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The Effectiveness of Psychological Debriefing for Victims of Acute Burn Trauma

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ABSTRACT

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THE EFFECTIVENESS OF PSYCHOLOGICAL DEBRIEFING FOR VICTIMS OF ACUTE BURN TRAUMA

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Psychological debriefing (PD) has been widely advocated and used following traumatic events in an attempt to prevent the later development of psychological sequelae. The quality of previous research into the effectiveness of PD has been relatively poor overall but has not been supportive of its effectiveness.

This thesis describes a randomised controlled trial of psychological debriefing in victims of acute burn trauma and their relatives. Following recruitment individuals completed initial questionnaires and were randomly allocated to a PD or control (no intervention) group. Follow-up interviews with the clinician administered post-traumatic stress disorder scale (CAPS) and further questionnaires occurred at three and thirteen months following the burn trauma.

One hundred and fifty-three individuals entered the study and were randomised to a PD or control (no intervention) group. One hundred and three (67%) subjects and 35 relatives completed three and thirteen month follow-up.

The PD group had higher initial questionnaire scores and more severe dimensions of burn trauma than the control group. They also displayed significantly higher scores on the CAPS and other outcome measures than the control group at both three and thirteen months. Forward stepwise linear regression analyses suggested that initial depression and percentage burn were significantly related to worse outcome whereas presence or absence of PD did not account for a significant proportion of the variance in CAPS scores. The relatives described similar levels of symptomatology to the subjects. PD appeared to have no significant impact on outcome in relatives.

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Preface

During my service as a trainee psychiatrist in the British Army I developed an interest in psychological reactions following traumatic events and post-traumatic stress disorder in particular. I helped treat many soldiers who suffered from post-traumatic stress reactions as a result of both military and civilian traumas. During the Gulf War I was involved in the planning and delivery of early psychological interventions designed to reduce the risk of soldiers developing psychological difficulties such as PTSD. It was at this time that I began to learn about psychological debriefing. I subsequently used it in my practice and became keen to research its effectiveness through a randomised controlled trial.

When I left the Army and moved to South Wales as a Senior Registrar in 1993 I met Peter Jenkins. We spoke about our common interest in traumatic stress and liaison psychiatry and he introduced me to the South Wales Regional Burns Unit. We successfully applied for a small grant from the Welsh Office and began the study in November 1993. I carried out the majority of the research during my time as Lecturer in Psychological Medicine at the University of Wales College of Medicine in Cardiff and have completed it in my current post as a consultant liaison psychiatrist. It is my hope that this thesis will make a significant contribution to our understanding of early interventions following traumatic events and also to our understanding of psychological reactions following burn trauma.

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Chapter 1 - Psychological Sequelae Following Traumatic Events

1.1 - History of Post-traumatic Stress Disorder

It has long been recognised that individuals can develop psychological symptoms following their involvement in a major traumatic event. In recent years several authors have considered historical figures whose diaries or other contemporaneous accounts suggest that they suffered psychologically as a result of a traumatic event. Examples include Ancient Greeks (Alford, 1992), Samuel Pepys following the great fire of London (Daly, 1983) and Charles Dickens following a railway accident in 1865 (Ackroyd, 1990). These individuals all described characteristic symptoms of what is now classified as post-traumatic stress disorder (PTSD).

By the nineteenth century attempts were being made to classify the reactions that individuals experienced following traumatic events. Initially attempts were made to account for these reactions in terms of an organic pathology. For example, Da Costa's syndrome or *Irritable Heart* originated from observations of American soldiers during their civil war (Da Costa, 1871) and *Railway Spine* was used to describe the post-traumatic stress reaction experienced by victims of railway accidents (Trimble, 1981). Oppenheim (1889), a German neurologist, first used the term *Traumatic Neurosis* and argued that this condition occurred due to molecular disturbance of the central nervous system. By World War I it was increasingly accepted that some individuals did experience psychological reactions to traumatic events and hence individuals who suffered from *Shell Shock* (Myers, 1915) were treated in military psychiatric hospitals such as Craiglockhart in Scotland and Netley in Hampshire (Barker, 1991). The writings of war poets such as Siegfried Sassoon and William Owen document some of the post-traumatic stress reactions experienced during World War I (Gardner, 1976).

Kardiner, an American psychotherapist, gained considerable insight into the psychological effects of war through his treatment of traumatised United States World War I Veterans. In 1941 he published a seminal work entitled 'The Traumatic Neuroses of War' in which he discussed in detail the psychological sequelae of war, describing the characteristic features of what later became defined as PTSD. His work has been acknowledged by many authors including Van der Kolk et al (1996) who stated "More than anyone else Kardiner defined PTSD for the remainder of the 20th century."

Unfortunately many of the lessons learnt during World Wars I and II and before appeared to be forgotten for many years. Van der Kolk et al (1996) reviewing the history of PTSD concluded: "Given the vast experience gained during the War [World War II], the dedication of the practitioners and the solid collection of data on the combat neuroses, it is astounding how the memory of War trauma was again completely forgotten for the subsequent quarter century." In fact there were some reports of the impact of trauma during this time - for example studies of concentration camp survivors (Archibald and Tuddenham, 1956) but the psychological sequelae of major trauma received little attention until the psychological effects of the Vietnam War began to be reported.

During the 1970s a powerful lobby developed in the USA concerned with the existence of psychological sequelae to the Vietnam War and the lack of recognition of them. During the 1970s reports also emerged regarding the psychological impact of other traumatic events. For example, Burgess and Holstrom (1974) described the "rape trauma syndrome" which comprised similar symptomatology to that suffered by Vietnam veterans. In 1978, Figley edited the first major book concerning the psychological effects of the Vietnam War entitled 'Stress Disorder amongst Vietnam Veterans: theory, research and treatment implications'.

Knowledge gained from the Vietnam War contributed greatly to the acceptance of Post Traumatic Stress Disorder into a psychiatric classificatory system for the first time in 1980 (The Diagnostic and Statistical Manual of Mental Disorders - 3rd

edition, (DSMIII) American Psychiatric Association). Since then the definition of PTSD has been further refined and it has become accepted that any major traumatic event including physical injury can precipitate it. The current classification of PTSD (DSMIV) is shown in table 1.1.

1.2 - Prevalence of Post-traumatic Stress Disorder

There have been no good population studies to consider the prevalence of PTSD amongst the general community in the UK. In the USA there have been several. The findings of the Epidemiologic Catchment Area Survey were the first to be published. Helzer et al (1987) reported a 1% lifetime prevalence rate for PTSD amongst 2493 individuals interviewed in St Louis with the Diagnostic Interview Schedule (DIS). Davidson et al (1991) reported a 1.3% lifetime prevalence and 0.44% current prevalence of PTSD also using the DIS in 2985 individuals in North Carolina. Breslau et al (1991) used the DIS with a population of 1007 American adults aged between 21 and 30. Almost 40% had been exposed to a major traumatic event, the lifetime prevalence rate for PTSD was 9%. The biggest study to date is the National Comorbidity Survey (Kessler et al, 1995) which interviewed a representative sample of 5,877 Americans aged between 15 and 54 years old. 60.7% of males and 51.2% of females reported having been involved in a significant traumatic event. The lifetime prevalence of PTSD was 10.4% in females and 5.0% in males. Over one third of sufferers continued to describe PTSD six years after diagnosis.

Research has suggested that exposure to higher impact trauma (e.g. rape) is associated with much higher rates of PTSD than exposure to lower impact trauma (e.g. physical assault). In Breslau et al's (1991) study 11.6% of those who had suffered a sudden injury or serious accident and 22.6% of those physically assaulted developed PTSD compared to 80% of women who reported rape. Kessler et al (1995) found a lifetime prevalence of PTSD following serious accident of 20.7% in men and 23.6% in women. For physical attack the rates were 12.4% in men and 30.8% in women and for rape 65% in men and 45.9% in women.

1.3 - Predictors of Post-traumatic Stress Disorder

The studies described above and other studies have found several factors that appeared to be associated with the development of PTSD following a traumatic event in addition to the severity of the trauma. These include behavioural difficulties before the age of 15 (Helzer et al, 1987), family history of psychiatric disorder (Davidson et al, 1991, Breslau & Davis, 1991), reduced social support (Davidson et al, 1991), pre trauma anxiety or depression (Resnick et al, 1992, Breslau & Davis, 1991, McFarlane, 1988), neuroticism (Breslau & Davis, 1991), female sex (Kessler et al, 1995), previous trauma (McFarlane, 1988), early symptoms of PTSD (Brewin et al, 1999) and early symptoms of depression (Freedman et al, 1999).

Table 1.1: DSMIV Diagnostic Criteria for Post-traumatic Stress Disorder

A.	The person has been exposed to a traumatic event in which both of the following were present:
	(1) the person experienced, witnessed, or was confronted with an event or events that involved actual or threatened death or serious injury, or a threat to the physical integrity of self or others.
	(2) the person's response involved intense fear, helplessness, or horror.
B.	The traumatic event is persistently re-experienced in one (or more) of the following ways:
	(1) recurrent and intrusive distressing recollections of the event, including images, thoughts, or perceptions.
	(2) recurrent distressing dreams of the event.
	(3) acting or feeling as if the traumatic event were recurring (includes a sense of reliving the experience, illusions, hallucinations, and dissociative flashback episodes, including those that occur on awakening or when intoxicated).
	(4) intense psychological distress at exposure to internal or external events that symbolize or resemble an aspect of the traumatic event.
	(5) physiological reactivity on exposure to internal or external cues that symbolize or resemble an aspect of the traumatic event.

continued/.

C. Persistent avoidance of stimuli associated with the trauma and numbing of general responsiveness (not present before the trauma), as indicated by three (or more) of the following:

(1) efforts to avoid thoughts, feelings or conversations associated with the trauma.

(2) efforts to avoid activities, places or people that arouse recollections of the trauma.

(3) inability to recall an important aspect of the trauma.

(4) markedly diminished interest or participation in significant activities.

(5) feeling of detachment or estrangement from others.

(6) restricted range of affect (e.g., unable to have loving feelings).

(7) sense of a foreshortened future (e.g., does not expect to have a career, marriage, children, or a normal life span).

D. Persistent symptoms of increased arousal (not present before the trauma), as indicated by two (or more) of the following:

(1) difficulty falling or staying asleep.

(2) irritability or outbursts of anger.

(3) difficulty concentrating.

(4) hypervigilance.

(5) exaggerated startle response.

E. Duration of the disturbance (symptoms in Criteria B, C, and D) is more than 1month.

F. The disturbance causes clinically significant distress or impairment in social, occupational, or other important areas of functioning.

Specify if:

Acute: if duration of symptoms is less than 3 months.

Chronic: if duration of symptoms is 3 months or more.

Specify if:

With Delayed Onset: if onset of symptoms is at least 6 months after the stressor.

1.4 - Other Psychological Sequelae Following Traumatic Events

In over 50% of cases when PTSD is diagnosed another major psychiatric diagnosis can additionally be made. The commonest co-diagnoses include major depressive disorder, panic disorder, other anxiety disorder and substance abuse/dependence. It is therefore essential to consider the co-existence of other disorders when PTSD is present. The National Vietnam Veterans Readjustment Study (Kulka et al, 1990) found that of those suffering from PTSD at the time of the study 50% could be diagnosed as suffering from one of the above disorders in addition. Further evaluation of the subjects revealed a 99% lifetime co-morbidity. Kessler et al (1995) found co-morbidity to be present in 88.3% of males and in 79% of females diagnosed as suffering from PTSD. The PTSD was felt to be the main diagnosis in approximately 40% of males and 50% of females.

The conditions that commonly occur as co-diagnoses with PTSD may also be precipitated by a major traumatic event and be present without co-existing PTSD. For example, Mayou et al (1993) studied 188 road traffic accident (RTA) victims in Oxford and found that 13 (8%) were suffering from PTSD at one year compared to 26 (15%) who were suffering from travel anxiety. Gregg et al (1995) interviewed 68 (86%) of the survivors of the Kegworth Air Disaster. They found that 54 (79%) met DSM-III-R criteria for a psychiatric disorder, 27 (40%) of whom met the criteria for PTSD within one year of the disaster. The commonest other diagnoses were major depression in 12 (18%), anxiety disorders in 6 (9%) and adjustment disorders in 18 (26%).

Adjustment disorders are commonly diagnosed following traumatic events and are states of subjective distress and emotional disturbance following a stressor. Symptoms vary but often comprise a mixture of anxiety, depressive and PTSD symptoms without satisfying the full criteria for these or another major psychiatric disorder. The tenth version of the International Classification of Diseases (WHO,

1992) also recognised that some individuals experience a change in personality following major trauma and introduced the diagnosis Enduring Personality Change after Catastrophic Experience which may be preceded by PTSD but cannot be diagnosed at the same time as PTSD. The criteria include a permanent significant personality change that can be traced back to the catastrophic experience and results in inflexible and maladaptive behaviour not present before the pathogenic experience.

1.5 - The Natural Course of Post-traumatic Stress Disorder Symptoms

There are few good prospective studies to determine the natural course of PTSD symptoms but those that have been conducted suggest that there is a gradual reduction in symptoms over time. Rothbaum and Foa (1992) described their prospective studies of rape victims and victims of nonsexual criminal assault. Sixty-four rape victims were interviewed within two weeks of their trauma, weekly to twelve weeks and then at six and nine months. Unfortunately there was a high dropout rate with only 24 individuals completing the nine month follow-up. At initial interview 94% met the PTSD symptom criteria, at one month this had reduced to 65%, was 47% at three months, 42% at six months and 47% at nine months. A similar but more marked reduction in PTSD symptoms was found in the 51 assault victims they studied. Sixty-five percent satisfied the PTSD symptom criteria at one week, 37% at one month, 15% at three months and 12% at six months when, unfortunately, only 26 remained in the study. At nine months none of the 15 interviewed met the criteria for PTSD. Kessler et al (1995) in their retrospective study of 5,877 individuals found that PTSD symptoms were reported to have reduced most rapidly in the first twelve months and then reduced more slowly but over a third of individuals continued to suffer from PTSD even after many years irrespective of whether or not treatment had been received.

Chapter 2 - History and Description of Psychological Debriefing

2.1 - Prevention of Psychological Sequelae Following Traumatic Events

Attempts have been made to develop interventions to prevent the development of psychological sequelae following major traumatic events. Critical Incident Stress Debriefing was first described by Mitchell in 1983 and this along with other forms of psychological debriefing (PD) have become the most written about, widely practised and well recognised forms of early psychological intervention following trauma over the last decade.

2.2 - Theoretical/Conceptual Framework

One of the major criticisms of PD is the absence of a sound underpinning theoretical framework. Indeed one of the main driving forces behind the development and acceptance of debriefing appears to have been a social desire to help those in need rather than a specific theoretical or empirical basis. However, the origins of debriefing can be traced back much further than 1983 and debriefing appears to involve a variety of approaches.

(i) The PIE model - The PIE model, based on the three principles of proximity, immediacy and expectancy emerged in the First World War and was then rediscovered in the Second World War. It was described by Kardiner and Spiegel (1947) and has been used and researched in more recent conflicts (e.g. the Lebanon War (Solomon and Benbenishty, 1988)). Individuals are treated close to the battle zone (proximity), as

soon as possible (immediacy) and with the expectation of returning to duty (expectancy).

(ii) Battlefield Debriefing - During World War II General Marshall, the chief historian of the US Army at that time, used and subsequently wrote about debriefing (Marshall, 1944). The majority of the debriefings occurred in large groups although he did perform some individual debriefings. He advocated holding debriefing sessions on the battlefield as soon as possible after the action and estimated that seven hours were needed to debrief one fighting day. Although one of the main functions of these meetings was information gathering Marshall noted that the emotional effects of the debriefing were "spiritually purging", a "morale-building" experience and one that the participants described as helpful. Marshall's debriefing method provided an intervention that was structured, recognised and respected individuals experiences, grief and expression of emotional responses. He believed that the debriefing technique was relatively simple and one that could be performed by commanders without the need for specialist training. His exploration of the events of battle seemed to provide participants with an opportunity to develop a narrative or internal verbal representation of the experience.

(iii) Group Psychotherapy - Lindy, Grace and Green (1981) described the "trauma membrane" which forms around a community involved in a major traumatic event and an inward recognition of people who have similarly suffered. This is central to the use of a group intervention, such as CISD as originally described, following a traumatic event which attempts to use the therapeutic forces within the group and the constructive support and interaction to modify and heal people's reactions. Factors that may be important include catharsis, interpersonal learning, group cohesiveness, universality, instillation of hope and guidance (Yalom, 1975).

(iv) Crisis Intervention - Crisis intervention (e.g. Caplan, 1964) attempts not to pathologise the distress caused by a life event. It is presumed that the suddenness of the event has not allowed the individual time to master their emotional response. Crisis intervention rapidly mobilises the support of a mental health professional who

offers temporary, often intensive, support which aims to bring about mastery by promoting rational problem solving behaviour using a more active confronting style than many therapies. Grief Counselling has much in common with crisis intervention and appears to have an evidence base. For example Raphael (1977) conducted a randomised controlled trial of a four session intervention with 30 women who had lost partners and were felt to be at high risk of developing psychological difficulties. Those in the intervention group fared better than those in the control group at follow-up. Raphael used a similar approach to assist the bereaved following a major train disaster in Australia which led her to advocate the importance of acute interventions and support following disasters (Raphael, 1986).

(v) Emotional Processing - Trauma psychology suggests that the majority of victims of severe trauma will experience some distress as they assimilate their experience. Horowitz's information processing model (1974) predicts alternating intrusive and avoidant symptoms which decrease in magnitude with time and which form an integral part of the normal stress response. It is only when these symptoms become excessive in duration, frequency or intensity that the reaction is considered pathological. Unfortunately there is no consensus as to what the limits of normality are, and hence when more formal treatment should begin. Rachman (1980) argued that several factors would be likely to promote emotional processing including engaged exposure to the disturbing material, habituation training, calm rehearsals (especially of coping behaviour), relaxation, vivid presentation of stimuli and repeated practice. He also argued that other factors could impede emotional processing such as avoidance of the disturbing stimuli, a refusal or inability to talk about them, repeated exposures to disturbing material under uncontrolled conditions and excessively brief presentations. It follows that the sooner individuals employ factors that promote emotional processing the less opportunity there is for maladaptive and disruptive cognitive and behavioural patterns to become established. Rachman's positive factors will be very familiar to behavioural therapists. The exploration of the cognitive schemas associated with traumatic memories is a further contribution made by the field of cognitive-behavioural therapy.

(vi) Psychoeducation - There is also a major educational component to debriefing. Psychoeducation has been advocated for traumatised individuals to promote their understanding of the reactions they experience, containment of their distress and to allow them to institute a series of self regulatory processes (e.g. Raphael, 1986).

2.2.1 - Synthesis of Approaches

A variety of theoretical and conceptual paradigms can be seen to have potentially contributed to the development of debriefing which essentially represents an eclectic approach. Common themes emerge from the approaches considered above. Early intervention is considered important and a great emphasis is placed on emotional expression, problem solving and confronting what actually happened. Any reactions are strongly normalised with apparent unconditional support from the facilitator/therapist. In their separate domains, the contributing theories to debriefing appear sound and debriefing has good face validity as a helpful intervention for traumatised individuals.

2.3 - Description of Psychological Debriefing

Critical Incident Stress Debriefing (CISD) was first described by Mitchell in 1983 as an individual or group intervention for ambulance personnel following exposure to traumatic situations in their work. It was described as a form of crisis intervention as opposed to a form of psychological treatment and therefore does not have the same philosophy, i.e. debriefing does not explicitly treat a pathological response. CISD and other models of Psychological Debriefing (PD) have become recognised as semi-structured interventions designed to reduce initial distress and to prevent the development of later psychological sequelae such as PTSD following traumatic events by promoting emotional processing through the ventilation and normalisation of reactions and preparation for possible future experiences. Further aims are to identify

individuals who may benefit from more formalised treatment and to provide early support. It has generally been considered that any individual exposed to the traumatic event is eligible for PD irrespective of the presence of psychological symptoms. It is, however, apparent that many participants of debriefings would have fulfilled the criteria for acute stress disorder or have symptoms of PTSD, anxiety and depression.

Debriefings have been used with survivors, victims, relatives, emergency care workers and providers of psychological care. The focus of a PD is on the present reactions of those involved in a trauma rather than earlier experiences which may shape an individual's reactions. Psychiatric "labelling" is avoided and the emphasis is placed on normalisation. The participants are assured that they are normal people who have experienced an abnormal event. Mitchell (1983) initially commented that a follow-up CISD may be necessary several weeks or months after a critical incident with some or all of those initially involved to deal with unresolved issues if present. More recently he (e.g. Mitchell and Everly (1995)) has argued that debriefing should be considered as one part of a comprehensive, systematic, multi-component approach to the management of traumatic stress (critical incident stress management, CISM) and that it should not be used as a one-off stand alone intervention. Despite this assertion debriefing has been used as a stand alone intervention by many practitioners.

Given the fact that the models of psychological debriefing described by Mitchell (1983) and Dyregrov (1989) have become the best known and most widely used I shall describe them in more detail before briefly discussing other models.

2.3.1 - The Mitchell Model

Mitchell (1983) initially described Critical Incident Incident Stress Debriefing as having six "segments". The introductory phase of CISD concerns explanation of the purpose of the debriefing, guidelines and some introductions. During the fact phase a factual description of exactly what happened is produced by asking all participants to describe their experience incorporating all sensory modalities (i.e. what they heard, saw, smelled

etc.). The feeling phase considers the participants' feelings be they positive or negative (e.g. fears, anxieties, guilt and anger). The symptom phase encourages participants to discuss various trauma related symptoms they experienced during the traumatic event or subsequently. The teaching phase flows from the symptoms phase and is led by the facilitators who discuss typical symptoms and normalise them as a natural stress response. The re-entry phase clarifies issues, gives the opportunity for questions, discusses the need for direction or specific activity after the debriefing, provides summary comments and ends with closure.

2.3.2 - The Dyregrov Model

Since Mitchell's initial description of CISD several other authors have described other forms of psychological debriefing which have some differences from CISD (Rose 1997). Dyregrov (1989) described psychological debriefing (PD) which represents his interpretation of Mitchell's technique, and indeed is very similar, although sensory information experienced at the time is specifically discussed. Dyregrov also appears to devote more attention to individual reactions and to the normalisation of reactions. The seven stages of PD as described by Dyregrov are detailed below.

1. The Introduction: The debriefer(s) states that the purpose of the meeting is to review the participant(s) reactions to the trauma, to discuss them, and to identify methods of dealing with them to prevent future problems. The debriefer assumes control and specifies his/her own competence in order to lend confidence to those attending. Three rules are made explicit: a. Participants are under no obligation to say anything except why they were there and what their role was vis a vis the traumatic event; b. Confidentiality is emphasised and, in groups, the members undertake not to divulge what others have said outside the group; and c. The focus of the discussions will be on the impressions and reactions of the participants.

2. Expectations and Facts: The details of what actually happened are discussed in considerable detail without focusing on the thoughts, impressions and emotional

reactions. Participants are encouraged to describe their expectations, i.e. did they expect what happened? (This is believed to focus the individual on their experiences at the time and may help them to understand why they reacted in the way they did. This is felt to be extremely important in certain situations, for example, unexpectedly encountering injured children can magnify the intensity of a traumatic situation).

3. Thoughts and Impressions: When the facts are being described, thoughts and impressions are elicited by asking questions such as, "What were your thoughts when you first realised you were injured?" and "What did you do?". This information aims to a) construct a picture of what happened, b) put individual reactions into perspective and c) help with the integration of traumatic experiences. Sensory impressions in all five modalities are elicited, e.g. "What did you see, hear, touch, smell, taste?" This aims to produce a more realistic reconstruction of the trauma.

4. Emotional Reactions: This stage is usually the longest in the PD. The earlier questions concerning thoughts and impressions are directed to lead to answers concerning emotions. The debriefer attempts to aid the release of emotions with questions about some of the common reactions during the trauma such as fear, helplessness, frustration, self-reproach, anger, guilt, anxiety and depression. Emotional reactions experienced since the event are also discussed.

5. Normalisation: After the emotional reactions have been expressed, the debriefer aims to facilitate their acceptance. This is done by stressing that the reactions are entirely normal. When more than one person is present in the PD it is likely that their emotions will be shared by others. This universality aims to help with normalisation. The debriefer stresses that individuals do not have to experience all of the emotions that normally occur after a trauma, but that it is normal to react after a critical incident. The debriefer also describes common symptoms which individuals may experience in the future such as: intrusive thoughts and images, distress when reminded of what happened, attempts to avoid thoughts, feelings and reminders, detachment from others, loss of interest in things that once gave pleasure, anxiety, depressed mood, sleep

disturbance (including nightmares), irritability, shame, guilt, anger, hypervigilance and increased startle reactions.

6. Future Planning/Coping: This stage allows the debriefer to focus on ways of managing symptoms should they arise and attempting to mobilise internal support mechanisms (e.g. discussing coping mechanisms) and external support (e.g. family and friends). The importance of open discussion of feelings with family and friends is emphasised. The possibility of needing additional support from them for a while is highlighted.

7. Disengagement: In this stage other topics are discussed. A leaflet describing the normal reactions and how to cope with them such as the British Red Cross leaflet on "Coping with personal Crisis" can be distributed. Guidance is also given regarding the need for further help and where it may be obtained if necessary. Participants are advised to seek further help if, for example: a. Psychological symptoms do not decrease after 4-6 weeks; b. Psychological symptoms increase over time; c. There is ongoing loss of function and occupation/family difficulties; d. Others comment on marked personality changes.

2.3.3 - Other Models

Raphael (1986) described a psychological debriefing that was less structured than Mitchell's and Dyregrov's models yet still had much in common with them including the fact that it was designed as a group intervention for secondary rather than primary victims. She suggested that particular topics may be usefully discussed during the debriefing such as personally experienced disaster stressors such as death encounter, survivor conflict and loss dislocation; positive and negative feelings; the victims and their problems; the special nature of disaster work and personal experiences. Another model is the Multiple Stressor Debriefing Model designed for use with American Red Cross personnel (Armstrong, O'Callahan & Marmar, 1991). This contains elements from the other debriefings but for the first time focuses on strategies adopted by

individuals before the trauma to deal with stressful situations. Four stages are completed. In the first stage there is disclosure of events followed by consideration of feelings and reactions. Coping strategies are then discussed including the previous ways an individual has dealt with stressful events. Finally the termination phase considers what it will be like leaving the disaster, the positive work done and the need to talk to significant others about experiences and feelings.

In more recent years the group psychological debriefing models described above have been modified for use with groups of primary victims and also to develop an intervention for individuals who have recently been exposed to a trauma (e.g. Lee, Slade & Lygo 1996; Hobbs, Mayou, Harrison & Warlock 1996). The individual debriefings described in the literature to date have adopted a seven stage model usually based on and very similar to the Mitchell and Dyregrov models. The group factors are obviously missing and therefore the debriefings focus directly on one individual's experiences and reactions. Some authors have commented that group factors are of essential importance to the process of PD and that the technique should not be transferred for use with individuals (e.g. Dyregrov, 1998). In individual PD the facilitator has to normalise the individual's reactions through sharing information gained from previous trauma victims and the literature rather than by highlighting common reactions within a group. Most reported individual debriefings have been for primary victims with physical injuries.

In addition to describing an early brief crisis intervention the term PD has also been used to describe a variety of other psychological interventions. For example Hayman and Scaturo (1993) described an eight session "psychological debriefing" for military personnel following the Gulf War. Amir et al (1998) combined debriefing with brief group psychotherapy to provide a six session intervention for 15 non-injured women during the first two months after a terrorist attack. Busuttil et al (1996) described debriefing as an integral part of a group treatment package for chronic PTSD. Such diverse use of the term has resulted in a somewhat confused literature and such applications are considered to be beyond the scope of this thesis which will use the term PD to denote a brief preventative technique that occurs shortly after a traumatic event as originally described.

2.4 - Summary and Conclusions

Despite an apparent absence of theoretical explanation as to why psychological debriefing should be beneficial when it was first introduced, a variety of different theoretical models appear to underpin it. It also has good face validity. The Mitchell and Dyregrov models have been more written about and widely used than other models of PD and appear to represent most practitioners' concept of what PD is. They both contain the key ingredients of what was being widely advocated as useful following traumatic events at the time this study was conceived. My personal experience with and knowledge of the Dyregrov model as an intervention that was being advocated for routine use in the Bristish Army following major traumatic events made me particularly keen to use it as the debriefing model to investigate in this study. It also had the advantage of having been clearly described by Dyregrov and I therefore considered it likely to be easier to replicate accurately than other debriefing methods discussed in the literature.

Chapter 3 - The Effectiveness of Psychological Debriefing

3.1 - Determining the Effectiveness of Psychological Debriefing

The popularity of psychological debriefing (PD) grew rapidly during the 1980s and early 1990s fuelled by anecdotal suggestions that it was an effective way of preventing the development of psychological sequelae following traumatic events. It was included in standard emergency planning protocols and used routinely in some instances, for example in Scandinavia (Dyregrov, 1989).

By the mid 1990s the lack of research and absence of a sound evidence base had become apparent leading to calls of caution from some. I reviewed the literature available at that time (Bisson & Deahl, 1994) and concluded that there was an absence of evidence from randomised controlled trials to suggest that PD was effective. Raphael, Meldrum and McFarlane (1995) concluded similarly and even argued that there had been some evidence from unpublished work in Australia that PD could be harmful to some individuals. The concerns voiced by many people in the field of traumatic stress have been matched by advocates of the technique leading to considerable debate as to its effectiveness (e.g. Mitchell & Everly, 1999, Avery et al, 1999). Mitchell and his colleagues have established the Critical Incident Stress Foundation in the United States of America who promote the use of Critical Incident Stress Management of which Critical Incident Stress Debriefing is an integral part (e.g. Mitchell & Everly, 1995). However, the absence of an evidence base for PD has led to it being abandoned by some practitioners. For example having used the technique for several years the Lincolnshire Joint Emergency Services Initiative no longer use PD following local audit and a review of the research evidence available (Avery and Orner, 1998).

It is widely accepted that the ideal way to determine the effectiveness of any form of intervention is through large, well-designed randomised controlled trials the results of which are replicated by other researchers. The best way to determine the current evidence for an intervention is to perform a systematic review of all the randomised controlled trials currently available. In order to consider the current status of research into PD this chapter will focus on the results of a systematic review, other randomised controlled trials and other research that has used inferior methodology.

Wessely, Rose and Bisson (1998) (and Rose & Bisson, 1998) have conducted a Cochrane Systematic Review to examine the effectiveness of psychological debriefing and other early interventions. Nine electronic databases were searched (MEDLINE, EMBASE, PsychLit, PILOTS, Biosis, Pascal, Occ. Safety and Health, CDSR and the Trials Register of the Cochrane Collaboration Depression, Anxiety and Neurosis group). The Journal of Traumatic Stress was hand searched and leading researchers in the area were contacted. All appropriate studies were identified and critically read. The summary of the literature that follows discusses the randomised controlled trials identified in the systematic review and also considers other trials that did not fulfil the stringent criteria adopted for inclusion in the Cochrane Review but are important in terms of providing a comprehensive review of the research that has been performed concerning PD. The full results of the Cochrane Review are not discussed here because the study presented in this thesis was included. Studies of PD as described above will be considered separately to studies of related early interventions that did not employ the PD technique as described.

3.2 - Summary of Literature regarding the Effectiveness of Psychological Debriefing

3.2.1 - Evidence from randomised controlled clinical trials

(i) Hobbs, Mayou, Harrison & Warlock (1996) - Hobbs et al reported a randomised controlled trial of individual psychological debriefing for victims of motor vehicle accidents (MVAs). One hundred and six individuals were included in their study and randomly allocated to a one hour individual debriefing undertaken within 24-48 hours of the accident in most cases. The debriefing combined a review of the traumatic experience, encouragement of emotional expression and promotion of cognitive processing of the experience. Advice was provided about common emotional reactions, the value of talking about the experience and an early graded return to normal road travel. A leaflet was also distributed reiterating these messages. There was no evidence that any measures apart from supervision were taken to encourage consistency of intervention.

The mean baseline scores on the Impact of Event Scale (IES) (Horowitz et al, 1979) were 15.13 (sd = 14.82) for the intervention group and 15.30 (sd = 12.35) for the control group. At four months the mean scores were 15.97 (sd = 15.32) for the intervention group and 12.87 (sd = 14.22) for the control group. No significant differences were found between the intervention and control groups at four months after the MVA on the General Severity Index of the Brief Symptom Inventory (BSI) (Derogatis & Melisaratos 1983), interview ratings on intrusive thoughts and travel anxiety, clinical diagnosis of PTSD or phobic anxiety disorder. The intervention group had a worse outcome ($p < 0.05$) on 2 subscales of the BSI and showed a non-significant trend for poorer outcome in terms of global distress and depression. The authors argued that there was no evidence that PD had helped and indeed highlighted indications that it may have been disadvantageous. This study has several good methodological factors including the use of validated measures and a larger sample size than many studies but it still has

limitations. The baseline assessment was performed on 106 individuals but only 91 completed the four month follow up assessment. This, the reassessment being performed by individuals who performed the intervention, the exclusion of individuals who could not remember the accident and the fact that the debriefed group had a higher mean injury score than the control group (and may have been expected to do worse as a result) could have led to bias.

(ii) Lee, Slade and Lygo (1996) - Lee et al studied women over the age of eighteen who had miscarried between six and nineteen weeks of pregnancy. Twenty-one received a one hour individual debriefing based on the Mitchell and Dyregrov methods approximately two weeks after the miscarriage and nineteen received no intervention. Follow-up at four months revealed no significant difference in symptomatology as judged by the impact of event scale (IES) and the hospital anxiety and depression scale (HADS) (Zigmond & Snaith, 1983) between intervention and control groups. The IES intrusion scale mean score reduced from 20.3 (sd = 11.1) in the PD group to 13.2 (sd = 11.3) in the intervention group and from 24.4 (sd = 10.8) to 18.1 (sd = 11.5) in the control group. The IES avoidance scale mean score reduced from 20.5 (sd = 11.1) in the PD group to 13.5 (sd = 12.0) in the intervention group and from 17.4 (sd = 13.1) to 11.4 (sd = 11.3) in the control group. At the four month follow-up two factor ANOVAS showed significant main effects of time on all outcome measures, but there were no main effects of the intervention.

Multiple regression analyses revealed that emotional distress scores at one week predicted scores at four months. Significantly more of the PD group (71%) felt that they had been given the opportunity to talk about how they felt compared with 29% of the non PD group. Women who received the PD were asked to rate its helpfulness on a 100mm scale from 'extremely unhelpful' (0) to 'extremely helpful' (100). The mean score was 74. The women on the whole showed a tendency towards being satisfied with their hospital care. Significantly more women in the control group (78%) had tried to obtain additional information about their miscarriage as opposed to 29% in the PD group when asked at follow-up. The main shortcomings of this study are the small number of participants and the absence of interview measures at follow-up.

(iii) Rose, Brewin, Andrews & Kirk (1999) - Rose et al considered 118 male and 39 female victims of violent crime who had an average age of 35 years (sd = 13). Participants were randomly allocated to either assessment only, education about post-traumatic stress symptoms or psychological debriefing followed by education. There were no significant differences in scores on the PSS, IES or BDI between the three groups. The mean IES score for the Assessment only group reduced from 28.0 (sd = 19.3) at baseline to 15.9 (sd = 19.4) at eleven month follow-up compared with the Education group which reduced from 24.2 (sd = 19.0) to 14.7 (sd = 19.5) and the Debriefing plus Education group which reduced from 28.5 (sd = 18.4) to 15.9 (sd = 16.0). This is a good study methodologically although relied on questionnaires as opposed to structured interviews for the follow-up assessments.

(vi) Dolan, Bowyer & Freeman (1999) - Dolan et al reported a study of 100 patients who had presented to an Accident and Emergency Department following a road traffic accident, assault or other traumatic injury. Patients were randomly allocated to receive a single session PD seven to eleven days post-trauma or to no intervention. Analyses of covariance with severity of injury as covariate revealed no differences between intervention and control groups at one month and six month follow-up as measured by the IES, HADS and the 28 item version of the General Health Questionnaire. Unfortunately this study has only been published as a conference abstract at present and therefore full details were not available to consider it.

Table 3.1 - Summary of Randomised Controlled Trials of Psychological Debriefing

Authors (Year)	Target Population	Time of PD post-trauma	Length of Session (mins)	Dependent Measure	Types of Control & Treatment Groups	Completers Sample Size (n)	Outcome	Follow-up Period
Hobbs, Mayou, Harrison & Worlock (1996)	MVA victims	24-48 hours	60	IES	Standard Care IPD	52 54	No significant difference	 4 months
Lee, Slade & Lygo (1996)	Miscarriage	14 days	60	IES	Standard Care Dyregrov/ Mitchell IPD	18 21	No significant difference	 4 months
Rose, Brewin, Amdrews & Kirk (1999)	Violent Crime	21 days	60	IES PSS BDI	Assessment Education Mitchell IPD &Education	Total 92	No significant difference	6 months 11 months
Dolan, Bowyer & Freeman (1999)	Accident and Emergency Attenders	7 - 11 days	ns	IES HADS GHQ28	IPD Standard Care	100 entered ? No. completers	No significant difference	1 month 6 months

IPD = Individual Psychological Debriefing

MVA = Motor Vehicle Accident

IES = Impact of Event Scale

GHQ28 = 28 Item Version of the General Health Questionnaire

PSS = PTSD diagnostic scale

BDI = Beck Depression Inventory

HADS = Hospital Anxiety and Depression Scale

3.2.2 - Evidence from studies with a comparison group

Comparison studies consider a group of individuals involved in a traumatic event(s) and then compare them according to whether or not PD was received. Their findings are weakened by the absence of random allocation to intervention or non-intervention groups: the reasons that determine whether or not individuals attend PD may be extremely important and result in considerable sample bias, markedly affecting the outcome. Prospective studies have shown that the majority of individuals involved in traumatic events do not go on to develop PTSD and indeed initial symptoms usually recover naturally in the following months (e.g. Riggs, Rothbaum & Foa, 1995; Blanchard, Hickling, Barton et al, 1996). It therefore follows that most people given PD following a traumatic event will not develop PTSD. These facts are likely to generate a spurious sense of efficacy regarding the preventive value of PD unless adequately controlled trials are performed.

