationship did not influence treatment response appears at first sight to be inconsistent with Tarrier, Sommerfield, and Pilgrim (1999) finding that patients with high expressed emotion (EE) relatives showed less improvement with CBT in a randomized controlled trial. Our measure of support was based on the patient's subjective appraisal whereas EE is a more objective, and possibly more sensitive, measure. Other possible reasons for the discrepancy include differences in the treatment programmes and the potentially greater feeling of community support for the experience of traumatization that is likely to have been present in Omagh. Broadly disseminated trauma awareness training was central to the community recovery strategy adopted in Omagh.

Patients who were physically injured in the bombing showed improvements in PTSD during the course of treatment but the overall degree of improvement was significantly less than in patients who had not been physically injured. Continuing physical problems and medical interventions are likely to have served as particularly clear reminders of the negative effect that the bombing had on an individual. More research is required to help enhance the impact of PTSD treatments on people who have physical injuries in addition to PTSD.

The finding that patients who were treated later tended ($P = 0.07$) to improve to a greater extent is the opposite of what might be expected in an untreated sample. Therapists reported feeling more confident as experience accumulated and the findings of the community survey became available as an additional guide for targeting treatment. The innovative use of video conferencing for remote supervision was also felt to be helpful.

In view of the special nature of a trauma that affected a whole community, the Sperrin Lakeland Health and Social Care Trust commissioned a community survey that particularly focused on psychological factors associated with persistent PTSD 7–8 months after the bombing. The results of this survey, which will be presented elsewhere, highlighted the importance of several factors (negative interpretation of symptoms, thought–emotion suppression, and idiosyncratic beliefs about the self and one's community) that became an increasingly strong focus of individual therapy as the case series progressed. This close link between clinically relevant research and the content of treatments may have been particularly helpful.

A common concern in the trauma field relates to the adverse effects on therapy of continuing trauma experience. In this context, it is interesting to note that during the course of the study more than 60 local hoax/false alarm bomb threats were received and publicized. Many of these threats resulted in evacuation of buildings and/or streets. The improvements reported here occurred in the context of this high level of continuing threat.

4.1. Limitations

Audit was not a major priority in the early stages of the project when treatment services were beginning to be organized. As a consequence, 14% of patients did not receive standardized measures of PTSD. It is possible that if standardized measures had been obtained from these individuals, a somewhat less positive overall picture might have resulted. However, we think this is unlikely for two reasons. First, careful review of these patients' notes suggested that they had improved to a similar extent to the 86% of patients who received standardized measures. Second,

the standardized measure data may itself be an underestimate of improvement as for a subset of patients the last available PTSD symptom score was several sessions before the end of treatment and the therapists were clear that the patients had improved further after this assessment.

The present findings clearly suggest that the good results previously reported for cognitive behavioural therapies in controlled trials can generalize to less standardized settings. However, our study differed from most existing studies in several respects and it is possible that the generally similar results may have occurred because some differences are associated with better outcome and some are associated with worse outcome. For example, focusing on a single trauma with treatment guided by directly relevant research about factors involved in maintaining emotional responses to that trauma may have been a clinical advantage. Conversely, therapists' high case load may have been a disadvantage. Detailed dissection of these possibilities must await further research.

Acknowledgements

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