(i) McFarlane (1988) - McFarlane examined a subgroup of 50 subjects randomly selected from 315 firefighters exposed to a natural disaster 8 months previously and at high risk of developing PTSD as measured by 3 variables: high exposure (exposure score >6), significant psychological symptoms (General Health Questionnaire, Goldberg & Hillier 1979) (GHQ) >4 and intrusive thoughts and imagery (IES >26). This sample was in fact matched with another 96 firefighters who were not interviewed but compared on the basis of exposure, IES and GHQ scores at 4 months. A proportion of the subgroup received PD although were not randomly selected to do so and therefore this study could not be described as a true RCT. Those individuals who received PD shortly after the incident were less likely to develop an acute post traumatic stress reaction than those who were not debriefed. However, the effectiveness of the debriefing process was thrown into doubt by the finding that individuals who developed a delayed onset post traumatic stress reaction were more likely to have attended a debriefing than those who had suffered no psychological disorder at any time during the follow-up period. This led McFarlane to comment that psychological debriefing may have immediate protective value but have little effect in the longer term.

(ii) Hyton and Hasle (1989) - Hyton and Hasle studied 58 (91%) of the 64 non-professional firefighters who attended a major hotel fire in Norway in 1986. Fourteen hotel guests died and fifty-four required hospital treatment. Participants were asked to complete a self report questionnaire which included the Impact of Event Scale on average 14 days after the fire. The mean IES scores were relatively low (intrusion = 8.0 (sd 6.7), avoidance = 5.8 (sd 5.8). Thirty-nine (67%) firefighters had attended a debriefing session, 38 (97%) of them reported this as useful. Actual comparisons of IES scores were not presented in the paper but the authors stated that they found no significant difference in IES scores between those formally debriefed and those who had talked with colleagues in more informal settings.

(iii) Deahl, Gillham, Thomas, Searle and Srinivasan (1994) - Deahl et al considered the effectiveness of group PD in soldiers who acted as gravediggers during the Gulf war. Seventy-four soldiers took part in the study. For operational reasons, only 55 of the sample received PD following the Dyregrov method and so the rest formed the control group. In addition no base-line measures were taken. Twenty (50%) of the PD sample reported that they had found the intervention helpful but IES and GHQ-28 scores showed no significant difference between the PD and control group at 9 month follow-up.

(iv) Jenkins (1996) - Jenkins studied 36 emergency medical technicians, paramedics and firefighters, 34 were male and two were female. Individuals were assessed 8 to 10 days and one month following a mass shooting incident in Texas in which 23 people were killed. The participants were offered voluntary PD which was provided within 24 hours. Results were available for 29 (81%) individuals. Fifteen (52%) individuals attended at least one PD. Using correlations Jenkins found that presence at a PD was associated with less reported depression and anxiety. She stated that half the PD attenders spontaneously reported it as helping them cope with their experience.

(v) Kenardy, Webster, Lewin, Carr, Hazell & Carter (1996) - Kenardy et al studied 195 emergency service personnel and disaster workers following an earthquake that resulted in 13 deaths and considerable property damage in a major industrial city in

Australia in 1989. All participants completed the GHQ-12 and the IES on at least three occasions over the two years after the earthquake. Sixty-two (32%) individuals were debriefed, the remaining 133 (68%) were not. The debriefed group on average had higher educational levels, were more likely to be helping in non threat situations, were more likely to be female, to be counsellors and co-ordinators of services.

The debriefed group attended a mean of 1.49 debriefing sessions. The debriefing was perceived to be helpful by 80% of those who attended. The outcome was presented according to earthquake exposure. In the low threat group the mean total IES score for those who were not debriefed reduced from 10.3 (sd 14.2) at six months to 5.0 (sd 10.6) at two years and from 8.0 (sd 7.2) to 6.0 (sd 5.8) in the debriefed group. In the high threat group the mean total IES score for those who were not debriefed reduced from 11.8 (sd 11.9) at six months to 5.9 (sd 7.7) at two years and from 14.2 (sd 12.3) to 11.1 (sd 13.2) in the debriefed group. In the low threat group the mean total GHQ-12 Likert score for those who were not debriefed reduced from 10.6 (sd 4.3) at six months to 9.9 (sd 4.5) at two years and increased from 10.7 (sd 5.8) to 11.0 (sd 3.8) in the debriefed group. In the high threat group the mean total GHQ12 Likert score for those who were not debriefed reduced from 12.9 (sd 6.1) at six months to 10.3 (sd 4.5) at two years and increased from 13.5 (sd 6.8) to 14.3 (sd 7.2) in the debriefed group.

The authors concluded that there was no evidence for a beneficial effect of debriefing although acknowledged difficulties with the study including absence of randomisation, the fact that there was no pre- or peri-debriefing data collected and that there was no control over the debriefing procedures.

(vi) Chemtob, Tomas, Law and Cremniter (1997) - Chemtob et al (1997) studied 51 individuals who had been exposed to a hurricane, 43 (84%) completed follow-up. The first group, 25 staff members of a temporary post-disaster counselling project received a single session group PD of approximately three hours followed by a two hour education session on post-disaster recovery six months after the hurricane. The second group, 18 staff members of the local mental health centre, received the same intervention nine months after the hurricane. The impact of event scale (IES) was used as the main

outcome measure and completed before the debriefing and three months afterwards for both groups. The main difference demographically between the two groups was that the second group were significantly more educated. Group two was noted to serve as a partial control for time and as a replication group.. Group one had a reduction in total IES score from a mean of 19.0 (sd 11.4) before the intervention to 12.3 (sd 8.3) after the intervention. In group two the scores were 24.8 (sd 10.9) and 16.8 (sd 12.3) respectively. The within group treatment effect was highly significant ($p < 0.0001$).

This trial again has its flaws in that the two groups were different in their composition, no randomisation procedure was used and only a single questionnaire measure of post-disaster distress was used. The fact that the intervention occurred six and nine months following the trauma makes it difficult to compare directly with debriefings that occurred within one month of the traumatic event. The combination of the PD with an educational package makes it difficult to determine the efficacy of PD alone. In addition the authors' assertion that the second group controlled for the passage of time is difficult to accept because no data were available from an earlier time point. It could also be argued that they may have represented a more symptomatic group than the first one.

(vii) Carlier, Lamberts, Van Uchelen and Gersons (1998) - Carlier et al studied police officers who had responded to a plane crash in Amsterdam in 1982 in which 43 people died. Of the 200 police officers present approximately 45% were debriefed in groups following Mitchell's method shortly after their involvement. Fifty-five percent were not debriefed for operational reasons. Individuals were assessed at eight and 18 months after the disaster. The sample examined were 105 officers, 95 (90%) were male and 46 (44%) had been debriefed. The mean age was 37 years (sd = 6.3). All participants were interviewed using a structured interview designed to elicit a DSMIIIR (APA, 1987) diagnosis of PTSD if present. There were no significant differences between the debriefed and non debriefed groups in terms of demographic variables or traumatic exposure. At eight and eighteen months two participants, one from each group satisfied the DSMIIIR criteria for chronic PTSD. A further six individuals (two debriefed, four nondebriefed) no longer satisfied the criteria for PTSD but had done

acutely. At eight months 25% of the debriefed group had partial PTSD compared with 27% of the non-debriefed group. At 18 months 24% of the debriefed group and 17% of the controls had partial PTSD. Further analysis revealed that the debriefed officers were significantly more likely to have hyperarousal symptoms at 18 months. The authors acknowledged that the low rate of PTSD may have resulted in a Type 1 error having been made. This study also suffered from absence of randomisation, lack of pre or peri-debriefing data collection and absence over control of the PD procedures although these were said to be provided by well trained and experienced facilitators.

Table 3.2 - Summary of Studies of Psychological Debriefing with a Comparison Group

Authors (Year)	Target Population	Time post-trauma	Length of Session (mins)	Dependent Measure	Types of Control & Treatment Groups	Completer Sample Size (n)	Result	Follow-up Period
McFarlane (1988)	Firefighters	"shortly after"	n.s.	IES GHQ	Standard Care PD	n.s. n.s.	More acute PTSR, less delayed PTSR	4 months 8 months
Hyton & Hasle (1989)	Firefighters	soon after	n.s.	IES	Standard care PD	n.s.	No effect on outcome	2 weeks
Deahl et al (1994)	Gulf War Dead Body Handling	Variable	Unknown	IES	Standard Care Dyregrov GPD	20 40	No overall effect	9 months
Jenkins (1996)	Emergency service personnel	< 24 hours	n.s.	SCL-90	Standard Care Group CISD	14 15	Less depression and anxiety	One month
Kenardy et al (1996)	Emergency Workers	n.s.	n.s.	GHQ-12 IES	Standard care PD	195	No effect overall	2 years
Chemtob et al (1997)	Hurricane	6-9 Months	5 hours	IES	Pre Treatment Post GPD/Ed'n	25 25	Improvement	 3 months
Carlier et al (1998)	Airplane Crash	"as soon as possible"	n.s.	DSMIIIR PTSD	Standard Care Group PD	59 46	No effect at 8 months, worse at 18 months	8 months 18 months

IPD = Individual Psychological Debriefing
GPD = Group Psychological Debriefing
IES = Impact of Event Scale
SCL-90 = Symptom Checklist
MVA = Motor Vehicle Accident
GHQ = General Health Questionnaire
PTSR = Post-traumatic Stress Reaction

3.2.3 - Evidence from Studies with no Comparison Group

The final group of data containing studies lack any control or comparison group and are therefore the least satisfactory in their methodology. It is impossible to determine if any changes are secondary to the debriefing, the passage of time or other factors.

(i) Sloan (1988) - Sloan studied 30 of 39 male survivors of a non-fatal plane crash. Participants completed questionnaires at a variety of time points between 12 days and one year after the crash. They were also interviewed individually between two and eight weeks after the crash to gather information regarding their psychological response, discuss their experience and receive a debriefing although the nature of this was not described. The intensity of participants' symptoms decreased rapidly over the first eight weeks after the crash and then more slowly. The mean IES for the 12 individuals who completed it at all time points reduced from 30.3 (sd = 11.0) initially to 14.3 (sd = 9.3) at two months and 13.7 (sd = 13.6) at one year. The main purpose of this study was not to determine the effectiveness of a debriefing and several participants received further support from the researcher during the study.

(ii) Flannery et al (1991) - Flannery et al described the debriefing of psychiatric staff members who had been assaulted by patients. Debriefings occurred immediately after the incident and were followed up by further contact at three and ten days. Over the ninety day study period there were 67 assaults and debriefing was offered to the victims of 62 of these. Five victims refused to participate. Sixty-nine percent were reported as "regaining a sense of control" within ten days and only seven required further support which was offered in the form of a group. The same authors have reported that violence and attacks from patients within a psychiatric setting were reduced by 63% over a two year period along with reductions in medical and legal expenses following the introduction of a CISM programme (Flannery et al, 1998).

(iii) Searle and Bisson (1992) - Searle and Bisson described eight soldiers from the British Army who were involved in an incident during the Gulf War which resulted in the deaths of nine of their colleagues and minor physical injuries to themselves. Group

PDs using the Dyregrov model were held between five and 11 days after the traumatic event. Two soldiers attended two PDs, the other six attended one PD. The mean IES score was 30.1 (sd = 12.5) five days post-trauma and 26.8 (sd = 13.7) five weeks post-trauma. Six individuals satisfied the DSM-III-R criteria for PTSD at five weeks and five of them required prolonged treatment before their symptoms improved.

(iv) Alexander and Wells (1991) and Alexander (1993) - Alexander and Wells studied 35 Grampian police officers who searched the Piper Alpha oil platform after it was raised. Their duties included the retrieval and identification of human remains. Most were free from evidence of psychological morbidity at three month and three year follow-up and Alexander argued that organisational and managerial practices appeared to be powerful antidotes to adverse post-traumatic stress reactions. The officers received regular "debriefing" sessions during their active service which they reported as being useful.

(v) Robinson and Mitchell (1993) - Robinson and Mitchell assessed the efficacy of PD amongst 172 emergency workers in Australia. Sixty percent completed questionnaires two weeks after the PD: overall the respondents found the PD to be of "considerable value" and the majority believed it had helped to reduce their stress related symptoms. Very few criticisms were voiced although some participants complained that it was "too political" and gave them a sense of "lack of control".

(vi) Stallard and Law (1993) - Stallard and Law studied seven adolescents (six female, one male, mean age 15.6 years (sd 0.5 years)) who had been involved, along with two other pupils and a teacher, in a traumatic mini-bus accident in which they sustained minor physical injuries. A two session group PD took place over two weeks six months after the accident. Five subjects completed questionnaires before and three months after the debriefing sessions. There were significant reductions in IES scores, anxiety and depression scores as measured on the Birleson Depression Inventory (Birleson 1981) and the Revised Children's Manifest Anxiety Scale (Reynolds & Richmond 1978). The change in the IES score was accounted for by a marked reduction of the intrusion subscale. In contrast, the avoidance scale of the IES had increased slightly. In addition

to the absence of a control group, the low sample size, incomplete follow-up and the fact that the PD was over two sessions six months after the accident makes interpretation and comparison with other studies difficult.

(vii) Western Management Consultants (1996) - Everly, Flannery and Mitchell (1998) cited a report from the Western Management Consultants in Canada who reported positively about a comprehensive CISM programme for nurses. Twenty four percent of those involved in a PD reported a decline in personnel turnover and 99% reported a decline in sick leave days.

Table 3.3 - Summary of Studies of Psychological Debriefing with no Comparison Group Included

Authors (Year)	Target Population	Time post-trauma	Length of Session (mins)	Dependent Measure	Intervention	Completers (n)	Outcome	Follow-up Period
Sloan (1988)	Non-fatal plane crash survivors	2-8 weeks	n.s.	IES	Debriefing	12	Symptoms reduced	12 months
Flannery et al (1991)	Psychiatric staff assaulted by patients	immediate	n.s.	n.s.	Debriefing	62	Felt beneficial	10 days
Searle & Bisson (1992)	Soldiers in Gulf War	5 days	120	IES	Group PD	8	High rate PTSD	5 weeks
Alexander & Wells (1991 and 1993)	Police Officers involved with Piper Alpha	daily	n.s.	HADS IES	Group PD	35	Low scores on HADS and IES	3 months
Robinson & Mitchell (1993)	Emergency workers	soon after	n.s.	Q'aire	Group PD	103	"considerable value"	2 weeks
Stallard & Law (1993)	Minibus Accident	4 months	2 Sessions of 3 hours each	IES	Pre Treatment Post Group PD	5 5	Reduced IES, anxiety and dep'n	3 months
Western Management Consultants (1996)	Nurses	n.s.	n.s.	n.s.	n.s.	n.s.	Reduced sick leave and turnover	n.s.

PD = Psychological Debriefing n.s. = Not Stated IES = Impact of Event Scale

3.3 Effectiveness of other one-off Psychological Interventions

Several studies have considered single session psychological interventions that have not been labelled as psychological debriefing but have much in common with PD. I have, therefore, decided to include randomised controlled trials of single session interventions administered soon after a traumatic event that focused on what happened during the traumatic event and discussed emotional reactions.

(i) Bordow and Porritt (1979) - Bordow and Porritt described a study of 70 males who had been inpatients on a trauma ward in Australia for at least one week as a result of involvement in a road traffic accident. The first thirty consecutive subjects were considered "delayed controls", received no intervention and were contacted for interview three to four months post-trauma. The other forty were assessed immediately and either contacted three months later with no further intervention or randomly allocated to a social worker intervention which lasted between two and ten hours. The immediate assessment was described as 'a structured interview to review the experience of injury and hospitalisation and the subject's emotional reactions to these'.

At three to four month follow-up Bordow and Porritt found that the more prolonged input group fared better than the immediate assessment group who fared better than the no assessment group. They argued that their results supported the notion that brief early interventions could help reduce psychological sequelae following trauma and that some individuals needed more than just a single intervention. The immediate assessment did not equate exactly to a PD as described above but it did have much in common. However, there are several problems with the study. It is not clear why only ten individuals received a one-off intervention. In addition the measures used were administered by the same individuals who administered the interventions. There were no females in the study group and the statistical analysis was on differences between all three groups together as opposed to between individual groups.

(ii) Bunn and Clarke (1979) - Bunn and Clarke studied thirty relatives of seriously ill or injured individuals who had been brought for admission to an emergency ward of a

hospital in Australia. Subjects were randomly allocated to an intervention or control group. The intervention was a thirty minute semi structured counselling session where subjects were encouraged to express their feelings and concerns about the crisis. They described their intervention as 'Supportive, empathetic ... subjects were encouraged to express their feelings and concerns about the crisis. Information about the injury or illness and its prognosis was provided'. Individuals were reviewed immediately after the intervention and the control group were reviewed twenty minutes after their original recruitment.

The results revealed a reduced level of anxiety in the counselled group when compared with the non-counselled group using anxiety content analysis scales. Unfortunately this study is seriously flawed. The five minute follow-up is inadequate and the measures used not ideal. It is impossible to determine whether or not there were any long lasting effects of the intervention as there was no longitudinal follow-up.

(iii) Stevens and Adshead (in Hobbs & Adshead, 1996) - Stevens and Adshead described a study of individuals who had presented to an Accident and Emergency department following acute physical trauma. Forty four males and nineteen females were recruited and twenty one were lost to follow-up. Those in the intervention group received a standardised interview within twenty four hours of attendance which reviewed the experience and their emotions. Although not adhering to a specific PD technique it contained several components of those described above. Individuals were reassessed one week, one month and three months post attendance.

There was no significant difference between those patients who were counselled and those who were not in terms of IES score, Beck Depression Inventory (BDI) (Beck et al, 1961) score, Spielberger Self Evaluation Questionnaire (SEQ) (Spielberger, 1981) score or development of PTSD except for those showing high initial SEQt and BDI scores who did better if in the counselled group. Two thirds said that they found the intervention useful and one third stated that they did not. Reasons given by this latter group for finding the counselling unhelpful were that they felt it had been offered too early, or that personally they felt they had not needed it. A major flaw in this study is

the fact that those individuals who displayed significant emotional responses during the counselling session were excluded from follow-up. This may have caused significant bias probably resulting in the intervention appearing more effective than it was.

Table 3.4 - Summary of Randomised Controlled Trials of other one-off Psychological Interventions

Authors (Year)	Target Population	Time post-trauma	Length of Session (mins)	Dependent Measure	Types of Control & Treatment Groups	Completers Sample Size (n)	Outcome	Follow-up Period
Bunn & Clarke (1979)	Relatives of seriously ill/injured	<12 hours	20	Anxiety content analysis scales	Standard care Individual Counselling	15 15	Intervention group fared better	5 minutes
Bordow & Porritt (1979)	MVA victims	< 1 week	60	8 Scales include Anxiety & Affect	Standard care Immediate Review 3 month SW input	30 10 30	SW input fared best followed by immediate review	3-4 months
Stevens & Adshead (1996)	MVA, Assault or Dog Bite	<24 hours	60	IES, BDI, SEQ	Standard Care Individual Counselling	? (Total of 42 completers)	No significant difference	1 week, 1 & 3 months

MVA = Motor Vehicle Accident

IES = Impact of Event Scale

BDI = Beck Depression Inventory

SEQ = Spielberger Self Evaluation Questionnaire

3.4 - Effectiveness of more complex early Psychological Interventions

There have been two randomised controlled trials published of more complex early psychological interventions designed to prevent the development of psychological sequelae following traumatic events. To complete this review of the literature it seemed appropriate to include these trials.

(i) Brom, Kleber and Hofman (1993) - Brom and his colleagues studied 151 motor vehicle accident victims in the Netherlands. Individuals were randomly allocated to a three to five session intervention that stressed the importance of practical help and information, support, reality testing, confrontation with the experience, early recognition of disorders, and referral to psychotherapeutic treatment. The intervention occurred between one and three months following the accident. The subjects in the intervention group were reported to have appreciated the intervention but there were no statistically significant differences in outcome between the two groups. Ten percent of both groups were suffering from PTSD at six month follow-up

(ii) Bryant, Harvey, Basten, Dang and Sackville (1998) - Bryant and his colleagues considered 24 individuals who satisfied the criteria for a diagnosis of acute stress disorder, a common precursor of PTSD, within two weeks of a road traffic accident or industrial accident. They found that five ninety minute sessions of cognitive behavioural therapy (CBT) was more effective than five ninety minute sessions of supportive counselling (SC) in reducing psychological distress and preventing the development of PTSD. One (8%) of the CBT group satisfied PTSD criteria immediately post intervention compared to ten (83%) of the SC group ($p < 0.001$). Two (17%) of the CBT group satisfied PTSD criteria at six months compared to eight (67%) of the SC group ($p < 0.05$).

Table 3.5 - Summary of Randomised Controlled Trials of more complex early Psychological Interventions

Authors (Year)	Target Population	Time post-trauma	Length of Sessions (mins)	Dependent Measure	Types of Control & Treatment Groups	Completers Sample Size (n)	Outcome	Follow-up Period
Brom et al (1993)	MVA victims	1 month	3 -5 x 60	PTSD	Standard Care Education/CBT	83 68	No significant difference	6 months
Bryant et al (1998)	MVA and Industrial Accident victims	2 weeks	5 x 90	PTSD	Supportive Counselling CBT	12 12	CBT group fared better	Post intervention and 6 months

MVA = Motor Vehicle Accident CBT = Cognitive Behavioural Therapy

3.5 - Summary and Conclusions

Psychological Debriefing has been widely advocated for routine use shortly after major traumatic events. The studies identified in this review vary greatly in their quality but overall the quality of the studies including the randomised controlled trials is poor. Common methodological shortcomings include absence of randomisation, absence of control group, absence of blindness at review (i.e.raters at follow-up not being blind to original treatment conditions), small sample size, varying degrees of trauma, other confounding variables ignored, low response rates, sampling bias, lack of uniformity of intervention, timing variance and questionnaire data as opposed to validated interview data.

Green et al (1983) have argued that it is very difficult to compare one disaster with another due to the individuality of each. They suggested routine measurement of the dimensions of a traumatic event such as number of deaths and degree of life threat. Unfortunately standard measures of the dimensions of the trauma were rarely recorded in the studies described in this chapter and comparisons were often made between relatively minor traumatic events and major ones. In addition to the dimensions of a traumatic event other factors known to influence psychological outcome must be considered. These include past psychiatric history, coping mechanisms and the presence of an acute stress reaction. The true effectiveness of PD can only be assessed in well controlled studies taking such factors into account.

Another common problem in the quoted studies is sample bias in that the response rates were frequently very low. Lindy, Grace and Green (1981) described the "trauma membrane" which needs to be penetrated. This is the social system who, if they are not convinced of the benefits of psychological interventions, are unlikely to sanction "experimentation" with their loved ones. In their outreach programme following the Beverly Hills Supper Club fire only 5% of those involved "engaged" despite extensive publicity and personal invitations to attend.

This review provides little evidence that early PD prevents psychopathology following trauma but appears to confirm that it is well received overall by participants. Some negative outcomes were found but overall PD appeared to make no difference to later psychological outcome when the studies were considered collectively. It can be concluded that the absence of rigorous research in the area of PD is disappointing and it is essential that efforts are made to determine what, if anything, should be offered to individuals following traumatic events. The most promising finding was that of Bryant et al (1998) for five ninety minute sessions of cognitive behavioural therapy for acute stress disorder sufferers. However this study had a small sample size and needs replication. Methodologically sound randomised controlled trials of PD and other early interventions in a variety of settings are required.

I was particularly disappointed at the lack of research in this area and the absence of an empirical basis for the widespread advocation and use of PD. It appeared that PD represented an intervention that was being marketed without a sound evidence base and adopted by a variety of organisiations presumably because it seemed an attractive, simple and effective technique to employ. This fuelled my desire to carry out a randomised controlled trial of PD to evaluate its effectiveness.

Chapter 4 - The Nature and Prevalence of Psychological Reactions Following Burn Trauma

4.1 - The Prevalence of Burn Trauma

Burn trauma is a significant cause of mortality and morbidity. In 1997 211 males and 125 females died as a direct result of burn trauma in England and Wales (Office of National Statistics, 1998). Frank et al (1987) estimated that 731,000 emergency room visits and 60,900 hospital admissions occurred annually as a result of burn trauma in the USA. Wilkinson (1998) obtained data from six of the nine Accident and Emergency departments (AED) that served a UK population of 2.6 million. There were 3,013 attendances as a result of burn trauma over a one year period representing one percent of the total AED workload.

4.2 - Summary of Literature Regarding Psychological Reactions Following Burn Trauma

It is no surprise that burn trauma can result in psychological distress. The burn trauma victim has many issues to contend with. Stressors often include the burn injury itself, pain, hospitalisation, reduced functioning and permanent scarring. In addition the burn injury has often been sustained as a result of involvement in a frightening psychologically traumatic event. Individuals who sustain burn trauma also appear more likely to have pre-existing mental health difficulties than the general population (e.g. Patterson et al, 1993). Given the nature of this thesis this chapter will focus on research that has considered psychological reactions that appear to have been precipitated by burn trauma rather than on research concerned with pre-existing psychopathology.

Several authors and researchers have considered the psychological impact of burn trauma. The earliest studies were mainly descriptive in nature. Overall, the

methodology employed has improved over time. The most recent studies have used well validated measures to determine the presence of psychological sequelae although, like the older studies, unfortunately have relatively small sample sizes. The rest of this chapter will consider the studies in chronological order identified through a review of the MEDLINE and PSYCHLIT computerised databases and a search of potentially relevant references. Tables 4.1 and 4.2 summarise the results and the methodological strengths and weaknesses of the studies respectively.

(i) Adler (1943) - Adler studied survivors of the Boston Cocoanut Grove nightclub fire in which 491 people died in November 1942. The study considered the 131 patients who were admitted to Boston City Hospital as a result of physical injuries sustained at the fire with a follow-up period of eleven months. Once the fire began individuals rushed for the exits, several fell to the ground, others described choking and losing consciousness presumably as a result of lack of oxygen. The injuries sustained included burn injuries and crush injuries from being trampled in the rush to escape. Fifty-four (41%) received what was described as a systematic neuropsychiatric examination in hospital. Thirty-six (27%) individuals died in hospital and three (2%) died following discharge. Following discharge, 46 individuals were interviewed for the study, a further 20 answered and returned questionnaires but were not interviewed. There was no psychiatric data available for 21 of the original sample, the majority of whom were said to have been discharged from hospital within 11 days and to have sustained relatively minor physical injuries.

Twenty-five (54%) individuals were found to be suffering from psychiatric complications and one from a brain lesion at three months. They were described as suffering from either "general nervousness" (n = 11) with irritability, fatigue and insomnia or from "anxiety neuroses" (n = 14) characterised by fears and anxiety they were unable to control. After nine months thirteen (28%) of the sample continued to display psychiatric complications, four were labelled as suffering from general nervousness, nine from anxiety neuroses and one a brain lesion. Nine (64%) of the fourteen with anxiety neuroses had hardly improved at nine months. Nightmares which involved reliving scenes of the disaster in a more or less realistic manner were described

in fifteen (33%) individuals during their hospital stay and in ten (22%) individuals after their discharge. Of the 20 survivors who completed a questionnaire nine (45%) described adverse psychological consequences which were not fully described in the paper.

Adler's paper is widely considered seminal in terms of a description of the psychological consequences following a major burn trauma. Despite not using validated instruments it would appear that Adler attempted to standardise the neuropsychiatric assessments and took care to report the known outcome of all 131 admitted patients. Unfortunately it is not clear from the paper exactly how many individuals sustained burn trauma as some individuals were noted to have sustained crush injuries only. This along with the extremely traumatic nature of the fire make it difficult to compare the results of this paper with studies considering consecutive admissions to a burn trauma unit, where the majority of injuries will have been sustained in traumatic events of a lesser magnitude.

(ii) Hamburg, Hamburg and deGoza (1953) - Hamburg et al considered 10 servicemen and two wives of servicemen who had sustained severe burn injury. Detailed interviews were performed by a psychiatrist on an average of seven occasions. Other information was obtained from Social Worker interviews and relatives. This was a qualitative study and Hamburg et al described the general distress and specific difficulties/issues encountered by the patients rather than specific psychiatric symptoms or disorders. Initial problems included the fear of not surviving and of how long their suffering would continue. Distress was noted to arise from being away from home, blaming someone else for what happened and in two individuals as a result of self-recrimination. Eight (67%) individuals were very concerned about permanent impairment of functioning. Other significant issues were described as "threat to the capacity to be loved by others", dependence on others, sexual problems in three and feelings of inadequacy in four. Unfortunately there was no standardised interview procedure in this study but it is recognised as one of the earliest attempts to consider the psychological impact of burn trauma in some detail.

(iii) Andraeson, Norris and Hartford (1971) - Andraeson et al studied nine women and eleven men aged between 18 and 60 who had sustained burns of greater than 20% total body surface area (TBSA) one to five years previously and had no major psychiatric history. Fifty potential subjects who satisfied the inclusion criteria were identified from the records of all patients admitted to the University of Iowa Burn Unit over a four year period. Thirty-three (66%) were selected to be contacted. The selection process was biased towards individuals with larger burns, who had suffered greater trauma, more significant deformity or facial burns and were in the 20 to 40 age group as it was felt that more would be learned from this group. Thirteen (39%) of the 33 were not interviewed as a result of being lost to contact, refusing to attend or not attending. Mean percentage burn was 37.0% (sd 20.6%), mean age was 34.1 years (sd 11.2 years), the mean length of time since the burn was 2.3 years (sd 1.3 years) and the mean initial inpatient stay was 79.2 days (sd 65.9 days). Patients made several returns for reconstructive surgery after their initial admission.

Six (30%) patients were found to have a significant emotional problem secondary to their burn trauma, four (20%) were classed as mild and two (10%) as moderate. Traumatic neurosis was the commonest diagnosis, given to four (20%) individuals followed by "mild depression" which was given to three (15%). One patient was diagnosed as suffering from "castration anxiety" after a perineal burn.

Andraeson and her colleagues noted that most individuals were functioning at pre-injury levels and concluded that the psychological problems encountered were relatively minor and had a good prognosis. However, their finding that six (30%) individuals were believed to have significant emotional difficulties over two years after their burn injury seems to challenge this conclusion. The relatively low incidence and mild severity of the psychological problems described may be related to the authors' definition of a "significant emotional problem" which required "serious handicap" in one of the four key areas of functioning - capacity to work, to enjoy self in recreation, to relate lovingly and productively within his family and to interact comfortably with other people. Many of the other studies considered did not require such functional impairment before considering an emotional problem to be significant. This makes comparison difficult.

(iv) Chang and Herzog (1976) - Chang and Herzog studied 51 burn trauma victims who had been treated at the University of Utah Medical Centre between 1970 and 1974. They were either interviewed or completed a questionnaire regarding their injury, pre-burn and post-burn functioning. Thirty-seven males and 14 females were included, aged between one and 88 years. The mean size of burn was 31.2%, 29 (57%) had burns involving either their face or hands. The mean duration of follow-up was 25.6 (sd 12.4) months post burn with a mean initial hospitalisation of 38.7 (34.0) days. There was no description of how the 51 were selected. Thirty-four (79%) of the 43 patients working or at school when they sustained their burn trauma had returned at the time of the study. The mean time off work was 6 months. Twenty-two (96%) of the 23 at work had returned but 10 (43%) required a change in their jobs.

Patients were asked to rate whether they were more depressed after the burn injury than they had been before it. Twenty-four (83%) of the 29 with hands/face burns described increased depression and five (17%) no change, 14 (64%) of the 22 without hand/face burns described increased depression and eight (36%) no change. The authors considered that psychological difficulties started at various times during the hospital stay and extended for approximately one year post-burn. They were considered to usually be related to awareness of disfigurement, duration of hospitalisation and chronicity of pain. The major adjustment appeared to occur following discharge with withdrawal, seclusion and shyness. The majority of patients reported a reduction in depression at approximately one year and were able to resume their pre-burn social activities.

This paper is difficult to interpret due to the absence of validated measures or any measure of the actual magnitude of the increases in depression reported.

(v) Mlott, Lira and Miller (1977) - Mlott et al administered the Minnesota multiphasic personality inventory (MMPI) three days after admission and 11 to 12 months post discharge to 25 burn trauma patients in South Carolina who had TBSA burns ranging between 25 and 30%. The composite MMPI profiles were "normal" at both time points but there was a decrease in depression and an increase in emotional lability and social

responsiveness over time. The authors commented that their results did not indicate "remarkable signs" of emotional trauma. The MMPI is difficult to compare with other outcome measures but has been validated in a variety of different populations.

(vi) Bowden et al (1980) - Bowden et al studied what they described as a representative sample of 569 patients treated at the university of Michigan burn centre in the USA between 1956 and 1976. Four hundred and sixty-one (81%) individuals were invited to participate in the study (those greater than 10 years old at the time the sample was identified). Three hundred and twenty (69%) of these were interviewed, the data of 314 (68%) were analysed. When compared with the 1,511 non interviewed burn centre patients those included in the study were slightly more likely to be white (94% versus 88%) and to have larger burns (mean 23% versus 19%). The mean age was 29 years, the mean TBSA burn was 23%, the mean inpatient stay was 46 days and 24% of the sample were female. Thirteen percent were diagnosed as alcoholic before the burn. A specially developed questionnaire was completed during the interviews to determine level of self-esteem.

Forty-seven (15%) individuals were classified as not having adequate self-esteem. Depression was not measured specifically in the study but fifty-six individuals indicated that they had wished themselves dead during treatment compared with 196 who had not. The 56 had significantly lower self esteem. This study has the benefit of a good sample size and a detailed interview but unfortunately did not measure specific psychological symptoms such as anxiety or depression making it difficult to accurately estimate the true prevalence of psychological sequelae or to compare the results with other studies. It is also impossible to determine whether the low self esteem detected was a consequence of the burn trauma or was pre-existing.

(vii) White (1982) - White studied 142 consecutive patients with burn injuries admitted to Birmingham Accident Hospital between May 1975 and May 1976. Those who lived within Birmingham and its close environs were interviewed and completed a questionnaire adapted from the General Health Questionnaire one year after the burn trauma. Ninety-three (65%) were male and 49 (35%) were female. All of the women

sustained their burns in non-industrial accidents whereas only 34 (37%) of the men did. No information was given regarding age of the sample. Eighty-six (61%) patients lived within the area for follow-up and 76 (88.4%) of these were traced, interviewed and "clinically rated" with regards to psychological sequelae. Twenty-four (35%) were felt to have none, seventeen (25%) mild sequelae, 13 (19%) moderate sequelae, 10 (15%) marked sequelae and 5 (7%) severe sequelae. The clinical presentations were of depression and anxiety states. Panic was described in 19 (25%), irritability in 22 (29%) and unhappiness or depression in 28 (37%). White did not describe the TBSA percentage burn and did not use validated criteria to determine psychological outcome. However strengths of this study were that he managed to follow-up the majority of the targeted sample and appeared to have interviewed them in some detail.

(viii) Green et al (1983) - Green et al studied psychological reactions to the Beverly Hills Supper Club Fire in May 1977. One hundred and sixty-five individuals died of burns or smoke inhalation and many of the remainder of the 2000 or more people present were injured. The subjects were recruited through "an extensive outreach effort" which involved describing the clinical work at the "fire aftermath centre", the possible psychological consequences of the fire and the research programme to determine the longer term effects of the fire. The public were targeted through articles on the radio, television and in newspapers. Five hundred individuals were contacted to take part in the study and were subsequently asked to telephone the centre (to demonstrate motivation) before being entered into the study. One hundred and forty (29%) were interviewed one year later (89 women and 58 men).

Psychological sequelae were determined by using the Psychiatric Evaluation Form (PEF) and the revised version of the symptom checklist. Participants were separated into those present at the fire (117) and those not (23 relatives and seven rescue workers). The mean injury rating of those at the fire was 1.36 (sd 0.66) on a scale where 1 represented no injury, 2 represented slight injury and 3 represented more severe injury (broken bones, smoke inhalation etcetera). No mention was made of how many sustained a burn injury. The mean subjective level of stress of those at the fire was 6.3 (sd 5.2) on a 1 to 10 scale, the PEF overall severity scale mean score was 2.09 (sd 1.17)

and the SCL-90 Global Severity Index mean score was 0.7 (sd 0.65). Anxiety was more prominent than depression. Forty-one percent of individuals were rated as "none" on the PEF overall severity scale, 28% as minimal, 18% as mild, nine percent as moderate, three percent as severe and one percent as extreme. (There were no differences in outcome between males and females at one year). Subjectively increased stress was reported over the year. At two years only 88 (60%) returned for interview. The dropouts had fared slightly worse at one year than those who returned for interview. The PEF at two years was 1.72 (sd = 0.97) versus 1.91 (sd = 1.08) at one year and the GSI was 0.56 (sd = 0.50) at two years versus 0.54 (sd = 0.47) at one year revealing little change in symptomatology between one and two years.

Several factors make this study difficult to interpret. The sample represented less than ten percent of individuals involved in the fire and less than 30% of the 500 contacted. The selection procedure was probably biased towards individuals more likely to have experienced psychological sequelae because they were volunteers responding to adverts that included the opportunity to receive help. This, like the study of Adler represents a study of a major traumatic event and it is difficult to compare the results with studies of burn injuries sustained in less traumatic events. It is also difficult to determine the impact of burn trauma as this was not focused on in the paper and it was not clear how many individuals actually suffered burn injury.

(ix) Blank and Perry (1984) - Blank and Perry screened 189 adult burn trauma inpatients during two six month periods. If delirium occurred then two weeks after a clear sensorium the Brief Psychiatric Rating Scale and the depression and anxiety subscales of the SCL-90 were administered. The impact of event scale was administered four weeks after the burn injury. Thirty-four (18%) (28 male and 6 female) fulfilled the DSMIII criteria for a diagnosis of delirium. Seven (28%) of the 25 survivors had severe psychological symptoms - either depression or post-traumatic stress disorder. Although generalisability is limited by inclusion of only individuals with a delirium this study has used well validated instruments to systematically assess individuals for psychological symptoms.

(x) Khoosal et al (1987) - Khoosal et al studied five of the most severely injured victims of the 1985 Bradford football stadium fire. Fifty-three spectators died and approximately 250 suffered burn trauma. The seven individuals with greater than 13% TBSA burns were initially included but unfortunately one died and another one withdrew consent for reasons that were not described. All five individuals experienced psychological distress with a mixture of anxiety and depression symptoms as measured by the Irritability, Depression and Anxiety Scale, the Spielberger state-trait anxiety inventory, the Beck depression inventory and the General Health Questionnaire. At twelve months two individuals continued to score in the morbid range on questionnaires and were clinically assessed as suffering from anxiety although it appeared that the authors considered these symptoms, in part at least to be explicable by preoccupation with compensation. Twelve months after the disaster neither depression nor anxiety were found to be present clinically although two individuals continued to score positively on the General Health Questionnaire. Given the small sample size it is very difficult to draw any conclusions from this paper and the reported absence of significant anxiety or depression at one year is at odds with most other research and debatable given the questionnaire scores.

(xi) Perry et al (1987) - Perry et al considered the records of adult burn trauma patients who had taken part in analgesic studies and were also interviewed using the Structured Clinical Interview for DSMIII to determine the presence or absence of PTSD. One hundred and four (78%) of the 134 who entered the analgesic studies had complete data and were therefore included. Forty-three (41%) of these patients had PTSD. It was noted that their subjective rating of pain was greater than those without PTSD although the authors acknowledged that it was unknown whether the presence of PTSD increased pain perception or vice-versa. Strengths of the study included assessment with a structured interview and a reasonable sample size although the authors acknowledged some shortcomings including the presence of delirium in many of the subjects studied. In addition the assessment took place very soon after the burn trauma at a mean of 9.4 days (sd = 3.1) as part of a study on analgesia as opposed to a study designed to determine the prevalence of PTSD.

(xii) Blumenfield and Reddish (1987) - Blumenfield and Reddish studied 68 hospitalised patients between 1981 and 1984 shortly after they had sustained a "mild to moderate" burn. Exclusion criteria included pre-existing psychopathology, substance abuse or medical illness, absence of adequate social and economic support and hospitalisation of less than one week. Mean TBSA burn was approximately 9.5%. In theory this was a group of individuals with low vulnerability to the development of psychiatric disorder before their burn trauma. Sixteen (24%) of the 68 had been unable to resume social or occupational functioning, and were impaired by psychological symptoms. They were labelled by the authors as the "small burn big problem" (SBBP) group. Prolonged sleeping difficulties during inpatient stay were found in 14 (87%) of the SBBP group compared with one (2%) of the 52 (76%) patients who did not report significant functional impairment. Phobic reactions to reminders were much higher in the SBBP group and the authors felt that their sense of invulnerability had been challenged. Unfortunately the authors did not include any formal measures of psychopathology and did not state the exact time when assessments occurred although it is apparent that these were soon after the burn trauma as they occurred before discharge and mean inpatient stay was 18 days.

(xiii) Tucker (1987) - Tucker studied 31 burn trauma victims who had been treated at a burns unit in Australia. Twenty-two were interviewed shortly before their discharge from hospital and nine were interviewed as outpatients. The mean time since the burn was six weeks for the pre-discharge group and 53 weeks for the outpatient group, the mean TBSA burn was 33% for the pre-discharge group and 31% for the outpatient group, the mean age of the group was 46 years for the pre-discharge group and 39 years for the outpatient group and 13 (59%) of the pre-discharge group and nine (100%) of the outpatient group were male. Five (16%) of the predischarge group described a past psychiatric history, none of the outpatient group did. The mean scores on the psychological measures used were 37 for the pre-discharge group and 29 for the outpatient group on the Spielberger state anxiety scale and 13 for the pre-discharge group and eight for the outpatient group on the centre for epidemiological studies depression scale. Four (19%) of the pre-discharge group and three (33%) of the outpatient group satisfied the criteria for a diagnosis of PTSD using the diagnostic

interview schedule for PTSD. This study used well validated psychological measures although it is impossible to draw conclusions from a comparison of the two groups given the absence of earlier measures in the outpatient group. The small sample sizes also make interpretation difficult.

(xiv) Ward et al (1987) - Ward et al studied 193 of the 887 adult burn trauma victims treated at a burn unit in California between 1973 and 1979. They included all victims with TBSA burns of 30% or more and a random sample of victims with smaller burns. One hundred and thirty-nine (72%) of the sample were located and interviewed. The mean age was 37.8 (sd 15.9) years, the mean TBSA burn was 17.4% (sd 17.6%) and 27 (36%) were female. The mean time since burn trauma was not given but 31 (22%) were interviewed less than two years after the burn trauma, 65 (47%) between two and four years after and 43 (31%) more than four years after. The Beck depression inventory was used as the psychological outcome measure. One hundred and eight individuals (77.7%) scored below a cut-off of ten and were considered not depressed, 13 (9.4%) scored between 10 and 14 and were considered to be mildly depressed and 18 (12.9%) scored over 14 and were considered to be moderately to severely depressed. This study considered one of the largest samples and used a well validated questionnaire but only measured depression.

(xv) Sheffield et al (1988) - Sheffield et al studied 212 patients admitted to a burn clinic in Minnesota, USA between 1977 and 1982. Mean inpatient stay was 22 days (range 0 to 193 days), the mean TBSA burn was not stated but the median was 10%, 91 sustained burns less than 10% and 121 greater than 10%. Outcome variables were administered at a mean of 246 days post discharge from hospital (range 0 to 1,980 days). The main psychological outcome variables were the impact of event scale and the quality of life index. Mean scores on these variables were 12.3 and 9.3 respectively (further details were not documented) which the authors considered to be within "normal limits". Twenty-one (10%) patients were referred for a psychiatric opinion and 14 (7%) received psychotherapy as a result but no further details were given. Despite the good sample size the results of this study are difficult to interpret given the limited information available regarding psychological outcome.

(xvi) Wallace and Lees (1988) - Wallace and Lees interviewed consecutive discharges from Birmingham Accident Hospital's burns unit in the six weeks from 1 November 1985 and interviewed them again six months later. A second sample was selected if they were discharged in the six weeks from 1 January 1984. A total of 99 patients were identified. Three were excluded due to poor comprehension of English or early dementia and they followed up just over three quarters of "all adults available" which was 16 adults at discharge and six months and 15 two years after discharge. The missing patients were not adequately accounted for in the paper. The TBSA burn was low in this study with a mean of 6.6% (range 0-31%) for the discharge and six month group and 7.4% (range 0-46%) for the two year group. Average inpatient stay was 26.3 days (range 2-223 days) and 8.4 days (range 1-35 days) respectively.

The Hospital Anxiety and Depression Scale was used to measure psychological symptoms. On the depression subscale 2 (12.5%) reached caseness (>12) at discharge, three (18.7%) at six months and three (20%) at two years. On the anxiety subscale five (31.25%) reached caseness at discharge, three (18.7%) at six months and four (26.6%) at two years. They reported psychiatric "caseness" in 31% at discharge, 38% at six months and 40% at two years. Using the Psychological Adjustment to Illness Scale six (40%) patients were identified as being psychologically distressed at six months and five (35.7%) at two years. This study considers a small sample and it is difficult to determine whether the sample is representative of the population under consideration as a whole. It is also inappropriate to directly compare the discharge/six month group with the two year group as they are from different cohorts.

(xvii) Malt and Ugland (1989) - Malt and Ugland reported a follow-up study of 70 adults who had been victims of burn trauma three to 13 years previously in Norway. Sixteen (23%) were experiencing "definite" psychosocial problems.

(xviii) Patterson et al (1990) - Patterson et al described consecutive admissions to a burns unit over a nine month period with a two and a half month hiatus for which no reason was described. Patients included had to be aged between 18 and 65 years old, had to have been an inpatient for at least one week and free from psychosis (except

delirium) or chronic organic brain syndrome. Patients were screened using the DSMIII PTSD criteria and if positive had a diagnostic confirmation through a full assessment by a psychologist. Individuals were then interviewed by phone or in an outpatient clinic post discharge. Sixty-three patients were included but two died, two were "nonassessable" and five had psychiatric disorder that was felt to make their responses unreliable. Therefore the results were based on 54 (86%) patients of the original sample. The average TBSA burn was 18.1%, mean age was 34.8 years, mean hospital stay was 27.5 days (sds not given). Forty-two (78%) were male and 12 (22%) female. Thirty-four (63%) described intrusive, recurrent recollections of the traumatic event and 16 (29.6%) fulfilled the full criteria for post-traumatic stress disorder during their inpatient stay. None did so at discharge. Eleven of the patients diagnosed with PTSD were interviewed for follow-up (median 40 days, range 10 to 280 days), one described a recurrence of PTSD symptoms, the authors commented that he had been involved in a work explosion and that litigation was pending. Unfortunately none of the individuals who did not have PTSD during their admission were followed-up and therefore the true prevalence of PTSD at follow-up could not be stated. The low rate of PTSD at and following discharge is surprising when compared with other research. It is unfortunate that only eleven were followed up and that the timing of the follow up was so diverse.

(xix) Sturgeon, Rosser and Shoenberg (1991) - Sturgeon et al described the case histories of six of the most severely burnt individuals in the Kings Cross London Underground Station fire in 1987. All were diagnosed as suffering from post-traumatic stress disorder at some point with an increase in symptoms noted around the time of anniversaries. Interestingly the mean score on the Impact of Event Scale four months after the disaster (30) was lower than the mean for passengers and bystanders (42). The same applied to mean General Health Questionnaire score (9 versus 12). However, sample bias may have contributed to these findings as the number of passengers and bystanders included was not stated nor was it stated how they were recruited to the study. It is also difficult to compare the results of such a small sample of severely injured individuals as a result of an extremely traumatic event with the results of other burn trauma studies.

(xx) Williams and Griffiths (1991) - Williams and Griffiths studied an unselected consecutive series of 68 inpatients discharged between September 1988 and June 1989 from a burns unit in West Lothian, Scotland. Patients were contacted as near as possible to one year after discharge. Deaths and unavailability of medical records resulted in the exclusion of 13 patients and eight patients were excluded on medical grounds (exact reasons not stated) leaving 47 (69%) who were contacted. Twenty-three (34% of the original sample) agreed to take part. The participating group appeared similar in terms of demographic and burn trauma variables to the non-participating group. They found three (13%) cases of depression using a cut-off point of eight on the HADS depression scale and eight (34.7%) cases of anxiety using a cut-off point of eight on the HADS anxiety scale. Three (13%) individuals were described as cases according to the impact of event scale although the cut-off was not mentioned. They concluded that anxiety was the commonest encountered psychological problem although failed to discuss the possibility that this may reflect shortcomings with the measure used as opposed to true differences. This is another study with a small sample size and a small percentage of those eligible taking part. This makes interpretation difficult.

(xxi) Perry et al (1992) - Perry et al approached consecutive admissions to a burn centre in New York within the first week of their admission. After obtaining consent, the Profile of Mood States (POMS), the Interpersonal Support Evaluation List and the Impact of Event Scale (IES) were administered. Patients were then assessed two, six and twelve months after their burn injury using the Structured Clinical Interview for DSMIIIR (SCID) for PTSD, the IES and POMS by phone or face to face. One hundred and twenty nine patients were assessed within one week of admission but two month follow-up data were only obtained from 51 (40%), six month data from 40 (31%) and twelve month data from 31 (24%) making interpretation of the results difficult given the high drop out rate. The authors stated that two patients who were initially assessed died and 68 could not be located post-discharge leading the authors to comment on a change of address being a common consequence of burn trauma.

Twenty-two (43%) of those followed up were white, 16 (31%) black and 11 (22%) Hispanic. Eight (16%) were unemployed. The completer and non-completer groups

did not show significant differences on demographic or burn related variables. Eighteen (35.3%) satisfied the criteria for PTSD at two months, 16 (40%) at six months and 14 (45.2%) at twelve months. This apparent increase in the prevalence of PTSD over time is difficult to interpret as the sample size reduced over time and the authors did not describe who dropped out. For example if the 18 individuals with PTSD at two months were all followed-up and included in the twelve month results this would represent a decrease in the actual prevalence.

(xxii) Riis et al (1992) - Riis et al studied patients with burns greater than 30% TBSA (range 30% to 85%) who were admitted to a burns unit in Denmark between 1968 and 1980. Twenty-five patients (89% of those still alive) took part in the study which occurred between seven and 21 years after the burn trauma. The participants were interviewed but no standardised measures were used and the results were descriptive. Eleven individuals received psychotropic medication during their inpatient stay, nine as a result of "burn psychosis" which was not defined and two who had pre-existing psychiatric difficulties. Four individuals including the two with pre-existing difficulties received psychotropic medication post discharge. The authors argued that overall their study suggested a "generally optimistic long-term psycho-social prognosis for severely burned persons". The absence of standardised measures in this study makes interpretation extremely difficult.

(xxiii) Roca et al (1992) - Roca et al studied inpatients of at least two days following burn trauma who were not consistently delirious and were approaching discharge. A battery of tests was administered including the SCID, Beck Depression Inventory, the NEO Parsonality Inventory, the Millon Clinical Multiaxial Inventory and the Psychosocial Adjustment to Illness Survey. One hundred and thirty four adults were admitted to the unit, 68 (51%) were excluded and of the remaining 66 (49%), 43 (65%) consented and completed the diagnostic interview. Reasons for exclusion were death in 14 cases, 41 were discharged within 48 hours, ten suffered from persistent delirium, one from severe attention deficit disorder and two from non-delirious psychotic states.

Four months post discharge 29 (67% of the 43) agreed to be reinterviewed with the SCID as did two patients who were not tested at discharge. There were no significant differences found between these and the 14 who did not complete the follow-up in terms of age, sex, education, TBSA burn, length of stay or type of burn. Thirty-five (81.4%) were male and 30 (69.8%) were white. The mean age was 34.7 years (sd 11.8 years), mean length of inpatient stay was 21.6 days (sd 21.9 days). Twelve individuals (27.9%) had at least 25% TBSA burn and 23 (53.5%) individuals had facial involvement. At the time of discharge only three (7.1%) patients suffered from PTSD, another three (7.1%) satisfied all the criteria except the one month duration. At four months seven (22.6%) of the 31 interviewed met the full criteria for PTSD. One had PTSD at discharge, one fulfilled all the criteria except the one month duration criterion and there were five new cases. Many individuals had some symptoms of PTSD without fulfilling the full criteria. The small number of eligible individuals actually followed up raises questions regarding the reliability of the results although a strength of the study is its use of the SCID, a well validated structured clinical interview.

(xxiv) Perez-Jimenez (1993) - Perez-Jimenez described 35 consecutive burn trauma patients without organic mental syndromes, psychotic disorders or learning difficulty who had been hospitalized for at least seven days. At seven days twelve (38.3%) satisfied the DSMIIIR B,C and D criteria for PTSD. At two months six (20%) satisfied the full criteria, one of whom did not satisfy the B,C and D criteria at seven days. This study is also limited by its small numbers and was reported as a letter, full methodological details are, therefore, not given.

(xxv) Fukunishi, Chishima and Anze (1994) - Fukunishi et al studied 15 men and nine women undergoing physical rehabilitation following burn injuries in Japan. Mean TBSA was 28.8% and three quarters had facial disfigurement. Patients were interviewed using the Structured Clinical Interview for DSMIIIR and asked to complete the Toronto Alexithymia Scale (TAS) and the Interpersonal Dependency Inventory (IDI). Mean score on the TAS was 63.1 (sd = 5.8) for patients less than four months post burn and 69.8 (sd = 8.4) for patients greater than ten months post burn. The IDI emotional reliance scores were 18.4 (sd = 3.2) and 14.9 (sd = 6.6) respectively. PTSD

symptoms were common but only one (10%) individual fulfilled the full DSMIIIR criteria in patients less than four months post burn compared to eight (57%) in patients over ten months post burn. The small sample size and wide variation in time post burn trauma are limitations of this study whilst the use of the SCID is a strength.

(xxvi) Powers, Cruse, Daniels and Stevens (1994) - Powers et al studied 39 consecutive survivors of burns who presented to an outpatient clinic at least one month after a burn injury for which they were hospitalised. Individuals were assessed by a liaison psychiatrist during their inpatient admission for pre burn psychiatric disorder (12 (31%) had a DSMIIR diagnosis that had resolved before the burn injury and 16 (41%) had a current DSMIIIR diagnosis at the time of the burn injury). The Structured Clinical Interview for DSMIIIR (SCID) was used to determine the presence of PTSD at a mean of 12 months post burn (range one to 67 months). Mean age of the participants was 40 years, 29 (73%) were male and the mean TBSA burn was 28%. Thirteen (33%) satisfied the DSMIIIR criteria for a current diagnosis of PTSD and two (5%) met the criteria for past PTSD that had resolved by the time of the assessment. An additional 38% met all but one symptom criterion for current or past PTSD. Twenty-four (61%) patients had 37 DSMIIIR diagnoses during their hospitalisation (16 adjustment disorders, eight depressive disorders, three alcohol withdrawal and three psychotic disorder not otherwise specified). The wide range of time since burn trauma at the time of the assessment for the presence of PTSD makes the results of this study difficult to compare with other studies but the use of the SCID is a strength.

(xxvii) Bryant (1996) - Bryant studied 67 patients who had been admitted to a burns unit in Sydney, Australia over a two year period. How these 67 were selected is not clear from the paper. Ten (15%) could not be contacted, 35 (52%) agreed to take part. Thirty-two males and three females took part in the study, the mean age was 33.9 (sd 14.9) and the mean inpatient stay was 27.4 (sd 39.0) days. Fourteen (40%) had facial burns. There were no significant differences between participants and non-participants across these measures. The PTSD interview, the Beck Depression Inventory and the Coping Style Questionnaire were administered 12 months after the burn trauma. Eleven (31%) satisfied the PTSD criteria, ten (29%) had subclinical PTSD (defined as

satisfying criteria for avoidance and arousal symptom clusters without satisfying the full PTSD criteria). This study suffers from its incomplete follow-up but has the advantage of having used well validated measures.

(xxviii) Franulic et al (1996) - Franulic et al studied 25 consecutive admissions to a burns unit in Chile who were over the age of 18 years and resident in Santiago. During their first week of admission the Hamilton anxiety (HAMA) and depression (HAMD) rating scales were administered along with the 28 item version of the General Health Questionnaire (GHQ28). Twenty-three (92%) participants were male, the mean age was 31.9 years (sd not stated, range 20 to 62 years) and the mean TBSA burn was 3.4% (sd 3.2%). Mean scores on the psychological measures employed were relatively low. The mean HAMA score was 8.2 (sd 6.1), the mean HAMD score was 7.0 (sd 5.0) and the mean GHQ28 score was 7.3 (sd 5.6).

(xxix) Difede et al (1997) - Difede et al approached all new admissions to the New York Hospital Regional Burn Centre over a period of two years and interviewed 180 patients within two weeks of their burn injury. There were 133 (74%) males and 47 (26%) females, the mean age was 35.7 (sd 11.5), 74 (41%) were black, 58 (32%) were white and 40 (22%) were Hispanic. Fifty-nine (33%) had a history of alcoholism recorded, 39 (22%) a history of drug abuse and 21 (12%) a history of psychiatric disorder. Mean TBSA burn was 14.9% (sd 11.4%), mean IES avoidance was 12.4 (sd 9.8), IES intrusion was 14.1 (sd 10.5) and POMS 5.29 (sd 5.34). This study like Franulic et al's (1996) is superior to many of the other studies considered because it has included all admissions making the results representative of the whole burn trauma population considered. Unfortunately there was no follow-up reported and the actual number of individuals with difficulties was not stated.

(xxx) Tedstone and Tarrier (1997) - Tedstone and Tarrier recruited patients from two burns units and two outpatient dressing clinics in Manchester and Nottingham who had sustained a burn injury within the preceding two weeks and were aged between 18 and 65. Patients with self-inflicted injury, major psychiatric disorder or who were already in contact with a psychiatrist or psychologist were excluded. Fifty patients were included,

five (10%) failed to return questionnaires at three month follow-up. Of the 45 (90%) remaining, 21 (46.7%) were outpatients and 24 (53.3%) were inpatients. Thirty-three (73.3%) were male and 12 (26.7%) female, mean age was 38.5 years (sd 11.9 years), 39 (86.7%) were employed. The initial interviews occurred between three and 14 days post trauma. Twenty-three (51.1%) had burns on their hands, neck or face.

Questionnaire follow-up occurred by post twelve weeks after the burn. Levels of "caseness" on the questionnaire measures were compared at two weeks and three months. Unfortunately the cut-offs were not cited. Nineteen (22.2%) were HADSA positive at two weeks and at three months, one (2.2%) was HADSD positive at two weeks and six (13.3%) at three months. Seventeen (37.8%) were positive on the IESi and IESa at two weeks and 18 (40%) at three months. One (2.2%) was PTSD positive on the PENN inventory at two weeks and four (8.9%) at three months. They discussed the apparent rise in psychological sequelae at follow-up and the fact that even patients with burns of less than one percent suffered significant psychological sequelae. This study employed well validated measures and achieved a high percentage (90%) follow-up. It was not stated what proportion of the total population under consideration the 50 comprised.

4.3 Summary and Conclusions

The research reviewed in this chapter strongly suggests that a significant number of individuals will develop psychological difficulties following burn trauma. The main psychological sequelae reported were symptoms of anxiety, depression and post-traumatic stress disorder. The quality of the research considered is variable and with some exceptions the quality overall is relatively poor. Common methodological problems include small numbers, problematic recruitment methods, large dropout rates with patients unaccounted for in the final analysis, the absence of systematic interviews and the absence of well validated questionnaire measures (see table 4.2). These factors along with the marked differences in the dimensions of the traumatic event, the

percentage burn, outcome measures, thresholds for "caseness" and assessment times makes direct comparison of the different studies considered difficult.
Within the first three months of a burn trauma the twelve studies that considered the prevalence of psychological sequelae found rates between 7% and 54% with a mean of 29.8% (sd = 13.4%). The nine studies that considered the prevalence rate between three months and one year after the burn trauma found psychological sequelae rates between 19% and 65% with a mean of 34.4% (sd = 13.6%). The eight studies that considered the prevalence rate over one year after the burn trauma found psychological sequelae rates between 15% and 75% with a mean of 35.3% (sd = 20.3%). Of the nine studies that measured the prevalence of psychological sequelae at least two time points after the burn trauma six found that there was a decrease in the prevalence over time and three an increase over time.

In summary psychological sequelae appear to be relatively common following burn trauma. The exact prevalence is difficult to estimate from the currently available research and although it is clear that psychological difficulties can continue for many years after the burn trauma there are contradictory findings in the literature regarding whether the natural course is for an increase or a decrease in prevalence over time.

Table 4.1 - Data containing Studies of the Prevalence of Psychological Symptoms Following Burn Trauma (n>10)

Study	Setting	n	% Burn mean (sd)	Follow-up post burn	Outcome measure	Completers n (%)	Mean (sd) outcomes	Prev'nce Psych Sequelae
Adler[1] (1943)	USA	131	n.s.	3 months 9 months	Psych. Compl'ns	46 (35%)	n.s.	26 (57%) 13 (28%)
Andraeson et al (1971)	USA	20	37.0 (20.6)	2.3 (1.3) years	Emot'l Diffs	20 (100%)	n.s.	6 (30%)
Chang & Herzog (1976)	USA	51	31.2 (n.s.)	25.6 (12.4) months	Dep'n worse	51 (100%)	n.s.	38 (75%)
Bowden et al (1980)	USA	461	23 (n.s.)	up to 20 years	Low self esteem	314 (68%)	n.s.	47 (15%)
White (1982)	UK	142	n.s.	One year	Psych. Sequelae	76 (54%)	n.s.	45 (65%)
Green et al (1983)[1]	USA	500	n.s.	One year Two years	PEF SCL-90 PEF SCL-90	147 (29%) 129 (26%)	2.1(1.2) 0.7(0.7) 1.7(1.0) 0.6(0.5)	36 (31%) n.s.

1 = included patients with non burn trauma injuries

PEF = Psychiatric Evaluation Form

SCL90 = Symptom Checklist

Table 4.1 continued

Blank & Perry (1984)[2]	USA	34	33 (n.s.)	Four weeks	BPRS SCL-90 IES intrusion IES avoidance	25 (74%)	 1.77 (ns) 3.07 (ns)	7 (28%)
Blumenfield & Reddish (1987)	USA	68	9.5 (n.s.)	During hosp'n (mean 18 days)	Psychological Sympts	68 (100%)	n.s.	16 (24%)
Perry et al (1987)	USA	134	20.7 (n.s.)	9 days	PTSD	104	n.s.	43 (41%)
Tucker (1987)	USA	22 9	33 (n.s.) 31 (n.s.)	6 weeks 53 weeks	SSAI CESDS PTSD SSAI CESDS PTSD	22 (100%) 9 (100%)	37 (n.s.) 13 (n.s.) n.s. 29 (n.s.) 8 (n.s.) n.s.	n.s. n.s. 4 (19%) n.s. n.s. 3 (33%)
Ward et al (1987)	USA	193	17.4 (17.6)	n.s., 108 (78%) > 2 years	BDI	139 (72%)	n.s.	31 (22.3%)
Sheffield et al (1988)	USA	212	n.s., median 10	268 days	IES QOLI	212 (100%)	12.28 (n.s.) 9.34 (n.s.)	n.s.

2 = patients who had suffered from delirium only

* = different samples

BPRS = Brief Psychiatric Rating Scale

CESDS = Centre for Epidemiological Studies Depression Scale

SSAI = Spielberger State Anxiety Inventory

IES = Impact of Event Scale

BDI = Beck Depression Inventory

QOLI = Quality of Life Index

Table 4.1 continued

Wallace & Lees (1988)	UK	99	7.0 (n.s.)	Discharge Six months Two years*	HADSA HADSD HADSA HADSD HADSA HADSD	31 (31%)	n.s.	5(31.3%) 2(12.5%) 3(18.7%) 3(18.7%) 4(26.6%) 3 (20%)
Malt & Ugland (1989)	Norway	70	n.s.	3-13 years	Psychological Problems	70 (100%)	n.s.	16 (23%)
Patterson et al (1990)	USA	63	18.1 (n.s.)	Inpatient Discharge F'up (med 40 days)	PTSD	54 54 11	n.s.	16 (29.6) 0 (0%) 1 (9%)
Williams & Griffiths (1991)	UK	55	n.s.	One year	HADSD HADSA IES	23 (42%)	n.s.	3 (13%) 8(34.7%) 3 (13%)
Perry et al (1992)	USA	129	n.s.	2 months 6 months One year	PTSD PTSD PTSD	51 (40%) 40 (31%) 31 (24%)	n.s.	18(35.3% 16 (40%) 14(45.2%

HADSA = Hospital Anxiety and Depression Scale (Anxiety Subscale) HADSD = Hospital Anxiety and Depression Scale (Depression Subscale)

Table 4.1 continued

Roca et al (1992)	USA	66	n.s. (12 >24%)	Discharge Four months	PTSD PTSD	43 (65%) 31 (47%)	n.s.	3 (7.1%) 7 (22.6%
Perez-Jimenez (1993)	Spain	35	n.s.	7 days 2 months	PTSD PTSD	30 (86%)	n.s.	12(38.3% 6 (20%)
Fukunishi et al (1994)	Japan	24	28.8 (n.s.)	< 4 months > 10 months	PTSD	24 (100%)	n.s. n.s.	1 (10%)* 8 (57%)*
Powers et al (1994)	USA	39	28 (n.s.)	12 months	PTSD	39 (100%)	n.s.	13 (33%)
Bryant (1996)	Australia	67	n.s.	One year	PTSD	35 (61%)	n.s.	11 (31%
Franulic et al (1996)	Chile	25	3.4 (3.2)	One week	HAMA HAMD GHQ28	25 (100%)	8.2(6.1) 7.0(5.0) 7.3(5.6)	n.s.
Difede et al (1997)	New York, USA	180	14.9 (11.4)	2 weeks	IESI IESA POMS	180 (100%)	14.1(10.5 12.4(9.8) 5.3(5.3)	n.s.
Tedstone & Tarrier (1997)	UK	50	n.s.	2 weeks 12 weeks	HADSA HADSD PTSD HADSA HADSD PTSD	45 (90%)	n.s.	19(22.2% 1 (2.2%) 1 (2.2%) 19(22.2% 6 (13.3%) 4 (8.9%)

Table 4.2: Methodological Strengths and Weaknesses of Data Containing Studies of the Prevalence of Psychological Symptoms Following Burn Trauma (n>10)

Study	Sample size	Burn Trauma	Inclusion Criteria	Outcome measures	General Comment
Adler (1943)	Adequate but low completer rate	Not described. Study included non burn trauma	Adequate	Non validated interview and q'aire.	A good descriptive study but lacks currently acceptable methodology
Andraeson et al (1971)	Small	Severe. Not representative of an average burns population	Not systematic, potentially biased	Non validated interview	Difficult to generalise results. High threshold for pathology
Chang & Herzog (1976)	Adequate	Severe	Not adequately described	Non validated questions on degree of depression	Difficult to compare with other studies
Bowden et al (1980)	Good	Appeared representative	Adequate	Non validated self esteem measure	Absence of a formal measure of psychopathology and wide age range makes interpretation difficult
White (1982)	Adequate, good follow-up rate of those eligible	Appeared representative.	Adequate	Non validated interview for psychological sequelae and validated q'aire	A good study, systematic and could be used for comparison

Table 4.2 continued

Green et al (1983)	Good initial sample size but very low follow-up rate	Not described. Study included non burn trauma injuries.	Potentially biased towards a help seeking group	Well validated	Interpretation difficult because of biased sampling and inclusion of non burn trauma
Blank & Perry (1984)	Small and smaller follow-up	Severe with delirium	Only included delirium sufferers therefore difficult to generalise results.	Well validated	Impossible to generalise due to inclusion criteria
Blumenfield & Reddish (1987)	Adequate	Mild to moderate burn trauma	Excluded severe burn trauma and pre-existing physical, psychological and physical difficulties.	Not validated	Difficult to generalise due to highly selected group of individuals without vulnerability factors to the development of psychiatric disorder
Perry et al (1987)	Adequate	Moderate to severe	Participants in an analgesia study therefore may be biased	Structured Clinical Interview	Assessment very early (9 days), delirium present in "many" subjects. Good methodology overall
Tucker (1987)	Small	Severe	Not fully described	Structured clinical interview and well validated q'aires.	Cannot compare the pre-discharge and outpatient groups. Good methodology overall

Table 4.2 continued

Ward et al (1987)	Good sample size	Moderate to severe	Good, slight bias to severer burns	Limited. One questionnaire measure only	Depression was only psychological outcome measured
Sheffield et al (1988)	Very good sample size	Mild to moderate	Appeared good	Limited. Questionnaires only	Limited information given regarding psychological outcome
Wallace & Lees (1988)	Adequate initial number. Poor follow-up rate	Mild to moderate	Consecutive discharges therefore should be representative	Well validated questionnaires	Poor follow up makes interpretation difficult
Malt & Ugland (1989)	Adequate	Not fully described	Not consecutive, potential bias	Psychological Problems	Limited by absence of standardised outcome measures
Patterson et al (1990)	Adequate but lower follow-up	Average	Good	DSMIII PTSD criteria - appropriate	Good methodology overall
Williams & Griffiths (1991)	Adequate initial number poor follow-up rate	Not described	Consecutive discharges therefore should be representative but low follow-up challenges this	Well validated questionnaires	Good methodology overall but poor follow-up rate makes interpretation difficult

Table 4.2 continued

Perry et al (1992)	Good initial number poor follow-up	Not described.	Consecutive admissions therefore appropriate	Excellent. Structured clinical interview and well validated q'aires.	Lack of description of dropouts make conclusion that PTSD rate has risen suspect
Roca et al (1992)	Adequate inclusion, high drop out rate not adequately accounted for	Not fully described	Adequate, not fully described	Excellent. Structured clinical interview and well validated q'aires.	Good methodology but poor follow-up rate makes interpretation difficult
Perez-Jimenez (1993)	Small	Not described.	Consecutive patients therefore appropriate	DSMIIIR PTSD criteria	Good methodology but small n
Fukunishi et al (1994)	Small number	Severe	Volunteers therefore potential bias	Very Good. Structured Clinical Interview	Small n and varied times after burn trauma makes interpretation difficult
Powers et al (1994)	Small number	Severe	Consecutive presentations to a clinic therefore should be representative.	Very good. Structured clinical interview	Small n and varied times after burn trauma makes interpretation difficult

Table 4.2 continued

Bryant (1996)	Adequate but smaller number completed	Not fully described	Not fully described	Excellent. Structured clinical interview and well validated questionnaires.	Good methodology but small n makes interpretation difficult
Franulic et al (1996)	Small	Mild	Consecutive admissions therefore appropriate	Well validated questionnaires.	Good methodology but small n makes interpretation difficult
Difede et al (1997)	Very good	Average	Good, consecutive admissions, appear representative	Well validated questionnaires. POMS	Good study
Tedstone & Tarrier (1997)	Just adequate, high percentage follow-up rate	Not fully described	Not fully described	Well validated questionnaires.	Good methodology and study overall

Chapter 5 - Predictors of Psychological Reactions to Burn Trauma

5.1 - Introduction

There are many possible factors that could explain why some individuals appear to develop psychological sequelae following burn trauma and some individuals do not. It is perhaps commonly assumed that the greater TBSA burn an individual sustains the more likely that individual is to develop a distressing psychological reaction. An association between the severity of the traumatic event and adverse psychological outcome has been found following other traumatic events (e.g. Kessler et al, 1995). However, trauma research suggests that this is not a linear relationship and that many other factors may affect outcome (see chapter 1). In addition to the TBSA burn other factors are likely to contribute to the severity of the trauma of an acute burn injury. For example, a five percent TBSA burn sustained as a result of an explosion in which many other people were involved is likely to be more traumatic than a five percent burn as a result of boiling water.

Most of the research into predictors of psychological reactions to burn trauma has been through the prevalence studies discussed in the last chapter. This has been done by considering the presence of psychological sequelae in subgroups of individuals (e.g. males/females, higher percentage burn/lower percentage burn), by performing correlation co-efficients to consider relationships between a variety of variables or by performing more complex statistical tests such as regression analyses to explore the contribution of various factors to the main psychological outcome measure. Such analyses are exploratory and prone to error but they suggest factors that should be subjected to study in more detail in the future. It is therefore extremely important to interpret the research considered in this chapter with caution, particularly research that has considered small samples and a large number of independent variables. One of the difficulties in critically appraising several of the available studies is that the full results

and statistics are not presented, leaving the reader with no knowledge of the magnitude of any relationship or the degree of confidence that this relationship is true. The details of the individual studies discussed in chapter 4 will not be repeated. Instead the focus will be on the exploration of variables that were associated with or seemed to predict psychological outcome. Table 5.1 summarises the studies discussed below.

5.2 - Summary of Literature Regarding Predictors of Psychological Reactions Post Burn Trauma

(i) Adler (1943) - Adler's study of survivors of the Boston Cocoanut Grove nightclub fire found no significant differences in the reactions of the 26 females when compared with the 20 males studied. Fourteen (54%) of the females suffered psychiatric complications at three months compared with eleven (55%) males. At nine months eight (31%) females and five (25%) males suffered psychiatric complications. Loss of consciousness, particularly if prolonged, was seen to be possibly protective on the basis that 13 (45%) of the 29 who lost consciousness suffered psychiatric complications compared with 12 (71%) of the 17 who did not. One half of individuals lost relatives or close friends but this did not appear to affect psychological outcome. There was no effect of severity of injury. Nightmares appeared to be predictive of psychiatric complications. Five (25%) of those individuals without psychiatric complications experienced nightmares while in hospital compared to ten (40%) of those who developed psychiatric complications. This difference was more marked after discharge when none of the group without psychiatric complications reported nightmares whereas ten (40%) of the psychiatric complications group did.

(ii) Andraeson et al (1971) - Andraeson et al's study of individuals who had sustained burns of greater than 20% TBSA one to five years previously did not specifically investigate predictors of outcome. However, they stated that they did not find a correlation between emotional difficulty and extent of burn or deformity although the study population was selected because of their severity of burn and/or deformity and no figures were given regarding this relationship. Five (25%) of the sample had psychiatric

difficulties before the burn. These were said to be most commonly chronic and long-standing personality disorders. Only one of these five was believed to have developed problems secondary to the burn trauma. Hence, although this was not a focus of their study Andraeson et al found no association between outcome and severity of injury or previous psychiatric difficulty.

(iii) Andraeson, Noyes and Hartford (1972) - In a separate study Andraeson et al considered factors influencing adjustment during the inpatient stay of 32 burn trauma victims with a mean TBSA burn of 29%. Individuals who developed "marked regression", severe depression, delirium or unmanageable behaviour were classified as poor adjusters (n = 16) and were compared with the 16 good adjusters who did not develop any of these complications. The poor adjusters reported significantly greater premorbid psychopathology, physical disability and TBSA burn over 30%. Disturbed family situation, recent family crises, changes in living pattern, intelligence, prior accidents, self-destructive tendencies and age over 30 were not associated with poor adjustment. The small sample size and multiple independent variables considered makes the risk of erroneous findings quite high in this study.

(iv) Chang and Herzog (1976) - Chang and Herzog found that burns to the hands or face were associated with a poorer outcome in their study of 51 burn trauma victims. Twenty-four (83%) of the 29 patients with hand or face burns described increased depression after the burn trauma compared to 14 (64%) of the 22 without hand or face burns although this was not statistically significant. Facial burns were also disproportionately represented in those individuals who divorced following their burn trauma. Four (80%) of the five individuals who had divorced at the time of the study had burns to their face compared with eight (57%) of the fourteen who remained married. The authors stated that psychological difficulties were usually related to awareness of disfigurement, duration of hospitalisation and chronicity of pain. They believed that the major adjustment appeared to occur following discharge with withdrawal, seclusion and shyness. These assertions along with their conclusion that post-burn depression correlated with duration of disability, percent body surface burn and specific areas of involvement did not appear supported by figures quoted in the

paper but relied, partially at least, on clinical impressions which make these findings of limited value.

(v) Bowden et al (1980) - Bowden et al studied 569 burn trauma patients and found that females had lower self esteem than males and that individuals burned under the age of eleven had the lowest self esteem. Those burned between the ages of 20 and 49 had the highest self esteem. The authors correctly pointed out that these results may have been influenced by the fact that many of the former group were adolescents at the time they were interviewed in the study. A comparison of individuals (n = 83) with burns of at least 20% and full-thickness of 10% with lesser burns (n = 224) revealed no statistical difference in self-esteem. No statistical difference was found in self esteem between those who were visibly disfigured and those who were not. There was also no difference depending on the site of the burn. Good social support, life satisfaction and involvement in social and recreational activities were all related to higher self esteem. Questions concerning depression were also related to lower self esteem. Marital status was not associated with reduced self esteem.

The authors concluded that lowered self esteem if present was indirectly connected to the actual burn trauma (for example through the loss of employment or disfigurement) and stronger if coupled with subsequent life changes (for example adolescence). It is difficult to understand this conclusion from the figures quoted and, although the sample size is large, the heterogeneous nature of the sample (with its wide range of ages and times since the burn injury) means that interpretation should only be made with caution. The other difficulty in interpreting the results of this study is the likelihood that several of the variables considered to be independent were probably related to self esteem anyway (e.g. perception of social support).

(vi) White (1982) - White found that the best predictors of poor psychological outcome at one year from his interview with 76 burn trauma patients were; age 36-45 ($p<0.01$), living alone ($p<0.001$) or with three or more children ($p<0.05$), severity of injury ($p<0.02$), length of hospital stay ($p<0.01$), initial anxiety, depression or personality disorder ($p<0.001$) but not psychosis. More sequelae were found in men from the lower

social classes. There was no clear relationship between area of injury and psychological outcome except that fewer men with leg burns reported severe psychological symptoms. Those 13 men involved with a compensation claim had significantly higher symptoms when compared to men injured in an industrial accident but not claiming compensation. However there was no difference when they were matched for severity of injury. The actual figures and methods of analysis were not fully described in the paper and therefore the magnitude of some of the associations reported was not clear.

(vii) Green et al (1983) - Green et al did not consider predictor variables specifically in their study of 147 survivors of the Beverly Hills Supper Club Fire although they did note that there were no differences in outcome between males and females. As stated previously the difficulties that compromise interpretation of the results of this study include no information regarding the presence or absence of burn trauma.

(viii) Blank and Perry (1984) - In Blank and Perry's study of 34 adult burn trauma patients who fulfilled the DSMIII criteria for a diagnosis of delirium, the seven individuals who appeared to reexperience their trauma during the delirium (the "intrusion" group) had a significantly worse psychological outcome than those who did not (the "avoidant" group). Six (86%) of the intrusion group suffered PTSD and the other a major depressive disorder. Only one (6%) of the avoidant group had a diagnosable condition (adjustment disorder with depressed mood). The intrusion group had larger mean burns (40.5% (sd 24.5%)) compared to the avoidant group (29% (sd 22.5%)). Fewer symptoms were associated with compromised consciousness at the time of injury and, perhaps surprisingly, with greater preburn psychopathology. The intrusion group were described as displaying an "activity dominance" coping style premorbidly that was abruptly and severely challenged by the trauma and by the requirements of being a dependant burn patient on a hospital ward. Patients who did not suffer delirium were not reported on in this paper and therefore it is difficult to interpret the results more generally. In addition it is difficult to interpret the true contribution of other variables because this was not specifically considered. For example, the increased percentage burn in the intrusion group may have greatly contributed to the increased psychological symptoms found in that group.

(ix) Browne et al (1985) - Browne et al studied 1,385 patients admitted to a burns unit over a 12 year period by obtaining information from their clinical notes and subsequently interviewing 340 adults, 42 adults who were children at the time of their burn trauma and 145 children. A variety of questionnaires were completed including measures designed to determine how individuals dealt with problems and engaged in social and recreational activities. The psychosocial adjustment to illness scale was also used. Ten percent to 15% of individuals were considered to have displayed evidence of maladjustment. A stepwise multiple regression analysis using adult adjustment as the dependent variable found that the best predictors of poor adjustment in order of importance were unemployment, avoidance style of coping, number of recreational activities and loss of occupational status. These four variables accounted for approximately 40% of the variance in adult adjustment. Severity of burn injury did not predict adjustment. This study has the major advantage of a large sample size but unfortunately did not use any well validated measures of psychological outcome and is a study of factors associated with adjustment rather than symptoms of anxiety, depression or post-traumatic stress.

(x) Blumenfield and Reddish (1987) - Blumenfield and Reddish studied 68 hospitalized patients with relatively minor burn trauma. The patients were divided into two groups according to impairment of functioning and compared across a variety of variables. Sixteen (24%) reported impaired functioning and 52 (76%) did not. There were no differences between the impaired functioning and non-impaired functioning in groups in terms of mean age (37.9 years versus 34 years), sex (79% male versus 88% male), race (78% white versus 88% white) or mean length of inpatient stay (18 days in both groups). The number of job related burn injuries were similar (25% in the symptomatic group and 22% in the control group). Personal carelessness was felt to have contributed to the burn trauma in 18% of the symptomatic group compared to 31% of the controls. In two percent of the control group carelessness by others was felt to have contributed compared to 18% of the symptomatic group.

There was no difference in percentage burn between the groups (9.6% versus 9.3%) but there were slightly more hand (75% versus 47%) and face (50% versus 35%) burns in

the symptomatic group. There was no difference between the two groups in terms of "obvious disfigurement" (27% controls and 20% symptomatic) which contrasted with concerns reported by patients about disfigurement (24% controls and 81% symptomatic) and represented a major difference between the groups. The fact that the symptomatic group contained only sixteen individuals increases the chance of false positive associations being made by multiple comparisons and therefore these results although interesting must be cautiously interpreted.

(xi) Kiecolt-Glaser and Williams (1987) - Kiecolt-Glaser and Williams considered the influence of self-blame, compliance and distress among 49 burn trauma patients. Nurses and physical therapists rated the patients' compliance with the therapeutic activities essential for proper healing and rated pain behaviour. After controlling for burn severity and time since admission, regression analyses revealed that behavioural self-blame was a significant predictor of poorer compliance with nurses, more pain behaviour and greater depression. A past psychiatric history also made individuals more depressed and more likely to blame themselves for the accident.

(xii) Perry et al (1987) - Perry et al considered 104 adult burn trauma patients a mean of 9.4 days (sd = 3.1) post burn trauma. The forty-three (41%) patients who had PTSD were compared with the 61 (59%) who did not across several different variables. The PTSD group had significantly higher reports of pain ($p<0.001$), larger TBSA burn ($p<0.001$), were more likely to be of younger age ($p<0.001$), male sex ($p<0.05$), married ($p<0.01$), to be employed ($p<0.001$), to have suffered from delirium ($p<0.001$), to feel guilty ($p<0.001$) and to be less responsible for the burn ($p<0.001$). Although not significant there was a trend to less premorbid psychiatric disorder and less substance abuse before the burn trauma in the PTSD group.

(xiii) Tucker (1987) - Tucker considered a variety of possible predictors of psychosocial problems in 31 burn trauma victims. Higher neuroticism scores on the Eysenck personality questionnaire were associated with post-burn depression and anxiety. Pre-burn psychiatric morbidity was also believed to be associated with poor post-burn psychosocial adjustment. There were no significant associations between the

presence of compensation or the dimensions of the burn trauma and psychological outcome. However this study had a small sample size, a wide range of time since burn trauma in the victims considered and multiple independent variables. It is therefore important to exercise caution in interpreting the results.

(xiv) Ward et al (1987) - Ward et al considered 17 possible predictors of depression in their study of 139 adult trauma victims. The possible predictors included dimensions of the burn trauma, age, employment status, physical and psychiatric history. Statistically significant associations with post-burn depression were found for a history of pre-burn psychiatric treatment ($p = 0.003$) and a pre-burn physical condition that contributed to the burn trauma ($p = 0.005$). No association was found between the extent, severity and location of the burn trauma. The authors concluded that individual factors rather than the burn trauma best predict post-burn depression.

(xv) Sheffield et al (1988) - Sheffield et al considered five variables (psychiatric referral during burn trauma treatment, compliance, TBSA burn, burned at work and injury severity score) as possible predictors of quality of life index and impact of event scale scores. The only variable significantly associated with a higher impact of event scale score was poor compliance with treatment ($p < 0.04$) this was also non-significantly associated with a lower quality of life index score ($p < 0.08$). The other four variables were not associated with these outcome measures.

(xvi) Wallace and Lees (1988) - Wallace and Lees studied 16 burn trauma victims at discharge from hospital and six months later and a separate group of 15 burn trauma victims two years post-discharge. In the first group there was a strong correlation between Hospital Anxiety and Depression Scale scores at discharge and at six months (anxiety $r = 0.71$, $p<0.0001$; depression $r = 0.61$, $p<0.0001$). To determine the relationship of other variables to psychological outcome t tests, correlations and chi square analyses were performed. The actual analyses were not given but the authors stated that there were no significant correlations between psychological morbidity and any of the demographic measures, social characteristics, burn severity or treatment factors. There was a strong correlation between mood state score at six months and at

two years although the fact that this involved the comparison of two different populations severely questions the authors' conclusion that this indicated that there was no significant diminution of psychological morbidity over time.

(xvii) Malt and Ugland (1989) - In Malt and Ugland's long-term (3-13 year) follow-up of 70 burned adults psychosocial problems were more prevalent in those with more severe burns (44%) compared with those who sustained more minor burns (16%). A combination of length of stay in hospital, presence of scars, previous psychiatric history, death threat and deviant behaviour during hospital stay were the best predictors of a negative outcome.

(xviii) Patterson et al (1990) - Patterson et al performed a multiple regression analysis to consider the predictive value of TBSA burn, age, sex, whether the burn trauma was work-related and whether the patient was directly responsible for the burn to a positive PTSD diagnosis in their study of 54 burn trauma victims. TBSA burn accounted for about 28% of the variance ($r=0.53$; $p<0.05$) being female ($r=0.24$; $p<0.05$) was also significantly related as was not being directly responsible for the burn trauma ($r=0.35$, $p<0.05$). Length of hospital stay was also strongly associated with outcome but was felt to be closely related to TBSA and therefore computed in a separate regression analysis ($r=0.45$, $p<0.05$).

(xix) Williams and Griffiths (1991) - Williams and Griffiths studied 23 burn trauma inpatients. To determine any significant relationships between severity of burn, age, sex, premorbid psychopathology, visibility of burn, cause of burn and outcome Pearson's Correlation Coefficients were performed. The only variable that appeared related to outcome was visibility of burn. However, the power of this analysis would have been very low, given their sample size, with a distinct possibility of an erroneous result. To determine predischarge predictors of psychological outcome a stepwise multiple regression analysis was performed using IES, HADSA and HADSD as the dependent variables. The full list of independent variables entered was not available but included previous medical or psychiatric history and presumably similar variables as used in the correlations because the only significant predictor was extent of visibility of

burn which accounted for about one third of variance in HADSD score (R Square = 0.332) and total IES score (R Square = 0.326). When HADSA was used as the dependent variable none of the independent variables were entered or removed in the stepwise regression analysis.

(xx) Perry et al (1992) - Perry et al used forward stepwise logistic regression analysis to explore the predictive value of several independent variables measured during the first week of hospitalisation in their study of 51 burn trauma admissions. Smaller burns, less perceived social support at baseline and severity of initial distress predicted development of PTSD. Severity of intrusive and avoidant thoughts in the first week of hospitalisation, and the presence of facial disfigurement did not predict the development of PTSD. They concluded that to consider social support, percentage burn and general emotional distress represented a good predictive model for the development of PTSD. Logistic regression analysis on the six month and twelve month follow-up data revealed that less perceived social support predicted PTSD at six months ($p<0.03$) and twelve months ($p<0.03$). The other variables did not at these time points. Exploratory analyses of sex, age, race, marital status and premorbid psychopathology found them to have no significant predictive value for the development of PTSD.

(xxi) Roca et al (1992) - Roca et al interviewed 43 burn trauma patients. Group means were compared using Student's t test, Pearson correlation coefficients were used to determine the relationship between continuous variables and chi-squares for dichotomous variables. Flame or flash burns were associated with reexperiencing symptoms when compared to other types of burn (e.g. electrical) (chi square = 2.9, p = 0.09). Individuals with re-experiencing phenomena scored lower on the openness measure of the NEO Personality Inventory ($p = 0.03$). Avoidance/numbing symptoms were associated with a lower extroversion score ($p = 0.001$) and increased arousal symptoms with a higher neuroticism score ($p = 0.007$). The four individuals who met the avoidance/numbing criterion were more schizoid ($p=0.008$), schizotypal ($p=0.01$), avoidant ($p=0.004$) and borderline ($p=0.02$) on the Millon Clinical Multiaxial Inventory than those who did not. Five of the six individuals with detectable blood alcohol at

admission met the increased arousal criterion compared to six (20.7%) who did not. No other associations were found and there was no association at four month follow-up.

PTSD symptoms were significantly influenced by postburn adjustment, sex, length of stay, percentage burn, facial involvement or delirium. There was no significant relationship found between post burn adjustment as measured by the Psychosocial Adjustment to Illness Survey and PTSD symptoms. Features of histrionic, antisocial, passive-aggressive, and/or borderline personality types predicted poorer adaptation at 4 months (all $p < 0.01$). Burns to the face ($p < 0.01$) and the sexual organs ($p < 0.01$) were associated with post-burn impairment in the social domain. Multiple tests were performed on this population with at times very low subject numbers making the risk of error high and the power of the study low.

(xxii) Perez-Jimenez (1993) - Perez-Jimenez described 35 consecutive burn trauma patients. They found that the initial IES score was significantly related to a diagnosis of PTSD at two months ($p < 0.0001$). No differences were found between the group with PTSD and those without in terms of previous psychiatric history, demographic variables, severity of burn (although all patients with PTSD had a burn of at least 10%), site of burn, causal attribution, the State-Trait Anxiety Inventory and the 60 item version of the General Health Questionnaire. Full statistics were not given for this study which was published as a letter in response to the Roca et al (1990) study discussed above.

(xxiii) Fukunishi, Chishima & Anze (1994) - Fukunishi et al studied 15 men and nine women undergoing physical rehabilitation following burn injuries in Japan. Individuals who developed PTSD were found to score higher on the Toronto Alexithymia Scale than those who did not. Sex, age, TBSA and facial involvement were not associated with the development of PTSD. The small sample size and wide variation in time post burn trauma are limitations of this study as is the absence of full details of how the associations with PTSD were calculated.

(xxiv) Powers, Cruse, Daniels & Stevens (1994) - Powers et al studied 39 consecutive survivors of burns who were assessed a mean of 12 months after their burn trauma for

the presence of PTSD. Full details of the analysis to determine the relationship of PTSD to clinical characteristics was not given but it was stated that no significant differences between the group with PTSD and the group without PTSD were found for age, sex, percent TBSA, length of hospital stay, eligibility for workman's compensation benefits, whether the injury was preventable by the patient, pre-burn psychiatric diagnosis and psychiatric diagnosis during time in hospital. The wide range of time since burn trauma at the time of the assessment for the presence of PTSD makes the results of this study difficult to compare with other studies and the relatively small sample size may have resulted in erroneous results.

(xxv) Bryant (1996) - Bryant studied 67 patients who had been admitted to a burns unit in Australia over a two year period. Patients were divided into three groups, a PTSD group ($n = 11$), a subclinical PTSD group ($n = 10$) and a normal group ($n = 14$). The PTSD group had a higher percentage burn (19.3% (sd 16.3%)) than the subclinical group (18.6% (sd 24.4%)) and the normal group (11.93 (8.4%)) although this difference was not statistically significant. There were also no significant differences in age or length of hospital stay but the Beck Depression Inventory score was significantly correlated with PTSD. Correlations revealed significant relationships between PTSD score and perceived severity ($r = 0.43$, $p < 0.001$), pain severity ($r = 0.59$, $p < 0.001$), concern over scar ($r = 0.64$, $p < 0.001$), avoidant coping style ($r = 0.64$, $p < 0.001$) and BDI score ($r = 0.64$, $p < 0.001$). Significant associations were not found between PTSD score and length of hospital stay ($r = 0.09$), presence of visible scarring ($r = -0.06$) or percentage burn ($r = 0.24$).

To consider the predictive value of variables Bryant performed a forward stepwise multiple regression simultaneously entering perceived severity of injury, presence of visible scarring, concern about scarring and avoidance as measured by the Coping Style Questionnaire as independent variables and the PTSD interview score as the dependent variable. Concern about scarring and avoidant coping style accounted for 61 percent of the variance. This study found that perceptions and emotional factors were more important than objective measures of severity of burn trauma in predicting psychological outcome.

(xxvi) Franulic et al (1996) - Franulic et al's study of 25 burn trauma victims in Chile found no significant correlation between severity of burn as measured by the Garces' Index and psychological symptoms (HAM-A rs = 0.03, HAM-D rs = 0.02, GHQ-28 rs = 0.07). There was a significant correlation between previous poor psychosocial adjustment and anxiety (rs = -0.31, $p < 0.02$) and also between anxiety and the harm avoidance dimension in the Tridemensional Personality Questionnaire (rs = 0.05, $p < 0.05$).

(xxvii) Difede et al (1997) - Difede et al interviewed 180 burn trauma patients within two weeks of injury. Multiple regression analysis was performed to determine the contribution of several variables to the explanation of the variance in the self report of pain. Ethnicity, sex and percentage burn did not significantly explain variance in the subjective pain scores. The Profile of Mood States (POMS) score was used as a measure of general psychological distress and accounted for most of the variance in the subjective pain scores ($p < 0.01$). Neither intrusion or avoidance symptoms as measured by the Impact of Event Scale correlated significantly with subjective pain after initial POMS score was controlled for. However, in females avoidant PTSD symptoms were better predictors of subjective pain scores than was general psychological distress (F = 5.54 versus 1.26) in contrast to males where the converse was true (F = 24.02 versus 0.23).

(xxviii) Tedstone, Tarrier and Faragher (1998) - Tedstone et al explored multiple independent variables as possible predictors of psychological morbidity in their sample of 45 burn trauma victims. They initially selected variables to enter into multi-stage linear regression analyses by investigating the bivariate relationships between potential predictors and the main outcome measures. Those associated with the outcome variables at $p < 0.01$ were selected and grouped into demographic variables, burn injury variables, PTSD variables, psychiatric variables and two groups of coping variables.

The independent variable most associated with HADSA score at three months was HADSA score at two weeks which accounted for 29% of the variance. Higher levels of focusing on the positive and compensation seeking were associated with increased

anxiety at three months, high levels of acceptance coping was associated with decreased anxiety. Negative appraisal for the future was most associated with HADSD score at three months. Initial score on the IES avoidance scale was most associated with IES avoidance score at three months and initial score on the IES intrusion scale was most associated with IES intrusion score at three months. High scores on the PENN PTSD inventory at three months were associated with high levels of emotion focused coping, low levels of acceptance coping and a bleak outlook on the future.

The extent of the burn was significantly associated with higher IES intrusion and avoidance scores at three months but accounted for less than six percent of the total variance on both these measures and was not associated with HADS or PENN scores at three months. The authors concluded that psychological factors including initial measures of distress and coping variables appeared to be more predictive of outcome than non-psychological variables such as the dimensions of the burn trauma but that it was still not possible to confidently predict who would develop psychological sequelae following burn trauma. This study focused on a variety of psychological factors that have not been considered in previous studies and suggests that they are worthy of further exploration. Unfortunately the relatively small sample size and large number of independent variables considered makes the risk of erroneous findings in this study relatively high.

5. 3 - Summary and Conclusions

The quality of the research into the predictors of psychological sequelae following burn trauma is again variable and overall the quality is relatively poor suffering from small sample sizes. There are some conflicting results but overall there appears to be an association between severity of burn and psychological distress although this association does not seem likely to be a very strong one. Several other factors may be associated but need researching more thoroughly. There seems little doubt that apparently healthy individuals with little in the way of apparent vulnerability to psychiatric disorder can develop psychological difficulties following relatively minor burn trauma.

Twenty-three of the studies identified considered percentage TBSA burn. One found a relationship with a positive psychological outcome, 16 no association and six an association with increased psychological sequelae. Involvement of hands or face was considered in nine studies with an association with negative outcome in four and no relationship in five. Past psychiatric history was considered in nine with no effect in five and an association with worse outcome in four. Sex was considered in 11 studies with no effect in nine, one found an association between negative outcome and male sex and one between negative outcome and female sex. Age had no association with outcome in nine studies and an increased risk with younger age in one study and age 36 to 45 in another. Initial psychological symptoms were associated with poorer outcome in nine studies and no effect in one. Other factors were looked at less frequently. Factors associated with worse outcome in at least two studies were length of hospitalisation (three studies), pain (three studies), others being to blame for what happened (three), perceived disfigurement (two), compensation issues (two) and avoidance coping style (two). The only factors associated with less psychological sequelae in at least two studies were social support (two) and loss of consciousness (two).

The apparent relationships of initial distress and increased TBSA burn with poorer psychological outcome and higher initial distress and poorer psychological outcome are in keeping with research following other traumatic events (e.g. Brewin et al, 1999, Kessler et al, 1995) but, along with other potential predictors of outcome following burn trauma need researching in larger studies.

Table 5.1 - Predictors of Psychological Reactions to Burn Trauma

Study	n	% Burn mean (sd)	Follow-up post burn	% Burn Assoc'n	Initial Distress Assoc'n	Hands / Face	Other Predictors Described
Adler (1943)[1]	131	n.s.	3 months 9 months	No	Yes	n.s.	Nightmares, No loss of consciousness.
Andraeson et al (1971)	20	37.0 (20.6)	2.3 (1.3) years	No	n.s.	n.s.	Nil specific.
Chang & Herzog (1976)	51	31.2 (n.s.)	25.6 (12.4) months	Yes	n.s.	Yes	Duration of disability, percent burn, hand/face burns.
Bowden et al (1980)	461	23 (n.s.)	Up to 20 years	No	n.s.	n.s.	Female sex, social support.
White (1982)	142	n.s.	One year	Yes	Yes	No	Age 36-45, living alone, living with >2 children, time in hospital, initial anxiety or depression, personality disorder.
Green et al (1983)[1]	500	n.s.	One year Two years	n.s.	n.s.	n.s.	Presence at fire
Blank and Perry (1984)[2]	34	33 (n.s.)	Four weeks	n.s.	Yes	n.s.	No loss of consciousness, less preburn psychopathology
Browne et al (1985)	527	n.s.	n.s., up to 12 years after	No	n.s.	n.s.	Unemployment, avoidance coping style, little recreational activity, loss of occupational status

n.s. = Not stated 1 = Included patients with non burn trauma injuries 2 = Patients who suffered delirium only

Table 5.1 continued

Blumenfield & Reddish (1987)	68	9.5 (n.s.)	Soon after (< 18 days)	No	n.s.	Yes	Hand/face burns
Perry et al (1987)	134	20.7 (n.s.)	9 days	Yes	n.s.	n.s.	Married, employed, younger age, pain, delirium, male sex, lack of responsibility.
Tucker (1987)	31	32 (n.s.)	6 weeks 53 weeks	No	n.s.	n.s.	Neuroticism, past psychiatric history.
Ward et al (1987)	193	17.4 (17.6)	n.s., 108 (78%) > 2 years	No	n.s.	No	Past psychiatric history, physical condition that contributed to burn trauma.
Sheffield et al (1988)	212	n.s., median 10	268 days	No	n.s.	n.s.	Poor compliance with treatment.
Wallace & Lees (1988)	99	7.0 (n.s.)	Discharge Six months Two years	No	Yes	n.s.	Mood at six months and two years.
Malt & Ugland (1989)	70	n.s.	3-13 years	Yes	n.s.	n.s.	Time in hospital, scarring, past psychiatric history, death threat and deviant behaviour in hospital.
Patterson et al (1990)	63	18.1 (n.s.)	Inpatient Discharge F'up (med 40 days)	Yes	n.s.	n.s.	percent burn, female, not directly responsible.
Williams & Griffiths (1991)	55	n.s.	One year	No	Yes	Yes	

Table 5.1 continued

Perry et al (1992)	129	n.s.	2 months 6 months One year	Yes (-ve assoc'n)	Yes	n.s.	Smaller burns, less perceived social support, higher initial IES and POMS.
Roca et al (1992)	66	n.s. (12 > 24%)	Discharge Four months	No	n.s.	Yes	Problematic personality traits.
Perez-Jimenez (1993)	35	n.s.	7 days 2 months	No	Yes	n.s.	
Fukunishi et al (1994)	24	28.8 (n.s.)	< 4 months > 10 months	No	n.s.	No	Alexithymia, not age or sex
Powers et al (1994)	39	28 (n.s.)	12 months	No	No	n.s.	Not length of hosp'n, age, past psych hist or lack of responsibility
Bryant (1996)	67	n.s.	One year	No	Yes	No	Concern about scarring, avoidant coping style.
Franulic et al (1996)	25	3.4 (3.2)	One week	No	n.s.	n.s.	Poor previous psychosocial adjustment, anxiety, harm avoidance on TPQ
Tedstone et al (1998)	45	n.s.	2 weeks 12 weeks	Yes	Yes	No	low acceptance coping, compensation seeking, negative appraisal for future, bleak outlook

Chapter 6 - Psychological Reactions of Relatives of Burn Trauma Victims

6.1 - Introduction

There is a general acknowledgement that individuals not directly involved in a traumatic event may be psychologically traumatised and develop psychological sequelae as a direct result. Raphael (1986) discussed a typology of disaster victims that defined primary victims as those present at the traumatic event, secondary victims as the relatives and friends of the primary victims, third-level victims as emergency personnel and fourth-level victims as the community involved. In the DSMIV definition of PTSD Criterion A includes "..... *learning about unexpected or violent death, serious harm, or threat of death or injury experienced by a family member or other close associates.*" Hence it is now formally accepted that individuals who learn about a traumatic event can be extremely traumatised by this and develop PTSD along with other psychological sequelae. Figley (1995) has discussed the concept of secondary traumatic stress disorder which includes similar phenomena to PTSD but is secondary to serious trauma experienced by another individual.

6.2 - Summary of Literature Regarding Psychological Reactions of Relatives of Burn Trauma Victims

Goodstein (1985) in a review paper discussed his belief that the family of burn trauma victims go through a similar emotional adjustment as the victims themselves. He described an initial shock and grief stage whilst the victim may be acutely unwell and the uncertainty of whether they will survive or not. This is followed by the inpatient stage where they have to adjust to a new role of visiting and helping a previously independent relative and potential conflicts with hospital staff who they may feel are not doing enough particularly in terms of aspects such as pain relief. The final stages

concern the cosmetic outcome, physical function and psychiatric aspects. He believed that emotional issues were often avoided and that family members were often overoptimistic. He described the potential stress of discharge when relatives' expectations that "all is over" are often challenged by a slow adjustment and rehabilitation period post discharge. Goodstein believed that family members often found themselves in a particularly difficult position somewhere between the patient and staff and often with noone addressing their needs as the focus of the staff was very much on the patient.

Unfortunately there has been little systematic research that has considered the psychological impact on relatives of burn trauma victims. The research that has been done is dominated by descriptive research on parents of burned children and the methodological quality is poor. The absence of the use of standardised measures in many studies, different magnitudes of trauma and the small sample sizes make the results difficult to compare and fully interpret. Given the shortcomings of this literature most of the studies identified will be considered in less detail than those relating to the victims of burn trauma discussed in chapter 4. The data containing studies are summarised in Table 6.3.

(i) Vigliano, Hart and Singer (1964) - Vigliano et al performed detailed assessments on ten children aged between six and 16 years old who had sustained burn trauma greater than 15% TBSA approximately four and a half years previously. They also interviewed the mothers of the children. Nine of the children described significant psychological disturbance and eight of the ten mothers did. Depression was the most commonly cited disturbance.

(ii) Martin, Lawrie and Wilkinson (1968) - Martin et al described symptoms of grief and depression in six of seven families of children who had died of burn trauma on a burns unit in London.

(iii) Martin (1970) - Martin studied 50 children treated at a burns unit in London and their parents who were interviewed within two days of the burn trauma and three, six

and 12 months later. The results of the study were descriptive. Self blame and blame of others or external circumstances such as housing conditions were found to be common.

(iv) Wright and Fulwiler (1974) - Wright and Fulwiler compared twelve children aged between eight and 13 who been hospitalized as a result of burn trauma (mean TBSA 22%) and their mothers with twelve control children matched for age and sex but hospitalised for a different reason and their mothers. One of the main outcome measures employed was the Rorschach test. The mothers of the burned children were rated as having significantly more psychopathology on this than the other mothers although there were no significant differences between the two groups of mothers on the manifest anxiety scale test. The authors suggested that their findings could be explained by either increased pre-existing psychopathology in the mothers of burned children or that burn trauma resulted in more marked emotional sequelae.

(v) Brodland and Andraeson (1974) - Brodland and Andraeson studied 32 adults aged between 20 and 59 following acute burn trauma and their relatives. Participants received a comprehensive psychosocial assessment on admission and were evaluated daily until discharge. Mean TBSA burn was 29% with a mean inpatient stay of one month. Their qualitative findings made them conclude that the relatives appeared to go through a similar adjustment process to the subjects with an initial shock/grief phase followed by an acceptance phase. Key stressors identified included fear and uncertainty as to whether their relative would live or not, adjustment to a formerly independent relative who had become much more dependent and at times very demanding, disfigurement, scarring and self blame for the accident even when this represented an irrational thought.

(vi) Green et al (1983) - In addition to studying the survivors of the Beverly Hills Supper Club fire as described in chapter 4 Green et al also studied 30 individuals who were not present at the fire (23 were family members who had been bereaved and seven were rescue workers). This "not at fire" group was compared with the 117 studied who were at the fire. The not at fire group's scores were significantly higher than the at fire group on the SCL-90 and the PEF. Eighteen (61%) of the not at fire group were noted

to be experiencing mild, moderate or severe psychological distress at one year after the fire compared to 36 (31%) of the at fire group. Twenty-one of the not at fire group were reinterviewed at two years. Their scores had reduced but were still higher than the at fire group. This study was of severely traumatised individuals as all the relatives had been bereaved as a result of the fire.

(vii) Reddish and Blumenfield (1984) - Reddish and Blumenfield studied the wives of 25 men consecutively admitted to a burns unit in the USA. The wives were interviewed by a psychiatric liaison nurse and a liaison psychiatrist but no standardised measures were used. The mean TBSA was 32% and the mean age of the wives was 40 years. Initial distress and feelings of loss, depression, sleep disturbance, guilt and anger were reported as common within the first 14 days after the burn trauma. During the rehabilitation period feelings of anxiety at dealing with their husbands at home and sexual concerns were common.

(viii) Cella et al (1988a) - Cella et al approached 68 parents and spouses of acute burn trauma victims admitted to a unit in New York. The patients included children and adults although the exact number of each was not stated. Forty-eight (71%) relatives agreed to take part (42 parents and six spouses). The mean TBSA burn of the patients was 21%. Relatives were asked to complete a variety of questionnaires and a semi-structured interview at three time points. Forty-eight completed the assessment at three to four days after the burn trauma, 26 at six to eight weeks afterwards and 23 at six to eight months afterwards. The levels of distress found in this group were high.

Mean scores for the initial assessment were 51.8 (sd. 13.3) for the Spielberger State Anxiety Inventory (SSAI), 12.1 (sd 7.9) for the Beck Depression Inventory (BDI), 20.3 (sd 9.9) for the intrusion scale of the Impact of Event Scale (IES), 13.8 (sd 9.8) for the avoidance scale of the IES and 23.4 (sd 7.7) for the Perceived Stress Scale (PSS). In the 23 relatives who completed all three time assessments the scores dropped significantly over time on all scales except the PSS. The scores at six to eight months were all lower than the scores at six to eight weeks as shown in Table 6.1.

Table 6.1: Psychological Questionnaire Sores for the 23 relatives who completed all three assessments.

Measure	One to three days mean (sd)	Six to eight weeks mean (sd)	Six to eight months mean (sd)	p value
SSAI	55.0 (12.3)	41.5 (11.4)	38.3 (9.1)	<0.001
BDI	13.6 (9.1)	7.6 (7.3)	4.0 (3.9)	<0.001
IESI	21.4 (9.1)	12.1 (8.5)	9.7 (9.5)	<0.001
IESA	17.5 (10.0)	12.6 (7.1)	12.4 (10.0)	<0.05
PSS	24.3 (7.6)	23.3 (6.9)	20.2 (9.3)	n.s.

They argued that their results showed that depression and anxiety tended to reduce over time whereas specific stress symptoms continued. This is difficult to justify from their results given the reduction in IES scores although it is fair to comment that the depression scores were particularly low.

The authors performed correlations with some continuous variables and compared mean intrusion and avoidance symptoms at time three with categorical variables. Increased age was associated with increased avoidance at six to eight month follow-up although the p value was 0.04 which makes a chance association relatively high given the small sample size to independent variable ratio. Guilt at time one was associated with increased intrusion and avoidance at follow-up. There was no significant association with marital status, income, extent of burn, facial disfigurement, and rating of blame.

(ix) Cella et al (1988b) - In a separate paper Cella et al (1988) compared 36 parents of hospitalised children as a result of burn trauma (median TBSA burn 14%) with 22 parents of children hospitalised for other surgical or medical procedures which were "benign" such as tonsillectomy, hernia repair and infection. Seventy-nine percent of the parents were female. There were no statistically significant differences between the parents in the two groups. Similar measures were employed to those described above within four days of the event. The parents of the burn trauma children were significantly more distressed than the non burn trauma children as shown in Table 6.2.

Table 6.2: Comparison of Parents of Children post Burn Trauma or other Trauma.

Measure	Burn Group mean (sd)	Nonburn Group mean (sd)	P value
IES, intrusion	19.3 (9.9)	12.4 (9.2)	<0.05
IES, avoidance	15.0 (9.9)	9.9 (7.2)	<0.05
BDI	12.3 (8.6)	5.7 (5.0)	<0.01
SSAI	51.7 (12.6)	47.7 (10.8)	n.s.

Post hoc analyses to consider predictors were performed. There were no significant differences but trends towards worse psychological symptoms with severity of burn trauma and facial involvement.

(x) Shelby et al (1992) - Shelby et al studied 14 relatives (three spouses, nine parents and two individuals with both spouse and child burned). The mean TBSA burn was 36% and the mean age of the relatives was 35 years old. Individuals with a significant past physical or psychiatric history were excluded. The relatives were assessed within 72 hours of the patient's hospital admission and two to five weeks later using the Depression Adjective Checklist, the Impact of Event Scale (IES) and the Spielberger State Anxiety Inventory (SSAI). The mean (sd) depression score fell from 15.9 (3.6) initially to 12.4 (3.6) at follow-up. The mean (sd) IES intrusion score fell from 24.0 (3.2) initially to 18.1 (6.3) at follow-up and the IES avoidance score fell from 15.3 (7.3) initially to 11.6 (8.4) at follow-up. The mean (sd) SSAI score fell from 53.8 (19.4) initially to 47.8 (13.0) at follow-up. Initial depression scores and the intrusion score on the IES were correlated with depression scores at follow-up but avoidance scores were not. Unfortunately other correlations were not included in the paper. These findings support the authors conclusion that the relatives displayed clinically significant levels of depression, anxiety and traumatic stress symptoms with some improvement over time although unfortunately the sample size was small and the follow-up period was short.

(xi) Rizzone et al (1994) - Rizzone et al published what they described as the first study of PTSD symptoms of parents of children with burns but unfortunately did not fully discuss Cella et al's (1988a,b) or Shelby et al's (1992) work. Twenty-five

parents (24 mothers and one father) were included in the study. The interviews occurred a mean of 7.3 (sd 4.5) years after the burn trauma and mean TBSA burn was high at 37.9% (sd 28.8%). The parents were all interviewed with the PTSD section of the Structured Clinical Interview for DSM-III-R.

Seven (28%) parents reported no symptoms of PTSD, 18 (72%) reported past symptoms and 14 (56%) reported present symptoms. Thirteen (52%) met diagnostic criteria for acute PTSD commencing within six months of the burn trauma. Four (31%) of these met the criteria for current PTSD. The one father reported no PTSD symptoms. Percentage TBSA burn was significantly correlated with present symptoms. Proximity, perceived stress and social support were not significantly correlated. Using hierarchical multiple regression the percentage TBSA burn and proximity to the trauma accounted for 16% of the variance in present PTSD symptoms which was highly significant ($p=0.007$). Feelings of guilt and self-blame were reported to be common.

Shortcomings of this study include the small sample size, the fact that some of the mothers were burnt themselves, the lack of uniformity in time lapsed since the burn trauma and no information regarding any relationship between psychological symptoms in the children and the parents.

6.3 Summary and Conclusions

There has been limited research into the psychological impact of burn trauma in the relatives of those burned. The quality of the existing research is poor overall. Methodological shortcomings include small sample sizes, absence of comparison of symptoms with the burn trauma victim or an alternative control and the absence of the use of well validated questionnaires or structured interviews. Most of the research to date has concerned parents of children who describe significant psychological sequelae. The studies that have considered relatives of adult burn trauma victims have also found significant psychological sequelae amongst them. Few studies have

considered variables associated with the development of psychological sequelae. Those that have done have produced inconsistent results but possible associations have been found with measures of initial depression, intrusive thoughts, TBSA burn and guilt. It is apparent that this area is under researched and that more studies are required to determine the true prevalence and predictors of psychological sequelae in relatives of acute burn trauma victims.

The research performed to date has confirmed that the relatives of burn trauma victims can be psychologically traumatised by their experiences. Even if they have not witnessed the actual traumatic event they are likely to have endured other traumatic experiences. For example being informed that a close relative has sustained burn trauma and seeing the effects of the burn for the first time are likely to represent major traumatic experiences. The studies revealed significant symptoms of PTSD in this population and highlighted the potential psychological and emotional needs of burn trauma victims. I therefore developed the idea of including relatives in the study and believed this to be justified by the levels of PTSD symptomatology found in previous studies. Given the nature of PD it seemed appropriate to offer it to subjects and relatives at the same time as this could potentially facilitate an understanding of each others traumatic experiences and promote mutual support.

Table 6.3 - Data containing Studies of the Prevalence and Predictors of Psychological Symptoms in Relatives of Victims of Acute Burn Trauma (n>10)

Study	Setting	n	% Burn mean (sd)	Follow-up post burn	Main Outcome measures	Completers n (%)	Mean (sd) outcomes	Prev'nce Psych Sequelae	Predictors of Psych Sequelae
Wright & Fulwiler (1974)[1]	USA	12	22 (n.s.)	39 months	Manifest Anxiety Scale Test	12 (100%)	19.67 (n.s.)	n.s.	n.s.
Green et al (1983)[2]	USA	30	n.s.	One year	PEF	30 (100%)	3.1 (1.3)	18 (61%)	n.s.
					SCL-90		1.0 (0.7)		
				Two years	PEF	21 (70%)	2.2 (1.3)	n.s.	
					SCL-90		0.6 (0.1)		
Cella et al (1988a)[3]	USA	68	21 (n.s.)	Three days	IES	48 (71%)	43.7 (17.5)	n.s.	Age, initial distress, guilt
					BDI		12.1 (7.9)		
				Seven weeks	IES	23 (34%)	24.7 (15.6)		
					BDI		7.6 (7.3)		
				Seven months	IES	23 (34%)	22.1 (19.5)		
					BDI		4.0 (3.9)		

1 = Included parents of children only 2 = Included 7 rescue workers 3 = Included parents of children and relatives of adults

PEF = Psychiatric Evaluation form SCL-90 = Symptom Checklist IES = Impact of Event Scale BDI = Beck Depression Inventory

Table 6.3 continued

Shelby et al (1992)[2]	USA	14	36 (6.3)	Three days	DAC IES SSAI	14 (100%)	15.9 (3.6) 39.3 (10.5) 53.8 (19.4)	n.s.	Initial depression and IES intrusion
				Two to Five weeks	DAC IES SSAI	14 (100%)	12.4 (3.6) 29.7 (14.7) 47.8 (13.0)		
Rizzone et al (1994)[1]	USA	25	37.9 (28.8)	7.3 years	DSMIIIR PTSD past DSMIIIR PTSD present	25 (100%)	n.s.	9 (36%) 4 (16%)	TBSA burn

DAC = Depression adjective checklist SSAI = Spielberger state anxiety inventory

Chapter 7 - Aims

The preceding chapters have highlighted the fact that a significant number of individuals who have experienced traumatic events develop psychological sequelae. As a result attempts have been made to develop effective early interventions to prevent psychological sequelae. Psychological debriefing has been the most widely advocated early intervention but lacks an empirical basis for its use. Exploration of the literature does provide some theoretical support for its use. This along with its widespread use and acceptance in some areas made me believe it important to perform a randomised controlled trial to investigate its effectiveness at preventing psychological sequelae following trauma. The fact that the Dyregrov (1989) method contained the key ingredients advocated for a psychological debriefing to be effective, its clear description and my personal familiarity with it made me believe it was the most appropriate model of psychological debriefing to study.

Chapter 4 confirms the relatively high incidence of psychological sequelae including PTSD in burn trauma victims. This and pre-existing links with the local burn trauma unit made me believe that burn trauma victims were an appropriate group to study. The findings that relatives of burn trauma victims can also be significantly traumatised even if they do not witness the burn trauma itself led to the inclusion of them in the study. The study also allowed for further exploration of factors that may be predictive of the later development of PTSD symptoms in burn trauma victims and their relatives, areas that appeared to have been under researched previously.

7.1 - Primary Aims

The primary aims of this study were to:

1. Determine the effectiveness of psychological debriefing in preventing psychological sequelae in victims of acute burn trauma.

2. Determine the effectiveness of psychological debriefing in preventing psychological sequelae in relatives and partners of victims of acute burn trauma.

3. Explore the predictive value of various factors including psychological debriefing on psychological outcome in victims of acute burn trauma.

4. Explore the predictive value of various factors including psychological debriefing on psychological outcome in relatives of victims of acute burn trauma.

5. Compare psychological responses of victims of acute burn trauma and their relatives.

7.2 - Outcome Measures

Given the main aim of psychological debriefing to prevent the development of PTSD and other psychological sequelae it was believed important to use a measure of PTSD as the main outcome measure for the study. The Clinician Administered PTSD Scale (CAPS-DX; Blake et al, 1990) was selected. A review of the literature revealed that the CAPS-DX is probably the best validated specific instrument to measure PTSD symptoms. It was developed at the National Centre for PTSD in the USA. It is a semi-structured interview that covers the 17 DSM-III-R B, C and D criteria for PTSD. Each question is scored according to the frequency and intensity of the symptom over the previous month on separate 0 to 4 scales giving a maximum total score of 136 and the ability to determine the presence or absence of PTSD as defined by DSM-III-R. It has been well validated and shown to be reliable across a variety of populations (Weathers, 1996).

It was also believed vital to include a questionnaire measure of PTSD symtpoms that could be administered before the intervention and at follow-up. The Impact of Event Scale (IES; Horowitz et al, 1979) was selected. A review of the questionnaires commonly used to measure symtpoms of PTSD revealed the IES to be well validated and reliable with a high correlation with the presence of PTSD (Neal et al, 1994). It is a

fifteen item questionnaire with seven questions concerning intrusive phenomena (e.g. distress on reminders, dreams) and eight questions concerning avoidance phenomena (e.g. not discussing the trauma). The frequency of symptoms are scored on a 0, 1, 3, 5 scale giving a maximum possible total score of 75.

In addition to the PTSD outcome measures, measures for anxiety and depression were included as a result of the high prevalence of these conditions in burn trauma populations and also as a result of the desired more global positive mental health effects of PD as an intervention. Given the nature of the population and the study it was decided to identify an easily administered questionnaire that avoided the risk of false positive findings due to elevation of scores through the inclusion of somatic symptoms of anxiety or depression. The Hospital Anxiety and Depression Scale (HADS; Zigmond & Snaith, 1983) was selected as it avoids questions about somatic complaints and has been well validated amongst individuals with physical conditions (e.g. Moorey et al, 1991). It is a 14 item questionnaire that has a seven question anxiety subscale and a seven question depression subscale. The questions focus on internal feelings such as "worrying thoughts go through my mind". Individuals are asked to rate each question by selecting one of four accompanying statements which are scored on a 0 to 3 scale giving a maximum possible score of 21 for both the anxiety and depression subscales.

Finally it was believed important to include measures of functional status. The late effect of accidental injury questionnaire (Malt, 1988) considers the impact accidental injury has had on an individual and concerns effects on functioning. Items were selected from this questionnaire for inclusion in the follow-up questionnaires as they had been used in similar populations previously. Visual analogue scales concerning four specific areas of functioning (social leisure, occupation, private leisure and home management) were also used to determine what impact the burn trauma and psychological effects had on these.

Chapter 8 - Method

8.1 - Location of Study and Ethical Approval

The study took place at the South Wales Regional Burns Unit. This was located in Chepstow when the study commenced but was then moved to Swansea where the study was completed. Ethical approval was granted for the study.

8.2 - Identification of Subjects

All patients aged between 16 and 65 years old who were admitted for at least 24 hours to the South Wales Regional Burns Unit between 1 November 1993 and 30 April 1995 following acute burn trauma and a close relative or partner were eligible for inclusion in the study.

8.3 - Exclusion Criteria

Any patients who satisfied one or more of the exclusion criteria listed below were excluded from the study.

1. Pre-existing major physical or psychiatric disorder/disability.
2. Home address outside South Wales.
3. Admission that the burn trauma was an act of deliberate self harm.
4. Evidence of impaired cognitive functioning as judged by a Mini-Mental State Examination score of less than 25 (Folstein, Folstein & McHugh, 1975).

8.4 - Procedure

8.4.1 - Consent and Randomisation Procedure

Potential subjects were identified and recruited between two and seven days following their burn trauma. Following identification a research psychiatrist explained the study to potential subjects and their relatives/partners and answered any questions that were raised. If subjects agreed to take part in the study they were asked to sign the consent form at Appendix A. Once a subject had given informed consent they were randomly allocated to receive the intervention (the psychological debriefing group) or standard treatment (the control group). Relatives/partners were consulted in the same way and were randomly allocated to the same group as the subject to whom they were related if they agreed to take part in the study.

A sample size calculation (see section 9.1) determined that a sample size of 204 should be aimed for. Therefore, a list of numbers from 1 to 204 were randomised to two groups (representing the intervention or standard treatment condition) using a computer programme. The research psychiatrist matched the subject number with the list generated by the computer programme to determine to which group the subject had been allocated.

8.4.2 - Initial Data Collection

Following consent and random allocation individuals were asked to complete the initial questionnaires which differed slightly for subjects and relatives/partners (see Appendix B). Individuals unable to write (most commonly because of burns to their hands) were offered assistance in completing the questionnaires by a relative, partner, friend, the research psychiatrist or a member of the burns unit staff. Interviews were not performed at this time as it was felt that a prolonged interview may effectively represent a partial psychological debriefing and make interpretation of the results difficult. Other data was

collected by the research psychiatrist and I from the medical notes regarding the extent of the injury and the treatment received.

The variables collected are shown in Table 8.1 and aimed to elicit the dimensions of the trauma, the degree of injury, background data and early psychological reactions. The selection of the variables collected was determined by previous research findings in the field of traumatic stress and burn trauma.

Table 8.1: Initial Data Collected

1. Dimensions of the burn trauma
a. Circumstances of trauma, b. Bereavement, c. Life threat, d. Extent of Injury, e. Other losses - home, belongings etcetera, f. Perceived stressfulness, g. Behaviour during the trauma, h. Immediate reactions.
2. Background data
a. Previous exposure to trauma/burns, b. Previous physical health, c. Previous mental health, d. Usual personality, e. Usual substance use, f. Occupation, g. Hobbies, h. Family details.
3. Standard questionnaires
a. Impact of Event Scale, b. Hospital Anxiety and Depression Scale, c. Quality of life visual analogue scales.

8.4.3 - The Intervention

Subjects allocated to the intervention group received a Psychological Debriefing using a slightly modified version of the PD model described by Dyregrov (1989). The choice of the Dyregrov model has been discussed above and was largely on theoretical grounds and the fact it was in widespread use. The main differences were that some time was spent discussing any physical concerns the individuals had following their burn trauma

and that the debriefings were performed with just the subject or the subject and a relative or partner (a full description of the method used is included at Appendix C). Otherwise the content, timing and duration of the intervention adhered as closely as possible to Dyregrov's (1989) description.

Subjects allocated to receive a PD were invited to ask a partner or close relative to attend if they desired. The PDs were scheduled to occur as soon as possible from 48 hours after the burn trauma as long as the individual's physical condition was stable. The debriefings were performed in a private room on the burns unit by a research psychiatrist or one of five burns unit nurses who had volunteered to undergo training and supervision in PD. The research psychiatrist had recently completed a six month placement on a psychotherapy unit. The burns unit nurses had no previous formal psychiatric or psychological training except what they had done as part of their basic nursing qualification. The research psychiatrist and burns unit nurses were trained in the technique of Psychological Debriefing by me and also received supervision from me. Supervision involved discussing how the PD had been delivered and encouraging the facilitators to adhere to the protocol as closely as possible. There were no other quality control measures included such as randomly taping and assessing some of the PDs.

8.4.4 - Follow-up Procedure

Three months and thirteen months after the burn trauma all individuals were contacted regarding follow-up interviews. The majority of follow-up interviews took place in the participants' own homes, a minority took place at the burns unit. The interviews were conducted by me blind as to whether the individual had been psychologically debriefed or not (I was not aware which subjects had been randomly allocated to the psychological debriefing group and which subjects had been randomly allocated to the control group until all the data collection was completed). A structured clinical interview, the diagnostic version of The Clinician Administered PTSD Scale (CAPS-DX; Blake et al, 1990) was administered to the subjects and relative/partner taking part in the study

(attached at Appendix D). In addition participants were asked to complete further questionnaires which again differed slightly for subjects and relatives/partners (attached at Appendix E). Exactly the same interview and questionnaire data were collected at three and thirteen months after the burn trauma. The variables collected at the follow-up interviews are shown in Table 8.2.

Table 8.2: Follow-up Data Collected

1. Items based on the late effect of accidental injury questionnaire
2. Time in hospital
3. Degree of disability
6. Clinician Administered PTSD Scale
7. Treatment (physical and psychological) since burn trauma
8. Substance use since burn trauma
9. Social support since burn trauma
11.Impact of Event Scale
12.Hospital Anxiety and Depression Scale
13.Quality of life visual analogue scales

Chapter 9 - Statistical Analysis of Data

9.1 - Sample Size Calculation

Previous research suggested that approximately 50% of burn trauma victims would develop psychological sequelae. If PD reduced this figure to 25% 102 subjects and 102 controls would have been required to have a 95% chance of detecting a difference at a statistically significant level of $p < 0.05$ in this study. A decision was made, therefore, to aim for a sample size of 204 although it was acknowledged that time limitations meant that recruitment would have to be stopped after eighteen months even if the target sample size had not been reached.

9.2 - Statistical Analyses

All data collected were coded numerically and entered into a database created on the Statistical Package for the Social Sciences (version 6.1 for Windows). Statistical advice was taken to determine the most appropriate ways to analyse the data.

9.2.1 - Non-completers

Initially the data collected from those individuals who completed the study was compared with those who did not. Student's independent t-test was used to compare continuous variables and the Chi-squared test was used to compare categorical variables. The Arcus Pro II statistical analysis package version 2.15a was used to perform the Chi-squared test.

9.2.2 - The Effectiveness of Psychological Debriefing

The data of participants who were allocated to the debriefing group and who received a debriefing were compared with the data of individuals allocated to the control group to determine the effectiveness of the intervention. Advice regarding analysis was taken from a medical statistician who believed that intention to treat analysis should be reserved for studies where the main outcome variable would be expected to remain relatively stable over time without intervention (for example treatment trials for established psychiatric disorder). Previous research that has shown levels of distress to reduce with time following traumatic events led the expectation that the main outcome measures (the total CAPS score, IES, HADSA and HADSD scores) would reduce over time in this study. In view of this the medical statistician advised that an intention to treat analysis using the last valid score for missing values would not be clinically meaningful and would be likely to make interpretation extremely difficult. It was, therefore, agreed that the main analysis would be performed only on those individuals who completed the full thirteen month follow-up period having adhered to the protocol. Student's independent t-test was used to compare continuous variables and the Chi-squared test was used to compare categorical variables. Analyses of co-variance were used to compare the normally distributed quantitative main outcome variables using the initial values of the variables as co-variates in order to control for any differences in initial values between the PD group and the control group.

9.2.3 - Relatives/Partners

It was decided that in order to determine any differences between relatives/partners and subjects that the data of the relatives and partners who completed the thirteen month follow-up should be compared with the data obtained from the subject to whom they were related. Student's paired samples t-test was used to compare continuous variables and the Chi-squared test was used to compare categorical variables. In order to determine the effectiveness of PD in the relatives/partners analyses of co-variance were used to compare the normally distributed quantitative main outcome variables using the

initial values of the variables as co-variates in order to control for any differences in initial values between those who received PD and those who did not.

9.2.4 - Linear Regression Analyses

As a result of the large number of variables considered and the likely impact of these variables on the results as a whole it was decided to investigate the impact of variables thought to be important by using forward stepwise linear regression analyses. The dependent variables selected were the main outcome measures, i.e. total CAPS score at three months and at thirteen months. Independent variables were separated into dimensions of trauma, demographics, premorbid vulnerability, presence of PD, distress at the time/initial distress and other variables. In the case of the relatives distress in the corresponding subject was added to this list.

Altman (1991) advocated that the maximum size of model acceptable should be decided in advance and that the number of independent variables should be restricted to minimise the risk of chance findings. He suggested a maximum number of independent variables as either the square root of the sample size or the sample size/10. Given the subjects sample size of 103 and relatives sample size of 35 in this study it was decided to identify ten independent variables for the subjects' analyses and six for the relatives' analyses. The independent variables were selected through a review of the results of previous studies of predictors of PTSD and other psychological sequelae in burn trauma victims taking care not to include variables that were likely to be highly related. It was believed that this method of selecting independent variables made most sense clinically and methodologically.

A variable was entered if the significance level of its F-to-enter was less than the Entry value of 0.05, and removed if the significance was greater than the Removal value of 0.1. Two forward stepwise linear regression analyses were performed on both the subjects and the relatives data using the total CAPS score at three and thirteen months as the dependent variables.

The review of the literature identified several potential predictor variables and it was determined that those included in the linear regression analyses should have been suggested as being predictive previously. Unfortunately given the relatively low overall sample sizes the number of independent variables that could have been included had to be restricted leading to difficult decisions regarding what to include. In the case of the subjects it was decided to include the presence or absence of PD as this was the main focus of the study. The percentage burn was included due to its inclusion in many previous studies and apparent predictive value. This also led to the inclusion of pain, hand/face burns and measures of initial distress. Given the apparent strong association of specific symptoms of distress with outcome in previous studies it was decided to include anxiety, depression and symptoms of traumatic stress as measured by the IES as separate independent variables. It was acknowledged that relationships between these variables could result in the predictive value of one or more being masked. However the apparent strong association made me believe it important to explore initial distress as thoroughly as possible. More recent research has suggested that internal factors may have a greater impact on outcome than external factors (e.g. Tedstone et al, 1998) and it was therefore decided to include self blame and the perception that someone else was to blame as independent variables. These have been found to be predictive of outcome in previous research but have not been as regularly researched as other variables. This is also true of the presence of a compensation claim, the final independent variable included, which although not widely studied has been associated with negative outcome and has received much anecdotal attention. Perhaps the most significant omission from the analysis was the presence of a past psychiatric history which has been associated with negative outcome in previous studies. Probably due to the exclusion criteria only four (4%) participants reported a past psychiatric history in this study and therefore its inclusion as an independent variable would have been unlikely to have resulted in a meaningful result.

In the case of the relatives the limited sample size meant that still fewer independent variables could be considered leading to the omission of several potential predictor variables. However it was considered important to resist the temptation to include

more variables than suggested by Altman (1991). Decisions regarding selection were again made on the basis of previous research. The degree of trauma to the subject has been shown to be important and therefore percentage burn was included. Measures of initial distress were felt to be important and given the findings that initial depression and intrusive thoughts were associated with outcome in previous studies of relatives initial depression and IES scores were included at the expense of initial anxiety scores. It was felt important to include a more internal variable and given the association found previously between guilt and outcome the self blame measure was considered most appropriate. Despite not having been previously studied the distress of the burn trauma victim seemed important. Initial depression in the burn trauma victim was therefore included along with the burn trauma victim's total CAPS score at the time the relative was interviewed.

Chapter 10 - Results - Description of Population and Initial Reactions

10.1 - Recruitment

One hundred and sixty-five patients who were admitted to the South Wales Regional Burns Unit agreed to take part in the study. Twelve were excluded having given their consent due to subsequent detection of the presence of an exclusion criterion (seven lived outside South Wales, three were suffering from a major psychiatric disorder, one had self inflicted their burn trauma and one had sustained their burn trauma more than one month previously). An additional 22 patients were identified as satisfying the inclusion criteria for the study but did not take part in the study. Five refused to do so and seventeen had been discharged before the study had been discussed with them. Unfortunately no details are available for these 22 individuals and therefore no comparison between them and those included could be made.

10.2 - Non-Completers

The 153 individuals who consented to enter the study and fulfilled the inclusion criteria were randomised to the PD group or the control group. Unfortunately 18 (12%) failed to complete the initial questionnaires despite reminders. Hence 135 (88%) individuals completed the initial questionnaires, data were obtained from 112 (73%) individuals at three month follow-up and from 103 (67%) individuals at the initial, three month and thirteen month follow-up points. Table 10.1 describes the stage of drop-out according to which group individuals were randomly allocated. There were no statistically significant differences in the number of dropouts between the two groups.

Table 10.1 - Time of drop-out according to group randomised to

Stage of Study	Number of PD Group Still in Study	Number of Control Group Still in Study	Odds Ratio (95% C.I.)	p
Randomisation	81 (100%)	72 (100%)		
Completion Initial Q'aire	76 (94%)	59 (82%)	3.35 (1.13, 9.92)	0.04
Completion Assessment Two	61 (75%)	50 (69%)	0.73 (0.30, 1.81)	0.65
Completion Assessment Three	57 (70%)	46 (64%)	1.24 (0.29, 5.23)	1.0

The reasons for non-completion at the three and thirteen month follow-up points are shown in Table 10.2. The two participants who died did so of causes unrelated to the burn trauma (one of lung cancer and one of a cerebral haemorrhage).

Table 10.2 - Reasons for non-completion at three and thirteen months (n = 32)

Stage of Study	PD Group (3 months)	PD Group (13 months)	Control Group (3 months)	Control Group (13 months)
Failed to attend PD	7 (22%)	n/a	n/a	n/a
Unable to Contact	5 (16%)	1 (3%)	8 (25%)	2 (6%)
Refused to Continue	3 (9%)	1 (3%)	1 (3%)	2 (6%)
Died	0 (0%)	2 (6%)	0 (0%)	0 (0%)

10.3 - Comparison of Completers and Non-completers

Tables 10.3 and 10.4 compare the dichotomous and continuous background and trauma related data variables obtained from the individuals who completed the study (n = 103) and those who did not but completed the initial questionnaires (n = 32). There were no deaths in the various incidents leading to the trauma and only one individual (0.7%) believed that anyone else had come near to death.

The tables demonstrate that overall the completers and non-completers were very similar. The only significant difference at the $p<0.05$ level was subjective life threat. Twice as many completers (48 (47%)) reported this as non-completers (7 (23%)).

Almost twice as many non-completers reported significant previous trauma (12 (38%)) as completers (20 (20%)) but this difference did not reach significance.

The sample was predominantly male, employed with an average age in their mid thirties and was functioning well before the burn trauma as judged by the low scores for impairment of functioning measures and high levels of contentment with life. The mean percentage TBSA burn was relatively low at around five percent as was the mean length of inpatient stay at 16.14 (sd 16.4) days for the completers. However the traumatic experience was perceived as stressful according to the visual analogue scale, shock reported and by the fact that almost half of the completers believed their life was threatened. A variety of traumatic events resulted in the burn trauma. Industrial accidents including minor explosions and fires were common. House fires and scalds with boiling water were less common. Self blame (43 (42%)) was twice as common as blaming others (21 (21%)) amongst the completers. Psychological distress as determined by the HADS and IES was present but the mean scores were relatively low with quite large variance.

Table 10.3 - Comparison of Dichotomous Background and Trauma Related Variables Between Completers (n = 103) and Non-Completers (n = 32)

Variable	Completers Total (%)	Non-Completers Total (%)	Odds Ratio	95% C.I.	p value
Sex (male)	77 (75%)	24 (77%)	0.86	0.33 to 2.24	0.95
Married	50 (49%)	14 (45%)	1.17	0.52 to 2.62	0.86
Employed	70 (68%)	22 (71%)	0.87	0.36 to 2.09	0.92
Past Psychological Treatment	9 (9%)	5 (17%)	0.47	0.15 to 1.55	0.36
Previous Psychiatrist Contact	4 (4%)	4 (14%)	0.29	0.07 to 1.22	0.17
Past Significant Trauma	20 (20%)	12 (38%)	0.42	0.18 to 0.99	0.08
Confidant	78 (77%)	28 (90%)	0.33	0.09 to 1.19	0.13
Rescued	21 (20%)	7 (23%)	0.88	0.33 to 2.31	0.99
Others Injured	16 (16%)	6 (19%)	0.82	0.29 to 2.30	0.91
Subjective Life Threat	48 (47%)	7 (23%)	2.92	1.15 to 7.41	0.035
Shocked by Suddenness	84 (84%)	24 (83%)	1.47	0.57 to 3.78	0.58
Shocked by Severity	72 (73%)	22 (71%)	1.06	0.45 to 2.49	1.0
Self Blame	43 (42%)	12 (39%)	1.13	0.50 to 2.58	0.93
Others Blamed	21 (21%)	8 (26%)	0.79	0.31 to 2.00	0.80

Table 10.4 - Comparison of Continuous Background and Trauma Related Variables Between Completers (n = 103) and Non-Completers (n = 32)

Variable	Completers Mean (sd.)	Non-Completers Mean (sd.)	Mean Difference	95% C.I.	2 tail sig (p value)
Age	37.4 (13.4)	34.7 (11.9)	-2.7	-8.13 to 2.66	0.32
Percent Burn	5.25 (5.29)	4.96 (4.54)	-0.29	-2.5 to 1.92	0.80
How Stressful*	5.37 (2.52)	5.26 (2.50)	-0.11	-1.13 to 0.91	0.83
Pain*	3.17 (2.05)	3.16 (1.99)	-0.01	-0.84 to 0.81	0.97
Privimp*	0.61 (1.40)	0.71 (1.76)	0.10	-0.5 to 0.71	0.74
Homeimp*	0.54 (1.38)	0.58 (1.21)	0.04	-0.51 to 0.58	0.90
SocImp*	0.51 (1.27)	1.19 (2.43)	0.68	-0.24 to 1.60	0.14
Workimp*	0.98 (2.22)	1.27 (2.48)	0.29	-0.65 to 1.22	0.55
Content*	6.62 (2.05)	6.52 (2.16)	-0.1	-0.95 to 0.75	0.82
HADSA	5.74 (4.39)	6.23 (4.61)	0.5	-1.32 to 2.31	0.59
HADSD	3.18 (3.71)	3.17 (3.60)	-0.01	-1.53 to 1.49	0.98
IES	15.88 (15.52)	15.48 (15.87)	-0.39	-6.76 to 5.97	0.90
IESI	8.38 (8.78)	7.26 (8.96)	-1.12	-4.72 to 2.48	0.54
IESA	7.53 (7.82)	7.90 (7.74)	0.37	-2.81 to 3.55	0.82

* 0 - 8 Visual Analogue Scales

Chapter 11 - Results - Effectiveness of Psychological Debriefing

Fifty-seven (74%) of those individuals randomised to the PD group and 46 (82%) of those individuals randomised to the control group completed the whole study. The excess number in the PD group was due to the absence of block randomisation and termination of recruitment after eighteen months which resulted in an unequal distribution of individuals between the two groups.

11.1 - Comparison of Initial Data Between the Psychological Debriefing and Control Groups

Tables 11.1 and 11.2 display the background and trauma related data obtained initially. Overall the groups were similar but there were some differences which suggest that the dimensions of the burn trauma were more severe in the PD group. Significantly more of the PD group were involved in traumatic events in which other people were injured (14 (25%)) than the control group (2 (4%)). Thirty-one (54%) of the PD group considered their life to have been threatened compared to 17 (37%) of the control group although this difference was not statistically significant. The percentage TBSA burn was higher in the PD group (6.28% (sd = 5.98%)) than the control group (4.16% (sd = 4.11%)) a difference that was almost statistically significant ($p = 0.05$). Perceived stressfulness was also non-significantly higher in the PD group (5.73 (sd = 2.22)) than the control group (4.91 (sd = 2.81)).

Table 11.1 - Comparison of Dichotomous Background and Trauma Related Variables between the PD Group (n = 57) and the Control Group (n = 46)

Variable	PD Group n (%)	Controls n (%)	OR/Mean Diff (95%CI)	P Value of Difference
Sex (male)	42 (74%)	35 (76%)	0.88 (0.36,2.16)	0.96
Married	24 (42%)	26 (57%)	0.56 (0.26,1.23)	0.21
Employed	43 (75%)	27 (59%)	2.16 (0.93,5.01)	0.11
Past Psychological Treatment	6 (11%)	4 (9%)	1.24 (0.33,4.67)	1.0
Previous Psychiatric Contact	3 (5%)	1 (2%)	3.07 (0.31, 30.63)	0.62
Past Significant Trauma	14 (25%)	6 (13%)	2.17 (0.76,6.19)	0.22
Confidant	41 (72%)	37 (80%)	0.62 (0.25,1.58)	0.44
Rescued	12 (21%)	9 (20%)	1.10 (0.42,2.88)	1.0
Others Involved	14 (25%)	2 (4%)	7.16 (1.54,33.4)	0.01
Subjective Life Threat	31 (54%)	17 (37%)	2.03 (0.92,4.50)	0.12
Shocked by Suddenness	48 (84%)	36 (78%)	1.48 (0.55, 4.02)	0.60
Shocked by Severity	46 (81%)	26 (57%)	3.22 (1.34, 7.75)	0.01
Self Blame	24 (42%)	19 (41%)	0.90 (0.41,1.97)	0.95
Others Blamed	15 (26%)	6 (13%)	2.38 (0.84,6.74)	0.16
Hand/Face Burn	23 (40%)	17 (37%)	1.15 (0.52, 2.57)	0.88
Significant Scarring	34 (60%)	21 (46%)	1.76 (0.80, 3.86)	0.22
Operated On	33 (58%)	23 (50%)	1.38 (0.63,3.00)	0.55

Table 11.2 - Comparison of Continuous Background and Trauma Related Variables between the PD Group (n = 57) and the Control Group (n = 46)

	PD Group mean (sd)	Control Group mean (sd)	Mean Diff (95%CI)	P Value of difference
Age	37.9 (13.1)	36.7 (13.9)	-1.22 (-6.22,4.18)	0.66
Percent Burn	6.28 (5.98)	4.16 (4.11)	2.11 (-0.01,4,24)	0.05
Length Inpatient (days)	18.4 (14.6)	13.2 (18.4)	5.21 (-1.43,11.85)	0.12
Pain (0-8 scale)	3.32 (2.05)	3.00 (2.04)	0.32 (-0.49,1.12)	0.44
How Stressful (0-8 scale)	5.73 (2.22)	4.91 (2.81)	0.82 (-0.2,1.84)	0.11

11.2 - Comparison of Outcome Data Between the Psychological Debriefing and Control Groups

11.2.1 - Main Outcome Measures

Table 11.3 displays the differences over time in HADS scores, IES scores and the total score on the CAPS. Initial scores on the HADS and IES were non-significantly higher in the PD group, the mean difference widening over the three assessment points. At thirteen months the scores on both the anxiety and the depression subscale of the HADS and the IES total score were significantly worse at the 0.05 level in the PD group when compared to the control group at thirteen months as determined by analysis of co-variance (ANCOVA) using the initial questionnaire score as the co-variate. Total CAPS score was significantly lower at both three and thirteen months in the control group compared to the PD group.

The presence of DSMIII-R (APA, 1987) PTSD was determined from the CAPS. At three months 12 (21%) of the PD group satisfied the full criteria compared to 7 (15%) of the control group (Odds Ratio (95% C.I.) = 1.78 (0.61 to 5.18), p = 0.42). At thirteen months 15 (26%) of the PD group satisfied the full criteria compared to 5 (11%) of the control group (Odds Ratio (95% C.I.) = 2.93 (0.98, 8.80), p = 0.086). Of the 20 individuals diagnosed as fulfilling the PTSD criteria at thirteen months 12 (60%) had done so at three months (10 were in the PD group and 2 in the control group) meaning that 8 (40%) individuals had developed PTSD after three months and that 8 individuals no longer fulfilled the criteria.

Analysis of co-variance using initial IES score and percentage burn as co-variates revealed that a higher initial IES score ($F = 44.2$, $p < 0.001$) was far more associated with poorer outcome as measured by IES at thirteen months than PD status ($F = 1.08$, $p = 0.30$) or percentage burn ($F = 1.55$, $p = 0.22$).

Table 11.3 - Comparison of the Main Outcome Measures between the PD Group (n = 57) and the Control Group (n = 46)

	PD Group Mean (sd)	Controls Mean (sd)	Mean difference (95% CI)	P value
HADSA - Initial	5.91 (4.31)	5.65 (4.45)	0.26 (1.99, -1.47)	0.77
HADSA - 3 months	6.39 (4.58)	5.37 (4.29)	1.02 (2.77, -0.74)	0.18[1]
HADSA - 13 months	6.89 (5.68)	4.72 (4.31)	2.18 (4.19, 0.17)	0.02*[1]
HADSD - Initial	3.48 (3.76)	2.89 (3.67)	0.59 (2.06, - 0.88)	0.43
HADSD - 3 months	3.53 (4.16)	2.65 (2.97)	0.87 (2.32, -0.57)	0.32[1]
HADSD - 13 months	3.79 (5.03)	2.02 (2.7)	1.77 (3.31, 0.22)	0.04*[1]
IES - Initial	16.26 (14.28)	15.42 (17.03)	0.84 (7.12, -5.44)	0.79
IES - 3 months	20.39 (19.33)	16.24 (18.24)	4.15 (11.59, -3.29)	0.24[1]
IES - 13 months	19.49 (20.91)	9.61 (12.89)	9.88 (16.55, 3.21)	0.009*[1]
IESi - Initial	8.49 (8.59)	8.24 (9.10)	0.25 (-3.31, 3.80)	0.89
IESi - 3 months	10.73 (10.89)	8.54 (9.61)	2.19 (-1.89, 6.27)	0.34[1]
IESi - 13 months	9.91 (11.09)	4.89 (6.38)	5.02 (1.56, 8.49)	0.019[1]
IESa - Initial	7.85 (7.15)	7.16 (8.61)	0.69 (-2.47, 3.85)	0.66
IESa - 3 months	9.75 (9.95)	7.76 (9.64)	1.99 (-1.88, 5.86)	0.26[1]
IESa - 13 months	9.58 (10.55)	4.72 (7.99)	4.86 (1.24, 8.49)	0.011[1]
CAPS total - 3 months	24.89 (23.94)	15.91 (16.80)	8.98 (16.97, 1.00)	0.028*
CAPS total - 13 months	22.86 (24.90)	13.59 (16.79)	9.27 (17.46, 1.09)	0.027*

1 = P value calculated using analysis of co-variance using initial score as co-variate

HADSA = Hospital anxiety and depression scale - anxiety subscale

HADSD = Hospital anxiety and depression scale - depression subscale

IES = Impact of event scale

CAPS = Clinician administered PTSD scale

11.2.2 - Factors Associated with the PD

Sixteen (52%) of respondents stated that they found the PD "definitely useful". Perception of usefulness of PD made no difference to outcome. Thirty-two (56%) debriefings were facilitated by a research psychiatric registrar and 25 (44%) by a burns unit nurse. Initial IES scores were similar for both groups (mean 15.96 (sd 13.34) for the psychiatrist group compared to 16.08 (sd 15.66) for the nurse group) but the percentage burn was significantly greater (mean difference (95% C.I.) 4.1% (1.34, 6.87),

p = 0.004) in the psychiatrist group (mean 8.31% (sd 8.95)) compared to the nurse group (mean 4.2% (sd 2.96)). Individuals debriefed by the psychiatrist fared worse on the total CAPS score at three months (mean difference = 12.44 (95%CI = 0.28, 24.6), p = 0.045) and at thirteen months (mean difference = 15.34 (95%CI = 2.70, 28.0), p = 0.018). Forty-two (74%) individuals received an individual debriefing and 15 (26%) a couple one, whether the PD was done on an individual or couple basis made no difference to the outcome. The mean length of the PD was 44.8 (sd 18.0) minutes (range 20 to 120 minutes). Increased length of PD was associated with a significantly higher initial IES score (Pearson's correlation coefficient (cc) = 0.47, p = 0.001), total CAPS score at three months (cc = 0.49, p < 0.001) and total CAPS score at thirteen months (cc = 0.49, p < 0.001). The mean time after the burn trauma that the PD occurred was 6.2 (3.6) days (range 2 to 19 days). This was not significantly associated with outcome but there was a trend for the further away the debriefing was for individuals to do worse. The Pearson's correlation coefficients were: initial IES score (cc = -0.06 (p = 0.67), total CAPS score at three months (cc = -0.14, p < 0.30) and total CAPS score at thirteen months (cc = -0.25, p < 0.06).

11.2.3 - Impact on Functioning and Other Outcome Variables

Table 11.4 compares level of contentment and impairment of functioning at all three assessments. There were no significant differences between the PD group and the control group at initial assessment when patients were asked to rate their level of impairment before the burn trauma. The PD group were less content and more impaired on all measures at three months and 13 months with level of contentment at 13 months and impairment of private leisure at three and thirteen months being significantly worse at the p < 0.05 level.

Table 11.4 - Comparison of Contentment and Functional Impairment between the PD Group (n = 57) and the Control Group (n = 46)

Variable (0-8 Scale)	PD Group Mean (sd)	Control Group Mean (sd)	Mean Difference	95% C.I.	2 tail sig (p value)
Content	6.79 (1.81)	6.40 (2.34)	-0.39	-1.22 to 0.44	0.35
Content (3mths)	5.60 (2.45)	6.02 (2.27)	0.43	-0.51 to 1.36	0.24[1]
Content (13mths)	5.34 (2.52)	6.41 (2.03)	1.07	0.17 to 1.97	0.004*[1]
Privimp	0.61 (1.47)	0.60 (1.32)	-0.014	-0.57 to 0.54	0.96
Privimp (3m)	1.81 (2.50)	0.91 (1.82)	-0.89	-1.74 to -0.047	0.041*[1]
Privimp (13m)	1.64 (2.51)	0.74 (1.74)	-0.90	-1.74 to -0.065	0.048*[1]
Homeimp	0.38 (1.01)	0.75 (0.39)	-0.36	-0.22 to 0.95	0.22
Homeimp (3m)	1.91 (2.67)	1.52 (1.98)	-0.39	-1.30 to 0.52	0.24[1]
Homeimp (13m)	1.59 (2.53)	0.96 (1.68)	-0.63	-1.47 to 0.20	0.049[1]
SocImp	0.42 (1.15)	0.64 (1.42)	0.22	-0.29 to 0.72	0.40
Socimp (3m)	2.37 (2.74)	1.59 (2.01)	-0.78	-0.71 to 0.15	0.10[1]
Socimp (13m)	1.82 (2.49)	1.20 (1.82)	-0.63	-1.48 to 0.22	0.093[1]
Workimp	0.84 (2.08)	1.16 (2.04)	0.31	-0.57 to 1.19	0.48
Workimp (3m)	2.75 (3.25)	2.05 (2.74)	-0.71	-1.90 to 0.48	0.26[1]
Workimp (13m)	1.91 (2.66)	1.05 (1.93)	-0.86	-1.78 to 0.058	0.092[1]

1 = P value calculated using analysis of covariance with initial value as covariate

Other outcome variables measured at 13 months are shown in Table 11.5. The PD group did not fare better on any of the measures and significantly more reported their finances as being worse. There did not appear to be any differences in alcohol or smoking use between the two groups.

Table 11.5 - Comparison of Other Outcome Variables at 13 months between the PD Group (n = 57) and the Control Group (n = 46)

	PD Group (n=57)	Controls (n=46)	Odds Ratio (95%CI)	P Value of difference
Reduced Functioning	14 (25%)	8 (17%)	1.55 (0.59,4.09)	0.52
Occupational Change	9 (21%)	4 (15%)	1.52 (0.42,5.54)	0.75
Finances Worse	21 (37%)	6 (13%)	3.89 (1.41,10.71	0.01*
Compensation Issues	15 (26%)	8 (17%)	0.56 (0.21,1.46)	0.34
Alcohol Increase	6 (11%)	5 (11%)	0.99 (0.28,3.46)	1.0
Smoking Increase	8 (14%)	4 (9%)	0.56 (0.16,1.98)	0.54

* Significant at P < 0.05 level.

Chapter 12 - Results - Relatives of Burn Trauma Victims

A close relative or partner of 45 participants consented to take part in the study and completed initial questionnaires, 38 (84%) completed the three month follow-up and 35 (78%) completed the 13 month follow-up. This group will be referred to as relatives (31 were partners and four were parents of the subjects). Analyses were performed comparing the measures obtained from the 35 relatives who completed follow-up with those of the corresponding subject. None of the relatives were directly involved in the traumatic event but all reported having felt traumatised by the news that their relative had been a victim of burn trauma and/or seeing their relative for the first time in hospital. The 35 burn trauma subjects appeared similar to the 103 subjects who completed the study although the mean percentage TBSA burn sustained by the 35 subjects was slightly lower at 3.82% (sd 2.86%).

12.1 - Comparison of Background and Trauma Related Variables

Table 12.1 displays a comparison of dichotomous variables collected initially between the relative and subject pairs. There were significantly more females in the relative group. The only other significant difference was that more of the relatives described being shocked by the severity of the traumatic event. Although not a significant finding the relatives blamed others more than the subjects (11 (34%) compared to 7 (20%)) whilst the subjects blamed themselves more (11 (31%) compared to 4 (12%)).

Table 12.1 - Comparison of Dichotomous Variables Collected Initially between Subjects (n = 35) and Relatives (n = 35)

	Subjects Total (Valid %)	Relative Total (Valid %)	Odds Ratio	95% C.I.	p value
Sex (male)	28 (80%)	9 (26%)	11.56	3.76 to 35.51	<0.0001*
Married	22 (63%)	28 (80%)	0.42	0.14 to 1.24	0.19
Employed	26 (74%)	21 (60%)	1.93	0.70 to 5.32	0.31
PPsychDiff	1 (3%)	4 (11%)	0.23	0.024 to 2.15	0.35
PPsychRx	1 (3%)	3 (9%)	0.31	0.031 to 3.17	0.61
PrevTrau	7 (20%)	14 (40%)	0.38	0.13 to 1.09	0.12
Confidant	28 (80%)	28 (85%)	0.71	0.20 to 2.52	0.84
Thought Life Threat	14 (40%)	16 (48.5%)	0.71	0.27 to 1.85	0.65
Shock Sudd	29 (83%)	28 (82%)	1.24	0.34 to 4.54	1.00
Shock Sev	25 (71%)	32 (94%)	0.16	0.03 to 0.78	0.03
Self Blame	11 (31%)	4 (12%)	3.32	0.94 to 11.78	0.10
Others Blamed	7 (20%)	11 (34%)	0.48	0.16 to 1.44	0.29

Table 12.2 displays a comparison of the continuous variables collected initially between the relative and subject pairs. There were no significant differences although there was a trend for the relatives to report finding the trauma more stressful than the subjects.

Table 12.2 - Comparison of Continuous Variables Collected Initially between Subjects (n = 35) and Relatives (n = 35)

	n of Pairs	Subjects Mean (sd.)	Relatives Mean (sd.)	Mean Diff	95% C.I.	2 tail sig (p value)
Age	32	38.3 (12.7)	40.0 (10.0)	1.72	-1.43 to 4.87	0.28
How Stressful	34	5.21 (2.68)	6.18 (2.04)	-0.97	0.24 to -2.18	0.11

12.2 - Comparison of Outcome Data

12.2.1 - Main Outcome Variables

Table 12.3 displays the differences over time in HADS scores, IES scores and the total score of the CAPS between the relative and subject pairs. Initial scores on the HADSA, HADSD and the IES were higher in the relatives when compared to the subjects although the difference was only significant at the $p<0.05$ level for the IES. Scores on the HADSA and HADSD at follow up remained higher amongst relatives but became lower on the specific measures of traumatic stress (the IES and the CAPS). The only significant differences were at 13 months when the relatives scored significantly higher on the HADSA ($p=0.002$) and the HADSD ($p=0.04$).

The presence of DSMIII-R (APA, 1987) PTSD was determined from the CAPS. At three months 6 (17.1%) of the subjects satisfied the full criteria compared to 3 (8.6%) of the relatives (Odds Ratio (95% C.I.) = 2.21 (0.51 to 9.64), p = 0.48). At thirteen months 3 (8.8%) of the subjects satisfied the full criteria compared to 3 (8.8%) of the relatives (Odds Ratio (95% C.I.) = 1.0 (0.19 to 5.33), p = 1.0). Two of the relatives satisfied the criteria for PTSD at both three and thirteen months. In one case both the subject and the relative satisfied the criteria for PTSD at both time points and in one case both satisfied the criteria for PTSD at three months but neither did at 13 months. The two other relatives developed PTSD without their subject having PTSD at either three or 13 months.

Table 12.3 - Comparison of the Main Outcome Measures between the Subjects (n = 35) and the Relatives (n = 35)

	n of Pairs	Subjects Mean (sd.)	Relatives Mean (sd.)	Mean Diff	95% C.I.	2 tail sig (p value)
CAPS (3m)	35	17.11 (16.88)	12.46 (16.38)	4.66	10.18 to -0.87	0.096
CAPS (13m)	32	12.09 (13.89)	10.72 (15.59)	1.38	6.15 to -3.40	0.56
HADSA	29	6.17 (4.25)	7.55 (5.06)	-1.38	0.67 to -3.43	0.18
HADSA (3m)	34	6.03 (4.37)	7.21 (5.24)	-1.18	0.55 to -2.90	0.18
HADSA (13m)	35	4.89 (4.25)	7.09 (4.88)	-2.20	-0.83 to -3.57	0.002*
HADSD	29	2.79 (2.72)	4.21 (3.78)	-1.41	0.19 to -3.02	0.082
HADSD (3m)	34	3.09 (3.18)	3.91 (4.58)	-0.82	0.75 to -2.40	0.30
HADSD (13m)	35	2.31 (3.29)	3.60 (4.58)	-1.29	-0.06 to -2.52	0.041*
IES	28	16.89 (15.19)	25.64 (16.45)	-8.75	-1.31 to -16.19	0.023*
IES (3m)	35	18.09 (20.66)	16.8 (16.6)	1.29	8.12 to -5.55	0.70
IES (13m)	35	13.06 (17.67)	10.09 (13.37)	2.97	8.68 to -2.74	0.30
IESA	28	8.39 (8.40)	11.25 (9.59)	2.86	-1.15 to 6.86	0.16
IESA (3m)	35	8.43 (10.48)	8.34 (9.21)	0.09	4.18 to -4.01	0.97
IESA (13m)	35	6.29 (9.13)	4.63 (6.98)	1.66	4.65 to -1.34	0.27
IESI	28	8.50 (8.59)	14.39 (9.89)	5.89	1.32 to 10.46	0.013*
IESI (3m)	35	9.89 (11.60)	8.46 (9.11)	1.43	5.04 to -2.18	0.43
IESI (13m)	35	6.77 (9.19)	5.49 (7.91)	1.29	4.50 to -1.93	0.42

12.2.2 - Impact on Functioning and Other Outcome Variables

Table 12.4 compares level of contentment and impairment of functioning between the subject and relative pairs at all three time points. There were relatively low levels of impairment before the burn trauma in both groups although the relatives reported significantly less contentment than the subjects ($p=0.003$). This difference was not present at the two follow up assessments which appeared to be explained by a drop in contentment in the subject group.

Functional impairment post burn was not marked in either group. Work impairment and inability to perform household chores was, perhaps expectedly, more impaired in the subjects than the relatives with a significant difference present at three months. Interestingly the reported increase in home impairment in the subject group was mirrored by a reported decrease in home impairment in the relative group suggesting they may have taken over some household chores. The most marked reduction in functioning in the relatives was in social functioning which was significantly impacted on in both groups.

Table 12.4 - Comparison of Contentment and Functional Impairment between the Subjects (n = 35) and Relatives (n = 35)

Variable	n of Pairs	Subjects Mean (sd)	Relatives Mean (sd)	Mean Difference	95% C.I.	2 tail sig (p value)
Content	31	7.23 (1.71)	5.55 (3.15)	1.68	2.75 to 0.61	0.003
Content (3mths)	33	5.97 (2.46)	5.67 (2.48)	0.30	1.27 to -0.67	0.53
Content (13mths)	34	6.06 (2.31)	6.03 (2.54)	0.03	0.96 to -0.91	0.95
Privimp	31	0.45 (1.12)	0.84 (1.83)	-0.39	0.46 to -1.24	0.36
Privimp (3m)	35	1.51 (2.61)	0.94 (1.96)	0.57	1.39 to -0.25	0.17
Privimp (13m)	35	1.20 (2.15)	0.80 (1.80)	0.4	0.95 to -0.15	0.15
Homeimp	35	0.71 (1.99)	1.77 (3.18)	-1.06	0.26 to -2.37	0.11
Homeimp (3m)	35	2.03 (2.63)	0.97 (1.82)	1.05	1.84 to 0.27	0.01
Homeimp (13m)	35	1.14 (2.09)	0.89 (1.75)	0.26	0.95 to -0.44	0.46
SocImp	31	0.26 (0.86)	0.90 (1.89)	-0.65	0.16 to -1.45	0.11
Socimp (3m)	35	2.14 (2.57)	1.54 (2.48)	0.60	1.44 to -0.24	0.16
Socimp (13m)	35	1.40 (2.35)	0.94 (2.17)	0.46	1.12 to -0.20	0.17
Workimp	30	1.07 (2.34)	0.63 (1.79)	0.43	-0.76 to 1.63	0.47
Workimp (3m)	34	2.44 (2.95)	0.79 (1.45)	1.65	0.60 to 2.69	0.003
Workimp (13m)	35	1.34 (2.30)	0.83 (1.72)	0.51	-0.30 to 1.33	0.21

12.3 - Effectiveness of Psychological Debriefing in Relatives

Nine (26%) of the relatives received PD together with their corresponding subject. In order to consider the effectiveness of the PD Table 12.6 compares the main outcome data for these nine individuals with the 26 (74%) who did not attend a PD. There were no statistically significant differences between the two groups.

Table 12.5 - Comparison of the Main Outcome Measures between Relatives who received PD (n = 9) and those who did not (n = 26)

	PD Group Mean (sd.)	Control Group Mean (sd.)	Mean Diff	95% C.I.	2 tail sig (p value)
CAPS (3m)	16.22 (20.04)	11.15 (15.15)	-5.07	-18.03 to 7.89	0.43
CAPS (13m)	10.44 (12.19)	10.83 (16.99)	0.38	-12.35 to 13.11	0.95
HADSA	8.11 (4.51)	7.30 (5.38)	-0.81	-5.04 to 3.42	0.70
HADSA (3m)	8.13 (4.76)	6.92 (5.43)	-1.20	-5.56 to 3.16	0.58[1]
HADSA (13m)	7.67 (4.74)	6.88 (5.01)	-0.78	-4.67 to 3.11	0.69[1]
HADSD	3.56 (2.56)	4.50 (4.25)	0.94	-2.21 to 4.10	0.54
HADSD (3m)	4.63 (4.93)	3.69 (4.54)	-0.93	-4.74 to 2.88	0.62[1]
HADSD (13m)	4.22 (3.03)	3.38 (5.04)	-0.84	-4.49 to 2.81	0.64[1]
IES	26.44 (12.89)	25.00 (17.56)	-1.44	-14.80 to 11.91	0.83
IES (3m)	15.22 (11.51)	17.35 (18.25)	2.12	-11.15 to 15.40	0.75[1]
IES (13m)	10.33 (10.64)	10.00 (14.38)	-0.33	-11.01 to 10.34	0.95[1]
IESA	12.89 (8.39)	10.38 (10.00)	-2.51	-10.31 to 5.30	0.52
IESA (3m)	7.67 (7.31)	8.58 (9.90)	0.91	-6.44 to 8.26	0.80[1]
IESA (13m)	5.00 (7.87)	4.50 (6.80)	-0.50	-6.07 to 5.07	0.86[1]
IESI	13.56 (6.65)	14.62 (10.70)	1.06	-6.87 to 8.99	0.79
IESI (3m)	7.56 (6.52)	8.77 (9.94)	1.21	-6.05 to 8.48	0.74[1]
IESI (13m)	5.44 (4.83)	5.50 (8.82)	0.06	-6.26 to 6.38	0.99[1]

1 = P value calculated using analysis of covariance with initial score as covariate

Chapter 13 - Results - Predictors of Psychological Outcome in Subjects

13.1 - Linear Regression Analysis of Subjects' Data

Two forward stepwise linear regression analyses were performed with the subjects' data using the method described in Chapter 9. The ten independent variables selected are listed in Table 13.1.

Table 13.1 - Variables entered in the forward stepwise linear regression analyses

Dimensions of Trauma	Percentage Burn, Pain, Hand/Face Burn
Demographics	None Entered
Premorbid Vulnerability	None Entered
Intervention	Presence or Absence of PD
Initial Distress	HADSA, HADSD, IES
Other Variables	Somebody Else Responsible, Self Blame, Compensation

13.1.1 - Results for CAPS total at three months

The first variable to be added was HADSD which accounted for 25% of the total variance (Adjusted R Square = 0.251). The results are shown below.

Variable	B	SE B	Beta	T	Sig T
HADSD	2.98	0.53	0.51	5.61	0.0000
(Constant)	11.17	2.48		4.50	0.0000

The variables not included after the first step are shown below.

Variable	Beta In	Partial	Min Toler	T	Sig T
TBSA % Burn	0.26	0.28	0.87	2.78	0.0066
Compensation	0.13	0.15	0.99	1.43	0.16
HADSA	0.12	0.10	0.56	0.95	0.34
HAND/FACE	-0.01	-0.02	1.00	-0.14	0.89
IES	0.19	0.17	0.61	1.64	0.10
PAIN	-0.05	-0.06	0.81	-0.53	0.60
PD	0.12	0.14	0.99	1.36	0.18
Self Blame	-0.18	-0.21	1.00	-2.00	0.049
Other Resp	0.14	0.16	1.00	1.57	0.12

The variable entered on step number two was TBSA percentage burn. Along with HADSD this accounted for 30% of the total variance (Adjusted R Square = 0.30) of the CAPS total score at three months. The results are shown below.

Variable	B	SE B	Beta	T	Sig T
% Burn	0.99	0.36	0.26	2.78	0.0066
HADSD	2.42	0.55	0.41	4.39	0.0000
(Constant)	7.45	2.74		2.71	0.0080

The variable entered on step three was self blame. These three variables together accounted for 33% of the total variance (Adjusted R Square = 0.33). No further variables were added to the results as the predetermined 0.05 limit was reached (i.e. none of the remaining variables had a p value < 0.05 at that stage). The final results and associated statistics are shown below.

Variable	B	SE B	Beta	T	Sig T
% Burn	1.03	0.35	0.27	2.96	0.0040
HADSD	2.43	0.54	0.42	4.52	0.0000
Self Blame	-7.94	3.55	-0.19	-2.23	0.028
(Constant)	10.54	3.02		3.49	0.0008

Multiple R = 0.60, R Square = 0.36, Adjusted R Square = 0.33, Standard Error = 16.81

Analysis of Variance

	DF	Sum of Squares	Mean Square
Regression	3	13689.56	4563.19
Residual	88	24872.74	282.64

F = 15.39, Sig F = 0.0000

13.1.2 - Results for CAPS total at 13 months

The first variable to be added was HADSD which accounted for 24% of the total variance (R Square = 0.24). The results are shown below.

Variable	B	SE B	Beta	T	Sig T
HADSD	2.78	0.51	0.50	5.42	0.0000
(Constant)	9.00	2.61		3.45	0.0009

The variables not included at this time point are shown below.

Variable	Beta In	Partial	Min Toler	T	Sig T
TBSA % Burn	0.23	0.24	0.87	2.37	0.02
Compensation	0.28	0.32	0.97	3.12	0.0025
HADSA	0.12	0.10	0.51	0.96	0.34
HAND/FACE	0.02	0.02	1.00	0.19	0.85
IES	0.003	0.003	0.62	0.03	0.98
PAIN	-0.04	-0.04	0.78	-0.42	0.68
PD	0.11	0.13	0.99	-1.00	0.32
Self Blame	-0.09	-0.11	1.00	-1.00	0.32
Other Resp	0.16	0.18	0.99	1.77	0.08

The variable entered on step number two was whether there were compensation issues. Along with HADSD this accounted for 31% of the total variance (Adjusted R Square = 0.31) of the CAPS total score at thirteen months. The results are shown below.

Variable	B	SE B	Beta	T	Sig T
HADSD	2.53	0.50	0.45	5.10	0.0000
Compensation	10.16	3.26	0.28	3.12	0.0025
(Constant)	6.27	2.64		2.37	0.0199

The variable entered on step three was percentage TBSA burn. These three variables together accounted for 34% of the total variance (Adjusted R Square = 0.34). No further variables were added to the results as the predetermined 0.05 limit was reached. The final results and associated statistics are shown below.

Variable	B	SE B	Beta	T	Sig T
% Burn	0.79	0.36	0.20	2.19	0.032
HADSD	2.15	0.52	0.38	4.15	0.0001
Compensation	9.51	3.20	0.26	2.97	0.0039
(Constant)	3.32	2.92		1.14	0.26

Multiple R = 0.60, R Square = 0.36, Adjusted R Square = 0.34, Standard Error = 17.47

Analysis of Variance

	DF	Sum of Squares	Mean Square
Regression	3	14794.81	4931.60
Residual	87	26538.23	305.04

F = 19.84, Sig F = 0.0000

Chapter 14 - Results - Predictors of Psychological Outcome in Relatives

14.1 - Linear Regression Analysis of Relatives' Data

Two forward stepwise linear regression analyses were performed with the relatives' data using the method described in Chapter 9. The six independent variables selected are listed in Table 14.1.

Table 14.1 - Variables entered in the forward stepwise linear regression analyses

Dimensions of Trauma	Percentage Burn
Demographics	None Entered
Premorbid Vulnerability	None Entered
Intervention	None Entered
Initial Distress	HADSD, IES
Distress in Subject	HADSD (initial), CAPS total
Other Variables	Self blame

14.1.1 - Results for CAPS total at three months

The first variable to be added was the subject's CAPS total at three months which accounted for 23% of the total variance (Adjusted R Square = 0.23). The results are shown below.

Variable	B	SE B	Beta	T	Sig T
Subject CAPS	0.51	0.18	0.51	2.88	0.0082
(Constant)	3.59	3.79		0.95	0.35

Multiple R = 0.51, R Square = 0.26, Adjusted R Square = 0.23, Standard Error = 13.00.

Analysis of Variance

	DF	Sum of Squares	Mean Square
Regression	1	1404.58	1404.58
Residual	24	4057.31	169.05

F = 8.31, Sig F = 0.0082

The variables not included at this time point are shown below.

Variable	Beta In	Partial	Min Toler	T	Sig T
TBSA % Burn	-0.04	-0.04	0.93	-0.21	0.83
Subject HADSD	0.24	0.28	1.00	1.39	0.18
Self Blame	-0.20	-0.23	1.00	1.39	0.18
IES	0.23	0.26	0.94	1.29	0.21
HADSD	0.17	0.18	0.88	0.89	0.38

No further variables were added to the results as the predetermined 0.05 limit was reached (i.e. none of the remaining variables had a p value < 0.05 at that stage).

14.1.2 - Results for CAPS total at 13 months

The first variable to be added was HADSD which accounted for 29% of the total variance (R Square = 0.29). The results are shown below.

Variable	B	SE B	Beta	T	Sig T
HADSD	2.09	0.64	0.57	3.25	0.0037
(Constant)	1.54	3.03		0.51	0.62

Multiple R = 0.57, R Square = 0.32, Adjusted R Square = 0.29, Standard Error = 9.94

Analysis of Variance

	DF	Sum of Squares	Mean Square
Regression	1	1044.13	1044.13
Residual	22	2172.50	98.75

F = 10.57, Sig F = 0.0037

The variables not included at this time point are shown below.

Variable	Beta In	Partial	Min Toler	T	Sig T
TBSA % Burn	0.15	0.17	0.92	0.81	0.43
Subject HADSD	0.08	0.10	0.98	0.45	0.66
Self Blame	-0.13	-0.15	0.96	-0.70	0.49
IES	0.25	0.27	0.81	1.29	0.21
Subject CAPS	0.17	0.18	0.70	0.83	0.42

No further variables were added to the results as the predetermined 0.05 limit was reached.

Chapter 15 - Discussion - Description of Population and Initial Reactions

15.1 - Statement of Principal Findings

One hundred and fifty-three patients admitted to the South Wales Regional Burns Unit were included in the study. One hundred and three (67%) completed the full study. There were no significant differences between completers and non-completers in terms of demographic details or levels of psychological distress. The only significant difference between the two groups was that 48 (47%) of the completers felt that their life was threatened during the trauma compared to seven (23%) of the non-completers. The mean percentage burn amongst completers was 5.25 (sd 5.29), the mean HADSA score was 5.74 (sd 4.39), the mean HADSD score was 3.18 (sd 3.71) and the mean IES score was 15.88 (sd 15.52).

15.2 - Strengths and Weaknesses of the Methodology

The study was designed primarily to test the effectiveness of psychological debriefing in a randomised controlled trial. This meant that exclusion criteria were used which would have prevented the inclusion of some individuals who may have been particularly vulnerable to the development of psychological symptoms. Individuals excluded were those with significant previous psychiatric or physical difficulties, individuals who had sustained burn trauma as an act of deliberate self harm, those too unwell to take part in the study and those with impaired cognitive functioning. It is, therefore, likely that the population studied was a population likely to experience lower levels of psychopathology than would have been found if all burn trauma victims admitted to hospital for greater than 24 hours had been included.

Strengths of the study include the use of well validated measures and the fact that there were no major differences between the completers and the non-completers. With regards the increased subjective life threat in the completers group it seems unlikely that this means that the completers and non completers were significantly different to each other. Unfortunately no information was available for the 22 eligible individuals who did not enter the study. The sample size of 103 was not large but was considered adequate. It is possible that some chance findings have occurred because of the reduced power compared to a study with a larger sample size and the multiple comparisons.

15.3 Comparison with other studies

The main difficulty in comparing the general characteristics and initial reactions of participants in this study with other studies of acute burn trauma is that previous studies have usually considered all available patients without applying specific exclusion criteria. This must be taken into account when comparing results. Several other studies suffer in comparison to this one by having smaller sample sizes (only six studies had more completers than this one) and by utilising either a clinical interview which was not a gold standard research diagnostic interview or measures that have not been well validated to determine the presence or absence of psychological symptoms. This criticism particularly applies to the earlier studies.

One of the most notable differences of this study in comparison to other studies is the relatively low mean TBSA burn. In the other studies reviewed that specified the mean TBSA percentage eight were greater than 20% (Andraeson et al (1971), Chang & Herzog (1976), Bowden et al (1980), Blank & Perry (1984), Perry et al (1987), Tucker (1987), Fukunishi et al (1994) and Powers et al (1994)), three were 10 - 20% (Ward et al (1987), Patterson et al (1990), Difede et al (1997)) and three were of less than 10% (Blumenfield & Reddish (1987), Wallace & Lees (1988), Franulic et al (1996)).

With regards the initial psychological sequelae, the levels of psychopathology although present were relatively low when compared to other studies. The only other studies that appeared to study individuals who had sustained similar degrees of burn trauma and where meaningful comparisons can be made are those of Franulic et al (1996) and Difede et al (1997). Franulic et al (1996) in their study of 25 burn trauma victims found mean one week scores of 8.2 (sd 6.1) on the HAMA, 7.0 (5.0) on the HAMD and 7.3 (sd 5.6) on the GHQ28. These scores are relatively low and although using different measures appear quite similar to the scores in this study. Difede et al (1997) found greater levels of distress in their study two weeks after the burn trauma. The mean IES scores were 14.1 (sd 10.5) for the intrusion scale and 12.4 (9.8) for the avoidance scale, 40% higher than the scores on the IES in this study and possibly accounted for, to a degree at least, by the exclusion criteria employed in this study.

The basic demographic variables revealed an excess of males (75%) and employment (68%) and other measures suggested that those included were relatively content with their lives and functioning at a good level before the burn trauma. This is in keeping with the results of previous research that has considered admissions to a burn trauma unit where the majority of participants were male and in employment (work related burn trauma was common) as opposed to individuals involved in a disaster where the sex difference was not found. The mean age of 37.4 years is similar to most other studies. Mean length of inpatient stay was slightly less than other studies at 16.1 days.

15.4 Summary and Conclusions

The absence of major differences between the completers and non-completers suggests that the results of this study are likely to be representative for those individuals who originally agreed to take part in it. It is apparent that the population used in this study represented a population with relatively low TBSA percentage burn and psychological symptoms in comparison with many other studies of victims of acute burn trauma. However, despite this it is apparent that the burn trauma was very traumatic for many individuals as judged by the 47% rate of subjective life threat and the mean score of

5.37 out of a maximum of eight for perceived stressfulness. The differences must be considered in interpreting the results of this study and make it difficult to generalise the results of this study to the whole burn trauma population as consecutive admissions without exclusion criteria would need to be considered for this.

Chapter 16 - Discussion - Effectiveness of Psychological Debriefing

16.1 - Statement of Principal Findings

Psychological debriefing did not prevent psychological sequelae amongst the victims of acute burn trauma in this study. Those individuals who received PD were more likely to develop psychological sequelae than those who did not. There are several possible explanations for this which are discussed below and include chance, increased percentage burn in the PD group, higher initial distress scores in the PD group and the possibility that PD may make some individuals worse. PD was perceived to be useful by the majority of those who acknowledged having received it.

16.2 - Strengths and Weaknesses of the Methodology

To the best of my knowledge this study represents the first randomised controlled trial of individual/couple PD with assessment blind to PD status following a traumatic event, and as such should help to shape future research and practice in this area. However in common with almost all studies there are strengths and weaknesses that should be borne in mind when interpreting the results. Churchill (1996) designed a quality rating scale for randomised controlled trials which along with a scale adapted from the recommendations for a good study of PD by Kenardy and Carr (1995) were used to determine the quality of the studies included in the Cochrane review of one-off interventions (Wessely et al, 1998). These two scales and a discussion of other issues will be used to highlight the strengths and weaknesses of this study.

16.2.1 - The Churchill Scale

a. Objectives of Trial and Specification of Main Outcomes a Priori - The objectives of the trial were clear and the main outcomes as prevention of PTSD and other psychological symptoms as measured by the CAPS, IES and HADS were clearly specified.

b. Sample Size - The sample size for each group fell in to the 30-60 range identified by Churchill as being adequate. Group sizes above 60 would have scored maximum marks on this criterion.

c. Follow-up - The thirteen month follow-up period is above the six months required to score maximally on the scale.

d. Power - The power of the study was calculated to be 60%.

e. Method of randomisation - This was clearly described as required by the scale and was generated by a computer programme. Unfortunately 200 numbers were randomised but only 153 individuals were randomised into the study before the 18 month time limit was reached. The absence of block randomisation unfortunately led to unequal numbers in the debriefed and control groups.

f. Randomisation Concealment - A list of the random numbers was generated which the recruiter was in possession of. Randomisation was, therefore, not totally concealed which may have contributed to the differences in baseline measures in this study.

g. Standardised Treatment (Intervention) - Adherence to the intervention as described in Appendix C, training and ongoing supervision aimed to ensure that the treatment was standardised although there was no systematic monitoring through for example audio or video taping debriefings to ensure intervention integrity.

h. Blinding of Subjects - This was not done and is very difficult to achieve with psychological interventions. All individuals knew that they were in the psychological debriefing group or the no intervention group.

i. Defined Source Population - This was clearly defined as admissions to the burns unit satisfying the inclusion criteria.

j. Recruitment of Sample - The sample were obtained from consecutive admissions ensuring a relatively low selection bias.

k. Exclusion Criteria - It is believed that the exclusion criteria were reasonable given the nature of the study.

l. Sample Demographic Information - The demographic information gathered was reasonably full and is believed to go beyond basic details such as age, sex and marital status.

j. Blinding of Assessor - This was done as the assessor was unaware which group the individual had been randomised to when interviewed at three and 13 months although this was not checked.

k. Record of Number/Reason for Withdrawal by Group - This is clearly stated in the results section.

l. Outcomes Presented - Clinician and patient determined outcomes are presented although there is no informant outcome which prevents the scoring of maximum marks on this criterion.

m. Inclusion of Withdrawals in Analysis (Intention To Treat or Endpoint) - This was not done on statistical advice as it was believed that to do so would not be clinically meaningful in a population where the expectation was for improvement over time as per a normal post-traumatic stress reaction.

n. Presentation of Results - These are presented in some detail.

o. Enough Data for Reanalysis of Main Outcomes - The data is complete and this could be done.

p. Appropriate Statistical Analysis - Statistical advice was taken and it is believed that an appropriate analysis of the data has been performed.

q. Baseline Differences Controlled for - This was done by performing analyses of co-variance for the main outcome measures.

The trial scored a total of 23 out of a maximum possible 37 on the Churchill scale when independently assessed by two of the authors of the Cochrane Review (Wessely et al, 1998).

16.2.2 - The Adapted Kenardy and Carr Scale

1. Clear Definition of the Population to Receive the Intervention.

a. Nature and Extent of Exposure - This was stated.
b. Time Since Exposure - This was stated.
c. Premorbid Vulnerability Factors - These were stated.
d. Age, Sex and Other Relevant Demographic Factors - These were stated.

2. Delineation of Appropriate Goals of Debriefing.

a. Imparting of Information as to Nature of Stress Responses and their "Normalisation" - This was done as described at Appendix C.
b. Imparting Information Regarding What Criteria Indicate a Need for Specialist Assistance and Where to get it - This was stated.

c. Developing a Sense of Belonging with those of "Shared Experience" - This was not done as the debriefings were performed with no-one else present from the same incident.

d. Prevention of PTSD Symptoms/Signs or other Symptoms of Relapse - This was stated as a main goal.

e. Prevention or Improvements in Levels of Disability Linked to the Stressor (e.g. Absenteeism, Family Difficulties etc.) - This was monitored.

f. Perceived Helpfulness - This was measured.

3. Randomisation

a. Randomisation Concealment - As discussed above this was considered to be incomplete in this study.

4. Baseline Measures

a. Self Report Measures - These were included.

b. Objective Measures - These were not included for fear that an information gathering interview at baseline may represent a partial intervention.

c. Rater Blind to Debriefing Condition - This did not occur as there was no rater at baseline.

5. Description of Debriefing Procedures

a. Personnel have Adequate Training - Personnel had training although it could be argued that the nurses in particular did not have the mental health training required to perform a psychological intervention albeit a non therapy.

b. Manualised Therapy - The therapy was clearly described and can be found at Appendix C.

c. Amount of Intervention Constant - This did not occur as it was found that the amount of time needed to complete the intervention depended on the level of distress and the nature of the trauma.

6. Outcome Measures

a. Self Report - These were included.

b. Objective - These were included.

c. Rater Blind to Debriefing Condition - This occurred.

7. Follow Up

a. Adequate Follow-up - This occurred at 13 months greater than the 12 months required by Kenardy and Carr for the maximum score on this criterion.

The trial scored a total of 22 out of a maximum possible 26 on the adapted Kenardy and Carr scale when independently assessed by two of the authors of the Cochrane Review (Wessely et al, 1998).

The scores on both the Churchill and the adapted Kenardy and Carr scales suggest that the study did have some methodological shortcomings but overall was of reasonably good methodological quality.

16.2.3 - Other Strengths/Weaknesses

Other important aspects of the methodology are the fact that individual or couple PD was used and that although there was no difference between those who received individual PD and those who received couple PD the results may not be directly comparable with those that would have been obtained with group PD. The intervention was also used as a stand alone intervention as opposed to being part of a Critical Incident Stress Management Programme and therefore would not be directly comparable with randomised controlled trials performed in this context although there have been no such studies to date. The study was carried out with a population of burn trauma victims which makes generalisation difficult to individuals involved in non-burn trauma. In addition the PD and the control groups were slightly different at

baseline with the PD group having experienced more previous trauma, having slightly greater dimensions of trauma and slightly greater psychological distress.

The use of a research psychiatrist to facilitate 32 debriefings and five burns unit nurses to facilitate the other 25 debriefings could be argued to be a shortcoming of the study given their relative lack of experience in trauma psychology and PD. Their selection as facilitators was done for pragmatic reasons and also because it was believed important to determine if the intervention could be transferred to routine clinical practice. The nurses were involved in procedures such as changing dressings but the outcome of subjects debriefed by a burns nurse was not worse than those debriefed by a research psychiatric registrar. Their knowledge of the physical aspects were reported by some individuals as having been beneficial. In fact, those individuals debriefed by the psychiatrist fared worse although the psychiatrist debriefed group had a significantly higher TBSA burn.

Most of the patients described some pain and many were taking analgesia but individuals were only debriefed at a time when they were felt able to actively participate in the process. To wait until individuals were totally pain free and analgesia free would have been to wait beyond the thirteen month follow-up period in some instances and there is good evidence that pain and psychological distress can be associated as discussed in chapter 5.

Another issue concerns the selection of the main outcome measures. The CAPS, HADS and IES are all supported by research into their clinical validity and have been widely used in outcome research. Like all measures they are not perfect and the HADS and IES questionnaires are potentially flawed as a result of their transparency (i.e. it is apparent which items are likely to suggest higher levels of distress). The inclusion of a clinician administered scale (the CAPS) is considered a strength of the study and although it is important to acknowledge the shortcomings of all outcome measures I believe that this combination is a satisfactory one given the main aims of the study.

16.3 Strengths and Weaknesses in Relation to Other Studies

As discussed in chapter 3 the other studies that have considered the effectiveness of psychological debriefing have also suffered from methodological shortcomings. When compared with the other randomised controlled trials of early one-off interventions this study appears to stand up well. A comparison of the scores on the Churchill and adapted Kenardy and Carr quality assessment scales is shown in Table 16.1 confirming this.

Table 16.1: Comparison of Scores on the Churchill and Adapted Kenardy and Carr Scales

Study	Score on Churchill Scale	Score on adapted Kenardy and Carr Scale
Bisson	23	22
Rose et al (1999)	21	16
Hobbs et al (1996)	15	13
Lee et al (1996)	14	14
Bordow & Porritt (1979)	11	11
Stevens & Adshead (1996)	10	13
Bunn & Clarke (1979)	8	8

The major differences between this study and the others on the two scales were a superior sample size than all the other studies except Hobbs et al (1996) which was similar, a longer period of follow-up than the other studies, greater information regarding demographic details, recruitment and exclusion criteria. Only one other study (Stevens & Adshead, 1996) also had an assessor blind to the intervention allocation. The number and reasons for withdrawal were considered in more detail than in the other studies and premorbid vulnerability factors were not considered in any of the other studies. Along with the Hobbs et al (1996), Lee et al (1996) and Rose et al (1999) studies, the PD technique was well described in this study and represented an adaptation of the Mitchell and Dyregrov models. The other interventions although containing common components of these models were

different. Perceived helpfulness was only included in two other studies (Lee et al, 1996 and Rose et al, 1999).

16.4 Possible Explanations for the Principal Findings

In this study the hypothesis that PD would prevent psychological sequelae amongst the victims of acute burn trauma was not supported. Those individuals who received PD were more likely to develop psychological sequelae than those who did not. Possible explanations for the increased rate of PTSD symptoms and higher mean questionnaire scores in the PD group include chance, increased initial questionnaire scores in the PD group, increased dimensions of burn trauma in the PD group and the possibility that PD may make some individuals worse.

a. Chance - One possibility for the differences in the scores is through chance. However the differences in total CAPS score were significant at a 0.03 level. With the differences found between the two groups on the total CAPS score at thirteen months the level of power to detect a 0.05 difference would have been approximately 60%. Chance does need to be considered although these statistical calculations suggest that the difference is more likely to be a real one than a chance finding and therefore it is important to consider other possibilities.

b. Increased percentage burn - The fact that the individuals in the PD group were more traumatised than those in the control group was likely to have been as a result of the randomisation process but may have affected the results. As shown in chapter 5 several studies have found an association between increased percentage burn and poorer outcome although not all studies have done. This study appears to suggest that increased TBSA burn was associated with a worse psychological outcome as the multiple regression analysis found that the percentage burn did account for a significant amount of the variance in CAPS total scores at three months ($p = 0.004$) and at thirteen months ($p = 0.032$). With regards the other RCTs of PD Hobbs et al (1996) also found

the PD group to have been more traumatised and their outcome was worse than the non-traumatised group.

c. Higher initial distress scores - The PD group in this study did have higher initial psychological sequelae as determined by questionnaire scores although these fell well within the 95% confidence intervals when compared with those of the control group. Analysis of co-variance determined that higher initial questionnaire scores were far superior predictors of poorer outcome than receipt of PD or percentage burn. It has previously been shown that lack of concealment of randomisation can result in differences between groups. In this study participants were randomly allocated to the PD or control group according to a list of numbers held by the recruiter. This may have resulted in some individuals who were more distressed being allocated to the PD group leading to the differences in initial distress between the groups. Whatever the cause the differences are likely to have impacted on the outcome. The multiple regression analysis also suggested that initial distress, particularly initial depression as measured by the HADSD was associated with poorer outcome and this explanation is supported by previous research.

Lee et al (1996) found that initial levels of distress were a better predictor of outcome than the presence or absence of PD. Freedman et al (1999) found that initial depression was the best predictor of PTSD at four months and one year amongst 236 trauma survivors who presented to an Accident and Emergency department. Brewin et al (1999) in a study of 157 victims of violent crime found that persisting high levels of symptoms (measured on average three weeks post crime) were the best predictors of continuing disorder and that PTSD at six months could be relatively well predicted by either the diagnosis of acute stress disorder or the presence of three or more reexperiencing or three or more arousal symptoms at three weeks post-trauma.

In addition nine studies of burn trauma victims have found initial psychological sequelae to be associated with poorer psychological outcome as discussed in chapter 5. This finding resulted in Perry et al (1992) concluding "Our data lend support to the view

that the individuals' psychiatric state immediately post-burn is more predictive of outcome than degree of trauma".

d. Psychological Debriefing - An alternative explanation for the group differences is that PD may be harmful. The possibility of PD producing a detrimental effect is extremely important because if this is the case then the routine use of PD should be discontinued. There have been some reports (e.g. McFarlane, 1988; Carlier et al, 1998) of PD having adverse effects in the literature and one other randomised controlled trial (Hobbs et al, 1996) also found this. However there are as many reports that have suggested PD to be positive or neutral (see chapter 3).

The two single intervention RCTs with a positive outcome (Bunn & Clarke 1979, Bordow & Porritt 1979) used a non-PD intervention and were the weakest methodologically. There appeared to be less in the way of intensive reexposure in these interventions. This seems to support the theoretical basis as to why PD could make some individuals worse. It involves intense imaginal exposure to a traumatic incident within a short time of it happening. In some individuals the intense re-exposure involved in a PD may re-traumatise them without allowing adequate time for habituation, resulting in an exacerbation of their symptoms. This would concur with the findings of Pitman et al (1991) and Vaughan and Tarrier (1992) who reported similar adverse reactions in some individuals following exposure therapy.

e. Other Factors - The facilitation of the PDs by relatively inexperienced individuals may be important. Stein and Lambert (1995) performed a meta-analysis of psychotherapy outcome studies and found a modest association between the training and experience of the therapist and a more positive outcome. The worse outcome in those debriefed by the psychiatrist may have been due to the increased TBSA burn in the psychiatrist debriefed group or chance. However, although not measured or suspected, other factors such as ability to debrief, individual characteristics and the stigma that can sometimes be associated with seeing a psychiatrist have to be considered. There were also practical difficulties associated with carrying out this trial in a clinical setting. Despite using a private room on the burns unit for the

psychological debriefings it was sometimes difficult to achieve total privacy although this was usually achieved. There were also other demands on individuals' time and priorities that sometimes made it difficult to deliver the intervention in the way it was manualised and originally described.

Timing may also be important. A trend between poorer outcome and the further away the PD was undertaken from the burn trauma occurred in this study. Previous RCTs of PD have been performed at different times following the trauma. Hobbs et al (1996) performed their intervention 24 to 48 hours after the traumatic event, Lee et al (1996) did so approximately 14 days after the event and in Rose et al's (1999) study the PD occurred approximately 21 days after the event. Some of the study participants in Stevens and Adshead (1996) felt that the intervention (within 24 hours) had been undertaken too early. Herman (1992) argued that psychological interventions following trauma should not be carried out until the physical state is stabilised and the person feels safe and secure. Myers (1989) also suggested that physical needs should be met before psychological intervention is performed. However, Bunn and Clarke (1979) and Stevens and Adshead (1996) performed their intervention within 24 hours of the trauma without apparent adverse affect.

The finding that a longer PD was more likely to be associated with poor outcome seems most likely to be explained by the fact that there were several individuals without significant psychological sequelae who had little to discuss and hence their PD was brief. Turnbull et al (1997) have argued that the phenomenon of increased symptomatology after PD is well recognised and probably part of the natural process of adjustment which is another possible explanation but is not supported by empirical evidence.

Finally it must be acknowledged that victims of acute burn trauma represent a unique population which may limit the generalisability of the findings of this study to victims of other types of traumatic event. Burn trauma victims are not only exposed to a frightening traumatic event but also sustain a physical injury, have to cope with painful, distressing treatment and often have to adjust to ongoing disability and/or

scarring. The complexity of the post trauma psychological response may heighten the level of distress and the literature suggests a higher level of and more prolonged psychological difficulties in burn trauma victims than in victims of other traumatic events. It may be that a one-off intervention is less likely to help when physical injury has occurred especially when that physical injury is severe and leads to ongoing disability and adjustment difficulties. In this study the overall level of burn trauma was relatively low and although potentially important is less likely to have affected the results than it would have done if higher.

Another important difference between victims of acute burn trauma and victims of many other traumatic events is the overrepresentation of individuals with a pre-existing psychiatric history or ongoing psychological difficulties amongst burn trauma victims. This would clearly be likely to effect outcome in an intervention study and therefore the generalisability of the results. However, although again potentially important the risk of this having a marked effect should have been minimised by the exclusion of individuals with pre-existing major psychiatric disorder and those who admitted that the burn trauma was an act of deliberate self harm.

f. Most likely explanation - It is impossible to make absolute conclusions about PD from a single study however it would appear from the results of this study, in particular the more complex analyses that the most likely reason for the outcome in the PD group being more negative than the outcome in the control group was the difference between the two groups at baseline in terms of the degree of initial distress and the severity of the burn trauma in that order. Therefore, it seems that the most likely effect of the debriefing was a neutral one and that this study does not support it as an intervention capable of preventing the development of psychological sequelae following a traumatic event. This interpretation appears to be supported by the results of the Cochrane Review of one-off interventions (Wessely et al, 1998) and by the results of the two RCTs (Lee et al, 1996; Rose et al, 1999) where there were no real differences at baseline between those individuals allocated to the PD group and those who were not. The possibility of chance and some individuals faring worse as a direct consequence of the

PD cannot be totally excluded and the results suggest that, at the very least, caution should be exercised before recommending PD.

The fact that most individuals (52%) who received PD spoke positively of it is an important finding of this study and has been found in other studies (Robinson & Mitchell, 1993, Jenkins, 1996, Kenardy et al, 1996, Lee et al, 1996, Rose et al, 1999) but cannot be solely used to justify its routine use. It may be that the outcome measures currently available are too crude to detect subtle positive changes, or, perhaps more likely, that subjective satisfaction with an intervention does not necessarily correlate well with outcome as shown by the results of Kenardy et al (1996), Lee et al (1996), Rose et al (1999) and this study.

16.5 Implications for Clinicians and Policymakers

Psychological Debriefing appears to be a classical example of an innovation that has come into practice without an adequate research base. McKinley (1981) described seven stages through which a medical innovation without an adequate research base may pass. Initially he described the "promising report", then professional and organisational adoption, public acceptance and state (third party) endorsement, the stage of "standard procedure" and observational reports, the stage of the randomised controlled trial, the stage of professional denunciation and finally the stage of erosion and discreditation. It was only after the acceptance of PD by many that its effectiveness has begun to be scrutinised in a systematic way.

This study has some shortcomings which must be taken into account when interpreting the results but the main finding of the study (lack of positive effect of individual/couple PD in this population) is consistent with the results of the other published RCTs of individual PD. This raises serious questions about the future usefulness of PD and the wisdom of advocating one-off interventions post trauma. Apart from the inappropriate use of resources that would result through routine use of an intervention that was not effective other potential adverse effects such as service

providers being secondarily traumatised, passive participation and delay in referral for treatment of psychiatric disorder could be avoided.
The provision of early psychological intervention results in "helpers" being exposed to the ventilation of powerful emotions by the victims of the trauma. This can make the work extremely difficult and stressful. An unfortunate corollary is the recognition that the service providers may become secondary victims themselves (e.g. Raphael, 1986, Talbot, 1990, Figley, 1995).

Another risk is the possibility of passive participation and resentment engendered by mandatory PD. Flannery (1991) used this observation to argue against mandatory debriefing. A good example of enforced early intervention is the case of the Americans held hostage in Iran following their release in the late nineteen seventies (Rahe et al, 1990). Many of the hostages wanted to return to their homes immediately but instead spent a four day period of seclusion and gradual reintroduction in Germany before being reunited with their families. Although "nearly all" acknowledged that their initial feelings were "overly optimistic", no comment was made on the feelings of those who were forced to undergo this process against their will.

Another danger of early intervention discussed by McFarlane (1989) is that over-enthusiasm for primary preventative methods might delay the institution of diagnosis and effective treatment for those who do suffer psychological sequelae. He argued that "clear definition of the limitations of the crisis intervention approach and the point at which more formal treatment is required" is needed. His concerns were fuelled by his finding that many individuals with psychiatric disorders arising out of the Australian bushfires presented late due to other professionals' fears that labelling on referral to a psychiatrist would occur (McFarlane, 1984). Such fears must be overcome if the victims of trauma are to receive the treatment they often need.

Given the current state of knowledge neither one-off group or individual Psychological Debriefing can be advocated as being able to prevent the subsequent development of PTSD following a traumatic event. However, there may be benefits to aspects of PD particularly when employed as part of a comprehensive management programme.

There appears to be good evidence that it is a well received intervention for most people and even though it may not prevent later psychological sequelae aspects of it may still be useful for screening, education and support. However if PD is employed following traumatic events some form of follow-up is important. This facilitates the identification of those who do develop psychological sequelae and ensures that they are offered adequate treatment. It may be that appeals for "flexibility" in the therapeutic approach to immediate trauma survivors as published following the Kings Cross Fire (Turner et al, 1989) is important.

The possibility that the intense re-exposure involved in PD may re-traumatise some individuals makes it seem essential that if PD or any similar intervention is to be employed it is provided by experienced, well-trained practitioners, is not mandatory and that potential participants are properly clinically assessed. If employed the intervention should be accompanied by clear and objective evaluation procedures to ensure it is meeting the objectives set for it.

What should be offered following trauma? - In the absence of evidence to support any one particular early intervention it would seem prudent to be more discerning in how we target our limited resources. They should primarily be used to provide more complex, evidence-based treatments for individuals who develop significant psychological difficulties following traumatic events. However while there is no evidence to support the preventive value of debriefing delivered in a single session there is a strong argument for providing acute psychological first aid and forming a treatment alliance as early as practical following a traumatic event. Early contact may provide a method of addressing the major problem of the general reluctance of people with PTSD to accept treatment.

Any early intervention will need full evaluation but 'non-invasive' support, information about the psychological effects of trauma and how to access help may be beneficial if delivered to survivors and 'helpers' in a co-ordinated way involving members of the primary healthcare team, social services, emergency planners, the voluntary sector and mental health professionals. Screening (e.g. questionnaires or

brief interviews) could potentially help to detect those individuals who are in need of more complex help and prevent the delays in adequate treatment noted following previous traumatic events (e.g. McFarlane, 1984).

If an individual does display significant symptomatology following a traumatic event, particularly if this continues over time, it would seem appropriate to offer more formal treatment at an early stage. The form of treatment will depend on the expertise available locally. Randomised controlled trials have now shown positive results for established therapies such as medication (Penava et al, 1997), exposure therapy, cognitive therapy and the newer therapy eye movement, desensitisation and reprocessing (see Sherman, 1998 for systematic review of psychological therapies for PTSD) in the treatment of PTSD. There is also some evidence that more complex early cognitive-behavioural intervention may be effective for acute stress disorder (Bryant et al, 1998).

16.6 Unanswered Questions and Future Research

The absence of rigorous research in this area is disappointing. There are significant difficulties in researching early interventions post-trauma including the powerful contemporary social movement that exists to promote early interventions and an acceptance in some quarters that no intervention is inherently wrong, making a true RCT difficult but not impossible.

It is essential that efforts are made to determine what, if anything, should be offered to individuals following traumatic events. Until recently PD and other early psychological interventions post trauma fell into that group of psychological interventions discussed by Fahy and Wessely (1993) as urgently requiring proper evaluation. Even now it appears essential to only use methods that have been shown to work. This can only be done through the use of the results of rigorous research making the need for such research in this area a priority.

Studies are few to date, data are scant and there has been a bias to the more systematic study of individual PD as a stand alone intervention as opposed to group PD as part of a more comprehensive traumatic stress management programme which has been argued as being most effective by some authors (e.g. Dyregrov, 1998). There are also many potentially important factors that have not been adequately systematically evaluated in the studies to date including the exact nature of the trauma, facilitator experience/quality and nature of the PD. To focus solely on the later reduction of PTSD and other psychological symptoms is probably too simplistic an approach to take to determine whether or not PD is beneficial as an early intervention. It would therefore be premature at present to conclude that PD should be totally discontinued as a possible intervention following trauma. Other variables are probably more important than PD in determining outcome. This was certainly the case with this study where initial level of depression was a much better predictor of outcome that the presence or absence of PD. Variables found to affect outcome in other studies such as personality, coping styles and quality of crisis support afterwards were not considered in detail and may have a major impact on outcome.

It may be that debriefing is not appropriate as a stand alone intervention or for all types of survivors and that the target populations for the currently available randomised controlled trials have been incorrect (CISD has been recommended for groups of rescue teams or help providers and as part of a comprehensive management programme). There is an urgent need for randomised controlled trials to be performed especially with group interventions (e.g. the efficacy of group psychological debriefing as part of an overall traumatic stress management programme - particularly in relation to emergency workers), studies involving children, multiple session interventions and methods of crisis intervention that do not involve intense re-exposure to the traumatic event. The possibility that group PD in combination with an educational session several months after a traumatic event may be effective has been raised by one positive study (Chemtob et al, 1997) but clearly needs replicating.

One of the more promising strategies appears to be to focus interventions on individuals who appear to be at highest risk of developing psychological disorders, for example

individuals who suffer from acute stress disorder as they appear to be at highest risk of developing PTSD. Bryant et al (1998) performed a randomised controlled trial of five sessions of cognitive behavioural therapy or supportive counselling for acute stress disorder sufferers. Cognitive behavioural therapy was shown to prevent the development of PTSD, supportive counselling was not. These findings suggest that more complex early interventions for those individuals at highest risk may be the best way to prevent the development of PTSD following trauma and warrant further research.

Chapter 17 - Discussion - Relatives of Acute Burn Trauma Victims

17.1 - Statement of Principal Findings

This study found that the relatives of individuals who had sustained acute burn trauma suffered from similar psychological reactions of a similar intensity to those sustained by the burn trauma victims. The outcome measures, particularly the IES score, reduced over time and the relatives continued to function at a relatively high level overall. Psychological debriefing did not appear to affect outcome amongst the relatives.

17.2 - Strengths and Weaknesses of the Methodology

The issues over the strengths and weaknesses of this part of the study overlap with those discussed in the previous chapter and will not be repeated. However certain factors make this part of the study less robust, need to be taken into account in interpreting the results and, therefore, will be discussed.

The sample size of 35 was disappointing and lower than was hoped for representing only a third of the number of burn trauma victims included in the main part of the study and reducing the power significantly. The exact reasons for the smaller sample size are unknown but were probably related to difficulties encountered in making contact with the relatives of some subjects who were often not present at the hospital at the time of subject recruitment.

The fact that the relatives were paired with the subjects for analysis is seen as a strength of this part of the study. The fact that almost all the relatives were female and that 31 (89%) were partners (four (11%) were parents) is important to consider in interpreting

the results. The ability of this part of the study to determine the effectiveness of the PD is problematic. Some relatives in the control group were randomly allocated to receive a PD but did not attend it and the power of the PD effectiveness analysis is particularly low as only nine relatives received a PD.

The use of traumatic stress measures that have been developed for use in the primary victims of traumatic events may be a shortcoming of this part of the study. I am not aware of better alternatives than the CAPS and the IES but there has been debate about whether it is appropriate to describe the psychological distress experienced by relatives as PTSD.

17.3 Comparison with other Studies

There has been a paucity of research into the psychological sequelae in relatives of adult survivors of burn trauma as illustrated in chapter 6. Most research has been on the parents of children, has considered smaller sample sizes than this study, usually with no control group such as the victim of the burn trauma and several studies have not employed standardised assessment tools as in this study. This makes comparison of other studies with this one problematic.

The finding of this study that relatives did experience significant psychopathology is supported by other studies that have found significant levels of psychopathology in relatives of burn trauma victims. Both Cella et al (1988a and b) and Shelby et al (1992) used the IES as one of their outcome measures. The relatives' scores were somewhat higher in their studies than in this study. This may be accounted for by the fact that the other studies considered relatives of burn trauma victims with markedly higher mean TBSA burns and/or the inclusion of parents of burned children in the other studies. The fact that the intensity of the symptoms appeared similar to those experienced by the victims of the burn trauma is important and supported by Vigliano et al's (1964) finding of similar rates of psychopathology in the mothers of burned children and the children

themselves. Unfortunately no other studies of the relatives of adult burn trauma victims have compared the rates of psychopathology between the relatives and the victims.

The finding that attendance at a PD was not effective in preventing the development of psychological sequelae is consistent with the PD literature discussed in previous chapters. The results did not suggest that PD was harmful but the small sample size (only nine in the PD group) may have resulted in differences not having been detected. No randomised controlled trials of PD have previously included the relatives of trauma victims but Bunn and Clarke's (1979) randomised controlled trial was of a one-off intervention with relatives of seriously ill or injured individuals. Their brief intervention did seem to reduce the relatives' distress on review immediately afterwards but as previously discussed the study was significantly flawed with no longitudinal follow-up.

17.4 Implications and Conclusions

The main implication of this part of the study is that the psychological aftercare of burn trauma victims discussed in chapter 16 must also cater for the needs of the relatives. There have been no previous randomised controlled trials of interventions to reduce or prevent psychological sequelae in the relatives of burn trauma victims and this study suggests that alternative interventions to PD need to be developed. In addition to individual interventions, group and family interventions have good face validity and should be considered. There is also a need for larger trials to consider the prevalence of psychological sequelae and their predictors in the relatives of burn trauma victims. The absence of rigorous research in this area is disappointing and could easily be improved.

Chapter 18 - Discussion - Predictors of Psychological Outcome in Subjects

18.1 - Statement of Principal Findings

This study found that depression as measured by the depression subscale of the hospital anxiety and depression scale (HADS) was the best baseline predictor of score on the Clinician Administered PTSD Scale (CAPS) at three months accounting for 25% of the total variance. Percentage burn and self blame (presence of self blame appeared to be protective) were the other two variables entered into the forward stepwise linear regression equation at this time point with all three variables accounting for 33% of the total variance. At thirteen months the depression subscale of the HADS was again the best predictor of CAPS score accounting for 24% of the total variance. The final equation contained three independent variables, the HADSD, percentage burn and compensation issues. These three variables accounted for 34% of the total variance. The presence of PD was not significantly predictive of outcome at either three or 13 months.

18.2 - Strengths and Weaknesses of the Methodology

The discussions regarding strengths and weaknesses in the previous chapters are pertinent to this chapter and will not be repeated. The main weakness for this part of the study is the sample size. With a large number of potential explanatory variables it is likely that some will be significant as a result of chance (Altman, 1994). It is also possible that a relatively low sample size will not have the power to pick up a relatively small association at a significant level even though that relationship is present. Therefore it is extremely important to interpret any results of multiple regression with caution especially if there are a large number of independent variables and a relatively

small number of subjects. For this reason some people argue that multiple regression should not be used with small sample sizes.

Altman's (1991) suggestions on limiting the number of independent variables were followed in this study and were identified through previous research as discussed previously. One of the assumptions of multiple regression analysis is that it is assumed that the effects of each variable is independent of each other this is often not true and may not have been in this study. However Altman did not recommend the routine investigation of interaction between all variables as this again could risk false results being obtained. Because of the risk that a model will be over-optimistic ideally that model should be tested with an independent set of data which is not usually possible and was not possible in this study.

A weakness of this study is that because the population were selected with a view to offering a brief psychological intervention and some of the exclusion criteria in particular previous psychiatric and physical history may have had a significant impact on the results (indeed they were selected as exclusion criteria due to fear of the impact they might have on outcome). It is therefore important not to generalise the results of this study to studies of unselected burn trauma populations.

18.3 - Strengths and Weaknesses in relation to other Studies

Paradoxically one of the strengths of this study in relation to many of the other studies is its sample size which although only 103 is much higher than most of the studies which have considered predictive variables.

The other studies looking at predictors using multiple regression analysis largely adhere to the guidelines suggested by Altman (1991) therefore also reducing the risk of spurious results. For example, Patterson et al (1990) used multiple regression with five independent variables for 54 subjects which seemed reasonable as did the six independent variables used by Perry et al (1992) for 31 subjects and the five used by

Bryant in a linear stepwise regression analysis of 35 burn trauma victims. However, Tedstone et al (1998) considered a much larger number of independent variables in their study of 45 burn trauma victims. Other studies have looked for associations in different ways, for example through correlation but given the number of variables considered and the small sample sizes the chance of results has been high (e.g. Williams & Griffiths (1991) who performed multiple correlations with a sample size of 21).

18.4 - Interpretation of Findings

The main predictor of poor outcome on the CAPS at both three and thirteen months in this study was initial score on the HADSD. This does appear to receive some support from other studies. In a population of Accident and Emergency attenders Freedman et al (1999) found initial depression to be highly predictive of outcome. Of the nine identified previous studies of burn trauma victims that considered initial distress eight found this to be associated with poorer outcome (see Table 5.1). Most studies used general measures of distress but four studies found that initial depression was associated with poorer outcome (White, 1982, Chang & Herzog, 1976, Wallace & Lees, 1988, Bryant, 1996).

The finding that initial depression was the best predictor of poor outcome on the CAPS is an interesting finding and seems robust particularly given a similar association at three and thirteen months. Several reasons may explain why depression may predict poorer outcome. Freedman et al (1999) suggested that early depression and the associated negative appraisal of the traumatic event may reduce the ability to recover. Individuals with depression may also have great difficulty reengaging with activities they formerly did thus leading to reduced self esteem and also an inability to confront their traumatic experience or cues to it which seems to help individuals to emotionally process their traumatic experience (Rachman, 1980).

The next predictor was percentage TBSA burn. As discussed in chapter 4 there have been discrepant findings regarding the predictive value of TBSA burn but overall it

does appear to be associated with poorer outcome. Such an association has good face validity but clearly does not apply to all individuals. The percentage variance accounted for by TBSA burn was, however, relatively low (5% at three months and 3% at 13 months) and it seems important not to place too much weight on the percentage burn as a predictor. This is supported by previous research. For example Blumenfield and Reddish (1987) considered only individuals with relatively minor burn trauma and found impaired functioning in 16 (24%) of them.

The final independent variable included in the two equations was different at three and thirteen months. At three months self blame (presence appeared protective) was included accounting for around an extra three percent of variance than the other two variables on their own. Only one other study of burn trauma victims has considered behavioural self-blame (Kiecolt-Glaser & Williams, 1987) and found it to be associated with poorer compliance with nurses, more pain behaviour and increased depression. Another study (Perez-Jimenez, 1993) considered "causal attribution" and did not find this to have a significant relationship with outcome.

There has been more research looking at behavioural self-blame following other traumatic events. Janoff-Bulman and Wortman (1977) found that self blame was associated with better coping in 29 individuals who had been paralysed in serious accidents, a result they did not expect but which is the same result as in this study. However, other research has proved to be equivocal about this finding and the association between poor outcome and blaming someone else has been more consistent (Janoff-Bulman, 1979) although this was not the case in this study. Janoff-Bulman and Wortman (1977) found that in determining whether to blame themselves or not many individuals were influenced by whether they were on their own at the time of the accident and whether what they were doing was something they enjoyed. They felt that better coping was associated with a need for an orderly and meaningful world and that a degree of self blame may help with this.

At thirteen months the third variable included in the equation was compensation issues which was added at step two with percentage TBSA burn being added at step three.

Compensation issues have been much discussed in the context of being a maintaining factor for PTSD. The finding of an association with poorer outcome and ongoing compensation issues should not come as a major surprise and could be argued to be predictable. Individuals claiming compensation are presumably more likely to have a psychiatric injury as this may be part of the basis of their claim. It has also been argued that individuals claiming compensation are more likely to report higher levels of distress through some manipulation of their symptoms, so-called "compensation neurosis". This concept has, however, been challenged by several authors. Mendelson (1995) described it as "simplistic and false" as a result of his follow-up study of 264 litigants who were not working at the conclusion of their legal proceedings. Fontana and Rosenheck (1998) studied 1,008 war veterans with PTSD and found no compensation-seeking effect in outcome among outpatients but a significant effect among some inpatients.

Other burn trauma studies have considered compensation issues. White (1982) found an association between the presence of compensation issues and the severity of psychological symptoms although this association disappeared when the severity of injury was controlled for. Tucker (1987) found that the presence of compensation issues was associated with post-burn psychosocial issues but not with depression or anxiety and almost twice as many of the no compensation issue group satisfied the criteria for PTSD when compared with the compensation group. Tedstone et al (1998) found that seeking compensation was significantly associated with increased scores on the anxiety and depression subscales of the HADS at three months post-burn trauma.

The absence of an association with other variables is also important. At three months anxiety, presence of compensation issues, hand/face burns, impact of event scale score, pain, feeling that someone else was responsible and the presence or absence of psychological debriefing did not significantly affect outcome. One factor that has been suggested by many as being particularly important is the presence of visible scarring, i.e. having sustained burns to the hands or face. This is only partially supported by previous research. Five of the studies discussed in chapter 5 found no association with poorer outcome and four did. It is likely that the hand and face burns in this study were not as

severe as in some of the other studies and that individuals more severely burned would have fared worse. However, of note, the most severely burnt man in this study had severe burns to his hands and face but suffered few psychological sequelae and with due deference to not generalising from one case this appears to support the notion that other factors may be more important in determining psychological outcome.

Early intrusive and avoidance symptoms have been found to be significantly associated with poorer psychological outcome in previous studies of victims of burn trauma (e.g. Adler, 1943; Perry et al, 1992) and other traumatic events (e.g. Brewin et al, 1999). It therefore seems somewhat surpirising that they were not found to be predictive in this study. There may have been no association, however it is also possible that interaction between the HADSD and the IES variables resulted in the HADSD effect masking the effect of the IES. As discussed earlier multiple regression analysis assumes that the effects of each variable are truly independent of each other but this is often not the case (Altman, 1991). The feeling that someone was responsible has been associated with poorer outcome in previous burns studies that considered this (e.g. Perry et al, 1987; Powers et al, 1994 and Patterson et al, 1990). Pain has been much researched and found to be associated with a poorer psychological outcome in burn trauma victims (e.g. Perry et al, 1987 and Difede et al, 1997).

18.5 - Implications and Conclusions

The main implication of this part of the study is that early depression appears to be a predictor of the development of PTSD following burn trauma. This is extremely important because it can be simply measured in clinical practice and the absence of benefit of a one-off intervention for everyone as shown in this study suggests that the way forward may be to detect those individuals with psychological difficulties and/or at high risk of developing psychological difficulties and offer them interventions that work whether they be psychological or pharmacological. This suggests that routinely recording depression levels in patients presenting following burn trauma could be beneficial.

There also appeared to be an association with more severe burn trauma but in common with other studies many individuals with relatively minor burns developed psychological difficulties. The better outcome with self blame at three months seems surprising but consistent with Janoff-Bulman and Wortman's study in 1977. Outstanding compensation issues at thirteen months is perhaps easier to accept as a predictor. It would appear that these other factors may be important in raising indices of suspicion in individuals although as only 33% of the total variance in CAPS score was explained at both three and thirteen months it is apparent that other important factors are present and that confident prediction is not possible. It, therefore, seems important to at least screen everyone for the presence of psychological distress.

There is a need for larger trials to consider the predictors of psychological sequelae following burn trauma with different populations including those individuals who were excluded from this study to determine the true impact of factors such as past psychiatric history on outcome. There is also a need to consider other potential predictors of poorer psychological outcome such as personality factors, coping factors and social support.

Chapter 19 - Discussion - Predictors of Psychological Outcome in Relatives

19.1 - Statement of Principal Findings

This study found that the total score of the subject's Clinician Administered PTSD Scale (CAPS) at three months was the best predictor of the score of the relative on the CAPS at three months accounting for 23% of the total variance. Percentage TBSA burn, baseline measures of relatives self blame, HADS depression score and total IES score and the subjects initial depression did not appear to be predictive and were not entered into the final equation. At thirteen months the depression subscale of the HADS score for the relative at baseline was the best predictor of total CAPS score accounting for 29% of the total variance. Percentage TBSA burn, baseline measures of relatives self blame, subject's HADS depression score and relatives total IES score and the subjects 13 month CAPS total did not appear to be predictive and were not entered into the final equation.

19.2 - Strengths and Weaknesses of the Methodology

The discussions regarding strengths and weaknesses in the previous chapters and in particular the last chapter are pertinent to this chapter and will not be repeated. The main additional weakness for this part of the study is the small sample size. This is considerably smaller than the subjects sample size and therefore the possibility of erroneous results is higher. Because of this only six independent variables were entered into the stepwise multiple regression adhering to Altman's rule of thumb of entering only n/10 or the square root. The six independent variables were identified for use through a review of the results of previous studies of predictors of PTSD in burn trauma and non-burn trauma populations.

Another weakness of this study is that the population were selected as relatives of subjects who had agreed to take part in a randomised controlled trial. Only one third of subjects had relatives willing or available to take part and therefore there is a significant risk that this group of relatives are not representative of all relatives of burn trauma victims. However it does represent a sample of relatives willing to be interviewed, complete questionnaires and take part in a RCT and therefore may be representative of that proportion of individuals who might be most amenable to engagement in psychological treatment if necessary.

19.3 - Comparison with other Studies

As described in chapter 6 there have been relatively few studies concerning the psychological sequelae in relatives of victims of acute burn trauma and even less that have focused on relatives of adult burn trauma victims as opposed to child burn trauma victims. Cella et al (1988), Shelby et al (1992) and Rizzone et al (1994) have considered variables that may predict poor psychological outcome in relatives. Neither of these studies considered psychological distress in the burn trauma victim although Rizzone et al did suggest this. These studies had smaller sample sizes, with 23, 14 and 25 subjects respectively, than this study and although they restricted the number of independent variables considered the risk of them having obtained erroneous results is relatively high. It is also difficult to compare the findings of this study with the other studies due to the differences in methodology, the fact that most of the relatives in the other studies were parents of children and the differences in independent variables selected for consideration.

Cella et al (1988) found that initial distress appeared to be predictive of poorer psychological outcome and Shelby et al (1992) found that initial depression appeared to be predictive of poorer psychological outcome. These findings support this study's finding that initial depression accounted for 29% of the total variance of CAPS score at thirteen months. This finding is also supported by the results of the forward stepwise linear regression performed with the burn trauma victims in this study and with the

findings from studies of victims of other traumatic events (Freedman et al, 1999). Cella et al (1988) also found no association between self blame and outcome or TBSA percentage burn and outcome. Rizzone et al (1994) found that TBSA burn was associated with negative outcome in their study although their study did include subjects with a higher mean TBSA percentage burn. Shelby et al (1992) found that the intrusion scale of the IES appeared to be predictive of poorer psychological outcome. The total IES score was used in this study but was not found to be predictive of outcome.

19.4 - Implications and Conclusions

It is obviously difficult to make any firm conclusions from the findings of this part of the study which are extremely exploratory in their nature. The main implication is that more research needs to be performed before any firm conclusions can be made. However the suggestion that initial depression in relatives and PTSD symptoms in the subject at three months are associated with poorer outcome in relatives is important because both can be simply measured in clinical practice. As discussed in the previous chapter it would appear that the identification of those individuals with psychological difficulties, or at high risk of developing them, and offering such individuals interventions that work is the most appropriate way to help given the evidence currently available. If some individuals are at higher risk than others of developing such difficulties it would appear important to attempt to follow their progress more closely. This suggests that there may be potential benefits in routinely recording depression levels in relatives following traumatic events and remembering their psychological needs over time in addition to the trauma victims. It would also appear important to be aware that if the burn trauma victim is suffering with mental health difficulties the relative may have an increased likelihood of suffering mental health difficulties themselves.

There is a need for larger trials to look at the predictors of psychological sequelae in the relatives of victims of burn trauma. Such studies should consider the relatives of all

burn trauma victims and should help lead to the development of appropriate screening techniques and effective interventions.

Chapter 20 - Concluding Remarks and Further Work

As with most studies certain factors must be taken into account when interpreting the results of this study. Despite being one of the biggest trials to date in this area the study is under powered. The use of burn trauma victims as the traumatised group may limit the generalisability of the results to other traumatised populations and despite extensive efforts to minimise them there were several practical difficulties in carrying out this trial in a clinical setting. Despite using a private room on the burns unit for the psychological debriefings it was sometimes difficult to achieve total privacy although this was usually achieved. There were also other demands on individuals' time and priorities that sometimes made it difficult to deliver the intervention in the way it was manualised and originally described.

This study has highlighted the fact that victims of burn trauma and their relatives can develop distressing psychological reactions to their experiences and that there is a clear need to develop effective interventions to help them. Psychological debriefing does not seem to be the effective intervention many people believed it would be and I hope that the results of this study will stimulate more research into what, if anything, should be provided for victims and relatives of burn trauma and other traumatic events. I also hope that accurate ways of predicting and detecting those individuals at the highest risk of psychological difficulties will be developed.

The clinical implications of this study are several fold. It should lead to a recognition that psychological effects are important and worthy of detection. It also suggests that psychological debriefing should not be routinely advocated and that further research is required to determine what best to offer. With the research currently available it seems most appropriate to attempt to detect those individuals displaying marked distress initially through questionnaires or brief interviews and to monitor their progress most closely. If an individual is continuing to display significant distress at one month after the burn trauma it would seem appropriate to offer a more complex brief intervention such as that described by Bryant et al (1998) at that time.

Appendix A

Consent form

FORM OF CONSENT

1. THE STUDY HAS BEEN EXPLAINED TO ME BY DR BANNISTER. I HAVE BEEN ABLE TO ASK AND DISCUSS MY QUESTIONS WITH HER, ABOUT THE GENERAL NATURE, PURPOSE, POSSIBLE RISKS AND DURATION OF THE STUDY.

2. I UNDERSTAND THAT THE AIM OF THE STUDY IS TO FIND OUT MORE ABOUT THE EFFECTIVENESS OF EARLY PSYCHOLOGICAL INTERVENTION IN PREVENTING PSYCHOLOGICAL DIFFICULTIES AFTER BURN TRAUMA.

3. I GIVE MY FULL CONSENT TO TAKE PART IN THE STUDY AND RESERVE THE RIGHT TO WITHDRAW FROM THE STUDY AT ANY TIME, WITHOUT GIVING A REASON, WITHOUT THIS BEING HELD AGAINST ME IN ANY WAY.

Signed.....

Name..... Date.....

Witnessed..... Date.....

Appendix B

Initial questionnaires

SUBJECTS' INITIAL QUESTIONNAIRE

The following questions concern your recent burn trauma. In order that we can better understand your experiences and the experiences of other victims of burn trauma we would be grateful if you could answer the following questions as honestly as possible. Your answers will be treated in total medical confidence. The first half of the questionnaire is concerned with you before the burn trauma, the second half concerns the incident itself. When you see an asterix (*) please delete as applicable.

BACKGROUND INFORMATION

NAME.....ADDRESS.....

.....

.....

TELEPHONE NUMBER.....

DATE OF BIRTH.....AGE.....

1. WHAT IS YOUR MARITAL STATUS?

MARRIED/SEPARATED/DIVORCED/SINGLE/WIDOWED*

2. PLEASE STATE THE NAMES AND AGES OF YOUR:

	NAME	AGE
a) SPOUSE/PARTNER	.....	.....
b) CHILDREN	.....	.....
	.....	.....
	.....	.....

3. WHAT IS YOUR OCCUPATION?.....

4. WHAT IS YOUR POSITION?.....

5. HOW LONG HAVE YOU BEEN IN YOU PRESENT JOB?.....

6. HAVE YOU EVER RECEIVED TREATMENT FOR ANY SIGNIFICANT PHYSICAL ILLNESS OR INJURY?

YES/NO*

IF YES, PLEASE DESCRIBE.....

.....

7. HAVE YOU EVER RECEIVED TREATMENT OR COUNSELLING FOR ANY PSYCHOLOGICAL PROBLEMS?

YES/NO*

IF YES, PLEASE TICK WHO FROM - PADRE
GENERAL PRACTITIONER
COUNSELLOR
PSYCHIATRIST
OTHER (PLEASE SPECIFY.....

.....)

8. HAVE YOU EVER BEEN INVOLVED IN ANY MAJOR TRAUMATIC EVENTS IN THE PAST? eg FIRES, ROAD TRAFFIC ACCIDENTS, ATTACKS etc.

YES/NO*

IF YES, PLEASE GIVE DETAILS.....

.....

9. WHAT ARE YOUR USUAL HOBBIES/HOW DO YOU SPEND YOUR SPARE TIME?

.....

.....

10. DO YOU HAVE ANYONE YOU CAN TALK TO AND SHARE YOUR INNERMOST FEELINGS?

YES/NO*

IF YES, WHO?.....

THE NEXT QUESTIONS CONCERN YOUR LEVEL OF FUNCTIONING **BEFORE** THE BURN TRAUMA. PLEASE SCORE ON THE 0-8 SCALE BY PLACING A CROSS AGAINST ONE OF THE NUMBERS.

11. BEFORE THE BURN TRAUMA MY WORK WAS IMPAIRED:

0 1 2 3 4 5 6 7 8

NOT AT ALL — SLIGHTLY — DEFINITELY — MARKEDLY — VERY SEVERELY I COULD NOT WORK

12. BEFORE THE BURN TRAUMA MY HOME MANAGEMENT (CLEANING, TIDYING, SHOPPING, COOKING, LOOKING AFTER CHILDREN, PAYING BILLS) WAS IMPAIRED:

0 1 2 3 4 5 6 7 8

NOT AT ALL — SLIGHTLY — DEFINITELY — MARKEDLY — VERY SEVERELY I COULD NOT DO IT

13. BEFORE THE BURN TRAUMA MY SOCIAL LEISURE ACTIVITIES (WITH OTHER PEOPLE, eg PARTIES, OUTINGS, VISITS, SPORTS etc.) WERE IMPAIRED:

0 1 2 3 4 5 6 7 8

NOT AT ALL — SLIGHTLY — DEFINITELY — MARKEDLY — VERY SEVERELY I COULD NOT DO THESE

14. BEFORE THE BURN TRAUMA MY PRIVATE LEISURE ACTIVITIES (DONE ALONE, eg READING, GARDENING, WALKING etc.) WERE IMPAIRED:

0 1 2 3 4 5 6 7 8

NOT AT ALL — SLIGHTLY — DEFINITELY — MARKEDLY — VERY SEVERELY I COULD NOT DO THESE

15. BEFORE THE BURN TRAUMA I WAS CONTENT WITH MY LIFE:

0 1 2 3 4 5 6 7 8

NOT AT ALL — TOTALLY

THE BURN TRAUMA

16. PLEASE DESCRIBE HOW YOU SUSTAINED YOUR BURN INJURY .....

.....

.....

.....

17.WHAT DATE DID IT OCCUR?.....

18. WHAT TIME DID IT OCCUR?.....

19. DID YOU HAVE TO BE RESCUED?

YES/NO/UNSURE*

20. DID YOU YOURSELF COME NEAR TO DEATH IN THE INCIDENT?

YES/NO*

21. DID ANYONE ELSE COME NEAR TO DEATH?

YES/NO*

22. DID ANYONE DIE?

YES/NO*

IF YES, WHO.....

23. WAS ANYONE ELSE INJURED?

YES/NO*

IF YES,PLEASE DESCRIBE WHO.....

24. HAVE YOU LOST ANYTHING ELSE AS A RESULT OF THE INCIDENT?

YOUR HOME?	YES/NO*
DAMAGE OF YOUR HOME/PROPERTY?	YES/NO*
DAMAGE TO PROPERTY AFFECTING YOUR WORK?	YES/NO*
YOUR MOTOR VEHICLE?	YES/NO*
TREASURED PERSONAL POSSESSIONS?	YES/NO*

OTHER LOSSES?

(PLEASE SPECIFY.....)

25. DURING THE INCIDENT WERE YOU:

CALM?	YES/NO*
FRIGHTENED?	YES/NO*
PANICKY?	YES/NO*
TEARFUL?	YES/NO*
SHOCKED?	YES/NO*
"FROZEN"?	YES/NO*
ACTING RATIONALLY?	YES/NO*
RUNNING AWAY?	YES/NO*

26. DID YOU HAVE PLENTY OF WARNING TO PREPARE YOURSELF BEFOREHAND FOR THE INCIDENT?

YES/NO*

IF YES, HOW LONG?.....HOURS

27. DID YOU HAVE PREVIOUS a) TRAINING YES/NO*
b) EXPERIENCE YES/NO*
c) KNOWLEDGE YES/NO*
WHICH HELPED YOU KNOW WHAT TO DO.

28. WERE YOU SHOCKED OR OVERWHELMED BY THE SUDDENNESS OF THE INCIDENT?

YES/NO*

29. WERE YOU SHOCKED OR OVERWHELMED BY THE SEVERITY OF THE INCIDENT?

YES/NO*

30. DID YOU a) THINK YOU WERE GOING TO DIE? YES/NO*
b) THINK IT WAS POSSIBLE YOU COULD DIE? YES/NO*
c) THINK IT WAS UNLIKELY YOU WOULD DIE BUT THAT IT COULD HAPPEN? YES/NO*

31. WHAT WAS THE MOST DISTRESSING PART FOR YOU?.....

.....

32. HOW STRESSFUL WAS THE WHOLE INCIDENT FOR YOU?

0 1 2 3 4 5 6 7 8

NOT AT ALL — AS STRESSFUL AS I CAN POSSIBLY IMAGINE

33. DO YOU HOLD ANYONE OR ANYTHING RESPONSIBLE FOR THE INCIDENT?

YES/NO*

IF YES WHO/WHAT?.....

34. DO YOU FEEL TO BLAME IN ANY WAY? YES/NO*

IF YES, PLEASE EXPLAIN.....

.....

35. ARE YOU SATISFIED WITH THE TREATMENT YOU HAVE HAD SO FAR?

YES/NO*

36. HOW MUCH PHYSICAL PAIN ARE YOU IN AT THE MOMENT?

0	1	2	3	4	5	6	7	8

NONE AT ALL — SLIGHT PAIN — DEFINITE PAIN — MARKED PAIN — VERY SEVERE PAIN (THE WORST POSSIBLE)

37. HOW DO YOU SEE THE FUTURE? GOOD/BAD/UNSURE*

38. SINCE THE INCIDENT DO YOU FEEL YOUR MENTAL HEALTH HAS

IMPROVED/DETERIORATED/STAYED THE SAME*

39. HOW MUCH DO YOU EXPECT TO RECOVER PHYSICALLY?

0	1	2	3	4	5	6	7	8

NOT AT ALL — TOTALLY

40. HOW MUCH DO YOU EXPECT TO RECOVER MENTALLY?

0	1	2	3	4	5	6	7	8

NOT AT ALL — TOTALLY

THANK YOU FOR COMPLETING THIS QUESTIONNAIRE. SHOULD YOU WISH TO MAKE ANY FURTHER COMMENTS, PLEASE DO SO IN THE SPACE BELOW AND OVERLEAF.

RELATIVES' INITIAL QUESTIONNAIRE

The following questions concern ..... recent burn trauma. In order that we can better understand your experiences and the experiences of others affected by burn trauma we would be grateful if you could answer the following questions as honestly as possible. Your answers will be treated in total medical confidence. The first half of the questionnaire is concerned with you before the burn trauma, the second half concerns the incident itself. When you see an asterix (*) please delete as applicable.

BACKGROUND INFORMATION

NAME.....ADDRESS.....

.....

.....

TELEPHONE NUMBER.....

DATE OF BIRTH.....AGE.....

1. WHAT IS YOUR OCCUPATION?.....

2. WHAT IS YOUR POSITION?.....

3. HOW LONG HAVE YOU BEEN IN YOU PRESENT JOB?.....

4. HAVE YOU EVER RECEIVED TREATMENT FOR ANY SIGNIFICANT PHYSICAL ILLNESS OR INJURY?

YES/NO*

IF YES, PLEASE DESCRIBE.....

.....

5. HAVE YOU EVER RECEIVED TREATMENT OR COUNSELLING FOR ANY PSYCHOLOGICAL PROBLEMS?

YES/NO*

IF YES, PLEASE TICK WHO FROM - PADRE
GENERAL PRACTITIONER
COUNSELLOR
PSYCHIATRIST
OTHER
(PLEASE SPECIFY.....)

6. HAVE YOU EVER BEEN INVOLVED IN ANY MAJOR TRAUMATIC EVENTS IN THE PAST? eg FIRES, ROAD TRAFFIC ACCIDENTS, ATTACKS etc.

YES/NO*

IF YES, PLEASE GIVE DETAILS.....

.....

7. WHAT ARE YOUR USUAL HOBBIES/HOW DO YOU SPEND YOUR SPARE TIME?

.....

.....

8. DO YOU HAVE ANYONE YOU CAN TALK TO AND SHARE YOUR INNERMOST FEELINGS?

YES/NO*

IF YES, WHO?.....

THE NEXT QUESTIONS CONCERN YOUR LEVEL OF FUNCTIONING **BEFORE** THE BURN TRAUMA. PLEASE SCORE ON THE 0-8 SCALE BY PLACING A CROSS AGAINST ONE OF THE NUMBERS.

9. BEFORE THE BURN TRAUMA MY WORK WAS IMPAIRED:

0	1	2	3	4	5	6	7	8
NOT AT ALL		SLIGHTLY		DEFINITELY		MARKEDLY	VERY SEVERELY I COULD NOT WORK	

10. BEFORE THE BURN TRAUMA MY HOME MANAGEMENT (CLEANING, TIDYING, SHOPPING, COOKING, LOOKING AFTER CHILDREN, PAYING BILLS) WAS IMPAIRED:

0 1 2 3 4 5 6 7 8

NOT AT ALL — SLIGHTLY — DEFINITELY — MARKEDLY — VERY SEVERELY I COULD NOT DO IT

11. BEFORE THE BURN TRAUMA MY SOCIAL LEISURE ACTIVITIES (WITH OTHER PEOPLE, eg PARTIES, OUTINGS, VISITS, SPORTS etc.) WERE IMPAIRED:

0 1 2 3 4 5 6 7 8

NOT AT ALL — SLIGHTLY — DEFINITELY — MARKEDLY — VERY SEVERELY I COULD NOT DO THESE

12. BEFORE THE BURN TRAUMA MY PRIVATE LEISURE ACTIVITIES (DONE ALONE, eg READING, GARDENING, WALKING etc.) WERE IMPAIRED:

0 1 2 3 4 5 6 7 8

NOT AT ALL — SLIGHTLY — DEFINITELY — MARKEDLY — VERY SEVERELY I COULD NOT DO THESE

13. BEFORE THE BURN TRAUMA I WAS CONTENT WITH MY LIFE:

0 1 2 3 4 5 6 7 8

NOT AT ALL — TOTALLY

THE BURN TRAUMA

14. PLEASE DESCRIBE HOW YOU HEARD OF THE BURN INJURY.....

.....

.....

.....

15. HAVE YOU LOST ANYTHING AS A RESULT OF THE INCIDENT?

YOUR HOME?	YES/NO*
DAMAGE OF YOUR HOME/PROPERTY?	YES/NO*
DAMAGE TO PROPERTY AFFECTING YOUR WORK?	YES/NO*
YOUR MOTOR VEHICLE?	YES/NO*
TREASURED PERSONAL POSSESSIONS?	YES/NO*
OTHER LOSSES?	
(PLEASE SPECIFY.....)	

16. ON RECEIVING THE NEWS WERE YOU:

CALM?	YES/NO*
FRIGHTENED?	YES/NO*
PANICKY?	YES/NO*
TEARFUL?	YES/NO*
SHOCKED?	YES/NO*
"FROZEN"?	YES/NO*
ACTING RATIONALLY?	YES/NO*
RUNNING AWAY?	YES/NO*

17. WERE YOU SHOCKED OR OVERWHELMED BY THE SUDDENNESS OF THE INCIDENT?

YES/NO*

18. WERE YOU SHOCKED OR OVERWHELMED BY THE SEVERITY OF THE INCIDENT?

YES/NO*

19. DID YOU a) THINK ..... WAS GOING TO DIE? YES/NO*
b) THINK IT WAS POSSIBLE ..... COULD DIE? YES/NO*
c) THINK IT WAS UNLIKELY ..... WOULD DIE BUT THAT IT COULD HAPPEN? YES/NO*

20. WHAT WAS THE MOST DISTRESSING PART FOR YOU?.....

.....

21. HOW STRESSFUL WAS THE WHOLE INCIDENT FOR YOU?

0 1 2 3 4 5 6 7 8

NOT AT ALL — AS STRESSFUL AS I CAN POSSIBLY IMAGINE

22. DO YOU HOLD ANYONE OR ANYTHING RESPONSIBLE FOR THE INCIDENT?

YES/NO*

IF YES WHO/WHAT?.....

23. DO YOU FEEL TO BLAME IN ANY WAY? YES/NO*

IF YES,PLEASE EXPLAIN.....

.....

24. ARE YOU SATISFIED WITH THE TREATMENT ..... HAS HAD SO FAR?

YES/NO*

25. ARE YOU SATISFIED WITH THE SUPPORT YOU HAVE RECEIVED SO FAR? YES/NO*

26. HOW DO YOU SEE THE FUTURE? GOOD/BAD/UNSURE*

27. SINCE THE INCIDENT DO YOU FEEL YOUR MENTAL HEALTH HAS

IMPROVED/DETERIORATED/STAYED THE SAME*

28. HOW MUCH DO YOU EXPECT ..... TO RECOVER PHYSICALLY?

0 1 2 3 4 5 6 7 8

NOT AT ALL — TOTALLY

29. HOW MUCH DO YOU EXPECT ..... TO RECOVER MENTALLY?

0	1	2	3	4	5	6	7	8
NOT AT ALL								TOTALLY

30. HOW MUCH DO YOU EXPECT TO RECOVER MENTALLY?

0	1	2	3	4	5	6	7	8
NOT AT ALL								TOTALLY

THANK YOU FOR COMPLETING THIS QUESTIONNAIRE. SHOULD YOU WISH TO MAKE ANY FURTHER COMMENTS, PLEASE DO SO IN THE SPACE BELOW AND OVERLEAF.

Appendix C

Psychological debriefing method

Description of the psychological debriefing method used

A psychological debriefing (PD) is an individual or group meeting that takes place shortly after a traumatic incident. Its purpose is to review the impressions and reactions of those involved. It has been used with survivors, victims, emergency care workers and providers of psychological care. Its aim is to reduce and prevent unwanted psychological sequelae.

PDs ideally involve rapid outreach (i.e. occur within a few days of the incident) and focus on the present reactions of those involved rather than earlier experiences which may shape an individual's reactions. Psychiatric "labelling" is avoided and the emphasis is placed on normalisation. The participants are assured that they are normal people who have experienced an abnormal event.

The PDs were either individual or couple meetings.

Structure of the PD meeting

A PD is made up of seven distinct stages which are described below.

1. The Introduction

The debriefer states that the purpose of the meeting is to review the participant(s) reactions to the trauma; to discuss them and to identify methods of dealing with them to prevent future problems. The debriefer assumes control and outlines his/her own competence in order to lend confidence to those attending. Three rules are made explicit:

a. Partipants are under no obligation to say anything except why they were there and what their role was.
b. Confidentiality is emphasised and in groups the members undertake not to divulge what others have said outside the group.

c. The focus will remain on the impressions and reactions of those involved.

2. Expectations and Facts

The details of what actually happened are discussed. Expectations should be expressed, i.e. did they expect what happened? (This is extremely important in certain situations, for example, unexpectedly encountering injured children can magnify the intensity of a traumatic situation).

3. Thoughts and Impressions

When the facts are being described, thoughts and impressions are elicited by asking questions such as,

"What were your thoughts when you first realised you were injured?"
"What did you do?"

This information helps to a) construct a picture of what happened, b) put individual reactions into perspective and c) to help with the integration of experiences.

Sensory impressions in all five modalities should be elicited,

"What did you see, hear, touch, smell, taste?"

This will help to produce a more realistic reconstruction of the trauma.

4. Emotional Reactions

This stage is likely to be the longest of the PD. The earlier questions concerning thoughts and impressions should lead to answers concerning emotions. The debriefer attempts to aid the release of emotions with questions about some of the common reactions such as fear, helplessness, frustration, self-reproach, anger, guilt, anxiety and depression. Emotional reactions experienced since the event are also important. Considering these is particularly useful to help create understanding within a family.

5. Normalisation

After the emotional reactions have been expressed the debriefer aims to facilitate acceptance of them. This is done by stressing that the reactions are entirely normal. When more than one person is present it is likely that they will not be alone in the emotions they feel. This helps with normalisation. The debriefer stresses that individuals do not have to experience all of the emotions described to be normal, but that it is normal to react after a critical incident. The debriefer should describe other feelings which individuals may experience in the future such as:

Intrusive thoughts and images
Distress when reminded of what happened
Attempts to avoid thoughts, feelings and reminders
Detachment from others
Loss of interest in things that once gave pleasure
Anxiety
Low mood
Sleep disturbance including nightmares
Irritability
Shame, guilt, anger
Hypervigilance and increased startle reactions

When dealing with individuals who have sustained significant physical injury as a result of acute burn trauma, time should be spent considering possible emotions and reactions associated with the disability/disfigurement.

6. Future Planning/Coping

The importance of open discussion of feelings with family and friends is emphasised. The possibility of needing additional support from them for a while is highlighted.

7. Disengagement

This gives the opportunity for any other areas to be discussed. A leaflet describing the normal reactions and how to cope with them such as the British Red Cross leaflet on "Coping with personal Crisis" (attached) can be useful. At this stage guidance is also given regarding the need for further help and where this may be obtained if necessary. Participants are advised to seek further help if:

a. Psychological symptoms do not decrease after 4-6 weeks
b. Psychological symptoms increase over time
c. There is ongoing loss of function and occupation/family difficulties
d. Others comment on marked personality changes

Appendix D

Clinician administered posttraumatic stress disorder scale

Hospital anxiety and depression scale

Impact of event scale

National Center for PTSD

CLINICIAN-ADMINISTERED PTSD SCALE (CAPS-1)

Form 1 - Current and Lifetime Diagnosis Version

Patient: Pt #: Date: Clinician:

Purpose: The CAPS was developed to measure cardinal and hypothesized signs and symptoms of PTSD. This clinician-administered instrument provides a method to evaluate the frequency and intensity of individual symptoms, as well as the impact of the symptoms on social and occupational functioning, the overall intensity of the symptoms, and the validity of the ratings obtained. Whenever possible, the CAPS-1 should be used in conjunction with self-report, behavioral, and physiological measures when assessing either baseline or post-treatment status.

Instructions: The time frame for each symptom is one month. Using the prompt questions or comparable alternatives and appropriate follow-up questions, first assess the frequency, over the previous month, of the identified symptom. Next, using the same method, evaluate the intensity of symptom occurrence. The descriptors for the anchor points of both the frequency and intensity dimensions can be read to the patient in arriving at the most accurate rating. **A frequency rating of one (1) or greater and a intensity rating of two (2) or greater reflect significant problems with a particular symptom, and should be considered a symptom endorsement.** This symptom then can be counted toward the required total for a given criterion (i.e., one symptom for B, three for C, two for D). It is important to note that criteria C, D, and E require that the symptoms not be present before the trauma. The clinician should clarify with the patient that the onset of any of the symptoms for criteria C, D, or E occurred after the trauma. If the veracity or accuracy of the patient's report is in doubt, the clinician should circle QV ("Questionable Validity") to the right of the corresponding item.

If the patient meets the PTSD diagnostic criteria for the past month, he or she automatically meets the criteria for a lifetime diagnosis. If not, use the "Lifetime Symptom Query" to establish a high-symptom one month period since the trauma for which to reassess the frequency and intensity of each symptom.

D. Blake, F. Weathers, L. Nagy, D. Kaloupek, G. Klauminzer, D. Charney & T. Keane
National Center for Posttraumatic Stress Disorder
Behavioral Science Division - Boston Neurosciences Division - West Haven
May, 1990

National Center for PTSD

CLINICIAN-ADMINISTERED PTSD SCALE (CAPS-1)

Traumatic event

The traumatic event is persistently reexperienced:

(1) recurrent and intrusive distressing recollections of the event

Frequency

Have you ever experienced unwanted memories of the event(s) without being exposed to something that reminded you of the event? How often in the past month?

0 Never
1 Rarely, once or twice a month
2 Occasionally, once or twice a week
3 Frequently, several times a week
4 Constantly, daily or almost every day

Description:

Intensity

At their worst, how much distress or discomfort did these memories cause you? Have you actively avoided remembering the event(s)? Did these memories cause you to stop what you were doing? Are you able to dismiss the memories if you try?

0 None
1 Mild, minimal distress
2 Moderate, distress clearly present but still manageable
3 Severe, considerable distress, marked discomfort
4 Extreme, overwhelming or incapacitating distress

C	L
QV	QV
F	F
I	I

(2) intense psychological distress at exposure to events that symbolize or resemble an aspect of the traumatic event, including anniversaries of the trauma

Frequency

Have you ever gotten upset when you were exposed to events that symbolize or resemble an aspect of the event(s)? [For example, particular males for rape victims, tree lines or wooded areas for combat veterans] How often in the past month?

0 Never
1 Rarely, once or twice a month
2 Occasionally, once or twice a week
3 Frequently, several times a week
4 Constantly, daily or almost every day

Description/Examples:

Intensity

At its worst, how much distress or discomfort did exposure to these reminders cause you? Were you able to remain in the situation? For how long?

0 None
1 Mild, minimal distress with no escape behavior
2 Moderate, distress clearly present but still manageable, and some escape behavior may be present
3 Severe, considerable distress, marked discomfort and escape behavior likely to be present
4 Extreme, overwhelming or incapacitating distress and marked escape behavior is definitely present

C	L
QV	QV
F	F
I	I

(3) sudden acting or feeling as if the traumatic event were recurring (includes a sense of reliving the experience, illusions, hallucinations, and dissociative [flashback] episodes, even those that occur upon awakening or when intoxicated)

Frequency

Have you ever suddenly acted or felt as if the event(s) were happening again? How often in the past month?

0 Never
1 Rarely, once or twice a month
2 Occasionally, once or twice a week
3 Frequently, several times a week
4 Constantly, daily or almost every day

Description:

Intensity

At its worst, how much did it seem that the event(s) was happening again? How long did it last? What did you do while this was happening?

0 Not at all
1 Mild, slightly more realistic than just thinking about the event
2 Moderate, definite dissociative quality, but still very aware of surroundings; daydreaming quality
3 Severe, strongly dissociative (reports images, sounds, smells), but retained some awareness of surroundings
4 Extreme, complete dissociation (flashback), no awareness of surroundings, possible amnesia for the episode (blackout)

C	L
QV	QV
F	F
I	I

(4) recurrent distressing dreams of the event

Frequency

Have you ever had unpleasant dreams about the event(s)? How often in the past month?

0 Never
1 Rarely, once or twice a month
2 Occasionally, once or twice a week
3 Frequently, several times a week
4 Constantly, nightly or almost every night

Description:

Intensity

At their worst, how much distress or discomfort did these dreams cause you? Did these dreams wake you up? [If yes, ask: Did you notice any physical symptoms when you awoke? How long does it usually take to get back to sleep?]

0 None
1 Mild, minimal distress
2 Moderate, distress clearly present but still manageable
3 Severe, considerable distress, marked discomfort
4 Extreme, overwhelming or incapacitating distress

C	L
QV	QV
F	F
I	I

Current Symptoms from Criterion B = _____

Lifetime Symptoms from Criterion B = _____

Persistent avoidance of stimuli associated with the trauma or numbing of general responsiveness (not present before the trauma)

(5) efforts to avoid thoughts or feelings associated with the trauma

Frequency

Have you ever tried to avoid thinking about what happened or tried to avoid feelings related to the event(s)? How often in the past month?

0 Never
1 Rarely, once or twice a month
2 Occasionally, once or twice a week
3 Frequently, several times a week
4 Constantly, daily or almost every day

Description:

Intensity

How much effort did you make to avoid thoughts or feelings related to the event(s)? [rate all attempts at cognitive avoidance, including distraction, suppression, and reducing awareness with alcohol or drugs]

0 No effort
1 Mild, minimal effort
2 Moderate, some effort, avoidance definitely present
3 Severe, considerable effort, marked avoidance
4 Extreme, drastic attempts at avoidance

C	L
QV	QV
F	F
I	I

) efforts to avoid activities or situations that arouse recollections of the trauma

Frequency

Have you ever tried to stay away from activities or situations that reminded you of the event(s)? How often in the past month?

Never
Rarely, once or twice a month
Occasionally, once or twice a week
Frequently, several times a week
Constantly, daily or almost every day

Description/Examples:

Intensity

How much effort did you make to avoid activities or situations related to the event(s)? [rate all attempts at behavioral avoidance, e.g., combat veteran who avoids veteran activities, war movies, Asians, etc.]

0 No effort
1 Mild, minimal effort
2 Moderate, some effort, avoidance definitely present
3 Severe, considerable effort, marked avoidance
4 Extreme, drastic attempts at avoidance

C	L
QV	QV
F	F
I	I

(7) inability to recall an important aspect of the trauma (psychogenic amnesia)

Frequency

Have you been unable to remember important parts of the event(s) (e.g., names, faces, chronology of events)? How much of the event(s) have you had difficulty remembering in the past month?

0 None, clear memory of event(s)
1 Few aspects of event(s) not remembered (less than 10%)
2 Some aspects of the event(s) not remembered (approximately 20-30%)
3 Many aspects of the event(s) not remembered (approximately 50-60%)
4 Most of event(s) not remembered (more than 80%)

Intensity

How much difficulty did you have recalling all important aspect(s) of the event(s)?

0 No difficulty at recalling event(s)
1 Mild, minimal difficulty recalling event(s)
2 Moderate, some difficulty, could recall event(s) with concentration
3 Severe, considerable difficulty recalling the event(s)
4 Extreme, nearly complete inability to recall the event(s)

C	L
QV	QV
F	F
I	I

Description:

(8) markedly diminished interest in significant activities

Frequency

Have you been less interested in important activities that once gave you pleasure, such as sports, hobbies, or social activities? As compared to before the event(s), how many activities in the past month have you had less interest in?

0 No loss of interest
1 Few activities (less than 10%)
2 Several activities (approx 20-30%)
3 Many activities (approx 50-60%)
4 Most activities (more than 80%)

Intensity

At its worst, how strong was your loss of interest in these activities?

0 No loss of interest
1 Mild, only slight loss of interest; probably would enjoy after starting activities
2 Moderate, definite loss of interest, but still has some enjoyment of activities
3 Severe, marked loss of interest in activities
4 Extreme, complete loss of interest, intentionally does not engage in activities

C	L
QV	QV
F	F
I	I

Description/Examples:

(9) feelings of detachment or estrangement from others

Frequency

As compared to before the event, have you felt distant or cut off from those around you? How much of the time have you felt this way in the past month?

0 None of the time
1 Very little of the time (less than 10%)
2 Some of the time (approx 20-30%)
3 Much of the time (approx 50-60%)
4 Most or all of the time (more than 80%)

Description:

Intensity

At their worst, how strong were your feelings of being distant or cut off from others? Who do you feel closest to?

0 No feelings of detachment or estrangement
1 Mild, occasionally feels "out of synch" with others
2 Moderate, feelings of detachment clearly present, but still feels some interpersonal connection or belonging with others
3 Severe, marked feelings of detachment or estrangement
4 Extreme, feels completely detached or estranged

C	L
QV	QV
F	F
I	I

(10) restricted range of affect, e.g., unable to have loving feelings

Frequency

Have you had periods where you felt emotionally numb, or had trouble experiencing feelings such as love or happiness? Is this different from how you felt before the event(s)? How much of the time have you felt this way in the past month?

0 None of the time
1 Very little of the time (less than 10%)
2 Some of the time (approx 20-30%)
3 Much of the time (approx 50-60%)
4 Most or all of the time (more than 80%)

Description:

Intensity

At their worst, how strong were your feelings of emotional numbness? [In rating this item include observations of range of affect in interview]

0 No emotional numbing
1 Mild, slight emotional numbing
2 Moderate, emotional numbing clearly present, but still able to experience emotions
3 Severe, marked emotional numbing in at least two primary emotions (e.g., love, happiness)
4 Extreme, feels completely unemotional

C	L
QV	QV
F	F
I	I

(11) sense of a foreshortened future, e.g., does not expect to have a career, marriage, children, or a long life

Frequency

Have you had times when you felt that there is no need to plan for the future, that somehow your future will be cut short? [If yes, rule out realistic risks such as life-threatening medical conditions] How long do you think you will live? Is this different from how you felt before the event(s)? How much of the time in the past month have you felt this way?

0 None of the time
1 Very little of the time (less than 10%)
2 Some of the time (approx 20-30%)
3 Much of the time (approx 50-60%)
4 Most or all of the time (more than 80%)

Intensity

At its worst, how strong was this feeling that your future will be cut short? How convinced were you that you will die prematurely?

0 No sense of a foreshortened future
1 Mild, slight sense of a foreshortened future
2 Moderate, sense of a foreshortened future definitely present
3 Severe, marked sense of a foreshortened future
4 Extreme, overwhelming sense of a foreshortened future

C	L
QV	QV
F	F
I	I

Description:

Current Symptoms from Criterion C = _____

Lifetime Symptoms from Criterion C = _____

Persistent symptoms of increased arousal (not present before the trauma)

(12) difficulty falling or staying asleep

Frequency

Have you ever had any problems falling or staying asleep? Is this different from the way you were sleeping before the event(s)? How many nights in the past month?

0 No nights of disturbed sleep
1 Rarely, once or twice a month
2 Occasionally, once or twice a week
3 Frequently, several times a week
4 Constantly, nightly or almost every night

Sleep Onset Problems? Y N

Mid Sleep Awakening? Y N

Early AM Awakening? Y N

Total #hrs Sleep/Night ____

Desired #hrs per Night ____

Intensity

[Ask probe items and rate overall sleep disturbance] How long did it take you to fall asleep? How many times did you wake up in the night? How many hours total did you sleep each night?

0 No sleep problems
1 Mild, takes slightly longer to fall asleep, or minimal difficulty staying asleep (up to 30 minutes loss of sleep)
2 Moderate, definite sleep disturbance, with clearly longer latency to sleep or clear difficulty staying asleep (30 to 90 minutes loss of sleep)
3 Severe, much longer latency to sleep or marked difficulty staying asleep (90 minutes to 3 hours loss of sleep)
4 Extreme, very long latency to sleep or profound difficulty staying asleep (greater than 3 hours loss of sleep)

C	L
QV	QV
F	F
I	I

(13) irritability or outbursts of anger

Frequency

Have there ever been times when you felt very irritable, or expressed feelings of anger and acted aggressively? Is this different from how you felt and/or acted before the event(s)? How often in the past month?

0 Never
1 Rarely, once or twice a month
2 Occasionally, once or twice a week
3 Frequently, several times a week
4 Constantly, daily or almost every day

Intensity

How angry were you? In what ways did you express/show anger?

0 No irritability or anger
1 Mild, minimal irritability, raises voice when angry
2 Moderate, irritability clearly present, easily becomes argumentative when angry, but can recover quickly
3 Severe, marked irritability, becomes verbally or physically aggressive when angry
4 Extreme, pervasive anger, easily provoked to physical violence

C	L
QV	QV
F	F
I	I

Description/Examples:

(14) difficulty concentrating

Frequency

Have you found it difficult to concentrate on what you were doing or on things going on around you? Has your concentration changed since the event(s)? How much of the time have you had concentration difficulties in the past month?

0 None of the time
1 Very little of the time (less than 10%)
2 Some of the time (approx 20-30%)
3 Much of the time (approx 50-60%)
4 Most or all of the time (more than 80%)

Intensity

How difficult was it for you to concentrate? [In rating this item include observations of concentration in the interview]

0 No difficulty with concentration
1 Mild, only slight effort needed to concentrate
2 Moderate, definite loss of concentration, but could concentrate with effort
3 Severe, marked loss of concentration, even with effort
4 Extreme, complete inability to concentrate

C	L
QV	QV
F	F
I	I

Description:

(15) hypervigilance

Frequency

Have there ever been times when you were especially alert or watchful, even when there was no obvious need to be? Is this different from how you felt and acted before the event(s)? How much of the [pertinent] time in the past month?

0 None of the time
1 Very little of the time (less than 10%)
2 Some of the time (approx 20-30%)
3 Much of the time (approx 50-60%)
4 Most or all of the time (more than 80%)

Intensity

How much effort did you make to try to be aware of everything around you? [In rating this item include observations of hypervigilance during the interview]

0 No hypervigilance
1 Mild, minimal hypervigilance, slight heightening of awareness
2 Moderate, hypervigilance clearly present, watchful in public (e.g., chooses safe place to sit in a restaurant or movie theater)
3 Severe, marked hypervigilance, very alert, scans environment for danger, exaggerated concern for safety of self (and home and family)
4 Extreme, excessive hypervigilance, efforts to ensure safety consume significant time and energy, and may involve extensive safety-checking behaviors, marked guarded behavior during interview

C	L
QV	QV
F	F
I	I

Description:

(16) exaggerated startle response

Frequency

Have you ever experienced strong startle reactions to loud, unexpected noises (e.g., car backfires, fireworks, doorslams, etc.) or things that you saw (e.g., movement in the corner of your eye)? Is this different from how you were before the event(s)? How often has this happened in the past month?

0 Not once
1 Once or twice
2 Once or twice a week
3 Several times a week
4 Daily or almost every day

Intensity

At their worst, how strong were these startle reactions?

0 No startle reaction
1 Mild, minimal reaction
2 Moderate, definite startle response, feels "jumpy"
3 Severe, marked startle response, sustained arousal following initial reaction
4 Extreme, excessive startle response, panic symptoms, overt coping behavior (e.g., combat veteran who "hits the dirt")

C	L
QV	QV
F	F
I	I

Description/Examples:

(17) physiologic reactivity upon exposure to events that symbolize or resemble an aspect of the traumatic event

Frequency

Have you ever experienced any physical reactions when you were faced with situations that reminded you of the event(s)? [Listen for report of symptoms such as heart racing, tremulousness, sweating, or muscle tension, but do not suggest symptoms to patient] How often in the past month?

0 Not once
1 Once or twice
2 Once or twice a week
3 Several times a week
4 Daily or almost every day

Intensity

At their worst, how strong were these physical reactions?

0 No physical reaction
1 Mild, minimal reaction
2 Moderate, physical reaction clearly present, reports some discomfort
3 Severe, marked physical reaction, reports strong discomfort
4 Extreme, dramatic physical reaction, sustained arousal, panic symptoms

C	L
QV	QV
F	F
I	I

Description/Examples:

Current Symptoms from Criterion D = _____

Lifetime Symptoms from Criterion D = _____

CAPS Global Ratings

(18) Impact on Social Functioning: **Have the symptoms you have endorsed affected your social life in any way?** Rate the overall impact that the PTSD symptoms have had on the patient's social functioning, taking into consideration impressions of the patient's behavior as well as his/her report provided at other times during the interview.

0 = No adverse impact on social functioning
1 = Slight/mild impact on social functioning, some impairment
2 = Moderate impact on social functioning
3 = Severe impact on social functioning
4 = Extreme impact on social functioning

(19) Impact on Occupational Functioning: **Are you presently able to maintain gainful employment? Have the symptoms you endorsed affected your work or ability to work in any way?** Rate the overall impact that the PTSD symptoms have had on the patient's occupational functioning, taking into consideration the patient's reported work history and his/her report provided at other points during the interview, and work functioning problems due to reasons other than PTSD symptoms.

0 = No adverse impact on occupational functioning
1 = Slight/mild impact on occupational functioning, some impairment
2 = Moderate impact on occupational functioning, significant impairment, intermittent employment
3 = Severe impact on occupational functioning, chronically unemployed
4 = Extreme impact on occupational functioning, not employed since event

(20) Global Severity: Interviewer's judgment of the overall intensity of the patient's PTSD symptoms. Rated from 0 (asymptomatic) to 4 (extreme symptoms, pervasive impairment). [Consider the degree of distress reported by the patient, the symptoms observed, and the functional impairment reported. Your judgment is required with respect to the emphasis placed on particular information as well as the accuracy of patient reporting. This judgment should be based on information obtained during this interview only.]

0 = Asymptomatic
1 = Slight/mild symptoms, little functional impairment
2 = Moderate symptoms, but functions satisfactorily with effort
3 = Severe symptoms, limited functioning even with effort
4 = Extreme symptoms, pervasive impairment

Global Improvement: Rate total overall improvement present since the initial rating. If no no earlier rating ask how the symptoms endorsed have changed over the past 6 months. Make rating of change whether or not, in your judgment, it is due to treatment.

0 = Asymptomatic
1 = Very much improvement
2 = Moderate improvement
3 = Slight improvement
4 = No improvement or not sufficient information

Rating Validity: Number of QV's circled on interview form: _____. Estimate the overall validity of the ratings obtained. Factors that may affect validity include the patient's cooperativeness and his/her attempts to appear more or less symptomatic than is actually the case. Furthermore, the type and intensity of PTSD symptoms present may interfere with the patient's concentration, attention, or ability to communicate in a coherent fashion.

0 = Excellent, no reason to suspect invalid responses
1 = Good, factor(s) present that may adversely affect validity
2 = Fair, factor(s) present that definitely reduce validity
3 = Poor, very low validity
4 = Invalid responses, suspect deliberate "faking bad" or "faking good"

Current Symptoms

Cx A met? No Yes

_____ # current symptoms for Criterion B - Cx B met (≥ 1)? No Yes

_____ # current symptoms for Criterion C - Cx C met (≥ 3)? No Yes

_____ # current symptoms for Criterion D - Cx D met (≥ 2)? No Yes

PTSD (Criteria A-D met)? No Yes

[If PTSD Criteria are met, skip next section and go on to "Associated or hypothesized features" (p. 12). If Criteria are not met, assess for Lifetime Diagnostic Status.]

Hospital Anxiety and Depression Scale (HADS)

Name: _____ Date: _____

FOLD HERE

Clinicians are aware that emotions play an important part in most illnesses. If your clinician knows about these feelings he or she will be able to help you more.

This questionnaire is designed to help your clinician to know how you feel. Read each item below and **underline the reply** which comes closest to how you have been feeling in the past week. Ignore the numbers printed at the edge of the questionnaire.

Don't take too long over your replies, your immediate reaction to each item will probably be more accurate than a long, thought-out response.

FOLD HERE

A D

I feel tense or 'wound up'
- 3 Most of the time
- 2 A lot of the time
- 1 From time to time, occasionally
- 0 Not at all

I still enjoy the things I used to enjoy
- 0 Definitely as much
- 1 Not quite so much
- 2 Only a little
- 3 Hardly at all

I get a sort of frightened feeling as if something awful is about to happen
- 3 Very definitely and quite badly
- 2 Yes, but not too badly
- 1 A little, but it doesn't worry me
- 0 Not at all

I can laugh and see the funny side of things
- 0 As much as I always could
- 1 Not quite so much now
- 2 Definitely not so much now
- 3 Not at all

Worrying thoughts go through my mind
- 3 A great deal of the time
- 2 A lot of the time
- 1 Not too often
- 0 Very little

I feel cheerful
- 3 Never
- 2 Not often
- 1 Sometimes
- 0 Most of the time

I can sit at ease and feel relaxed
- 0 Definitely
- 1 Usually
- 2 Not often
- 3 Not at all

A D

I feel as if I am slowed down
- 3 Nearly all the time
- 2 Very often
- 1 Sometimes
- 0 Not at all

I get a sort of frightened feeling like 'butterflies' in the stomach
- 0 Not at all
- 1 Occasionally
- 2 Quite often
- 3 Very often

I have lost interest in my appearance
- 3 Definitely
- 2 I don't take as much care as I should
- 1 I may not take quite as much care
- 0 I take just as much care as ever

I feel restless as if I have to be on the move
- 3 Very much indeed
- 2 Quite a lot
- 1 Not very much
- 0 Not at all

I look forward with enjoyment to things
- 0 As much as I ever did
- 1 Rather less than I used to
- 2 Definitely less than I used to
- 3 Hardly at all

I get sudden feelings of panic
- 3 Very often indeed
- 2 Quite often
- 1 Not very often
- 0 Not at all

I can enjoy a good book or radio or television programme
- 0 Often
- 1 Sometimes
- 2 Not often
- 3 Very seldom

Now check that you have answered all the questions

A D

TOTAL ☐☐

Code 4460 01 4 Printed in Great Britain 1(6.94)

Name..... Date .....

PLEASE ANSWER THE FOLLOWING QUESTIONS WITH RESPECT TO HOW YOU HAVE FELT DURING THE PAST FOURTEEEN DAYS.

Below is a list of comments made by people after traumatic incidents. Please read each item and indicate how frequently these comments were true for you, during the past fourteen days, by circling the number to the left of each statement.

0 = Not at all

1 = Rarely

2 = Sometimes

3 = Often

DURING THE PAST 14 DAYS

0 1 2 3	1. I thought about it when I didn't mean to.
0 1 2 3	2. I avoided letting myself get upset when I thought about it or was reminded of it.
0 1 2 3	3. I tried to remove it from memory.
0 1 2 3	4. I had trouble falling asleep or staying asleep because of the pictures and/or thoughts about it that came in to my mind.
0 1 2 3	5. I had waves of strong feelings about it.
0 1 2 3	6. I had dreams about it.
0 1 2 3	7. I have stayed away from reminders of it.
0 1 2 3	8. I have felt as if it hadn't happened or it wasn't real.
0 1 2 3	9. I have tried not to talk about it.
0 1 2 3	10. Pictures about it popped in to my mind.
0 1 2 3	11. Other things kept making me think about it.
0 1 2 3	12. I was aware that I still had a lot of feelings about it but I didn't deal with it.
0 1 2 3	13. I have tried not to think about it.
0 1 2 3	14. Any reminder brought back feelings about it.
0 1 2 3	15. My feelings about it have been sort of numb.

Thank you for completing this questionnaire.

Appendix E

Follow-up questionnaires

SUBJECTS' FOLLOW-UP QUESTIONNAIRE

The following questions concern your burn trauma and subsequent experiences. In order that we can better understand your experiences and the experiences of other victims of burn trauma we would be grateful if you could answer the following questions as honestly as possible. Your answers will be treated in total medical confidence. When you see an asterix (*) please delete as applicable.

NAME.....ADDRESS.....

.....

.....

TELEPHONE NUMBER.....

DATE OF BIRTH.....AGE.....

1. HAVE YOU SUFFERED PERMANENT PHYSICAL CHANGES AS A RESULT OF THE BURN TRAUMA?

YES/NO*

IF YES, PLEASE DESCRIBE.....

.....

.....

2. HAVE YOUR INJURIES LED TO REDUCED PHYSICAL FUNCTION? YES/NO*

IF YES, PLEASE DESCRIBE.....

.....

.....

3. WHAT IS YOUR MARITAL STATUS?

MARRIED/SEPARATED/DIVORCED/SINGLE/WIDOWED*

4. HAS THIS CHANGED SINCE THE BURN TRAUMA? YES/NO*

5. HAVE YOUR RELATIONSHIPS WITH YOUR FAMILY ALTERED SINCE THE BURN TRAUMA?

IMPROVED / UNCHANGED / WORSENED*

6. HAVE YOUR RELATIONSHIPS WITH OTHER PEOPLE (FRIENDS, WORK COLLEAGUES) ALTERED SINCE THE BURN TRAUMA?

IMPROVED / UNCHANGED / WORSENED*

7. WHAT IS YOUR OCCUPATION TODAY?.....

8. IS YOUR OCCUPATION

a. THE SAME AS BEFORE THE BURN TRAUMA?	YES/NO*
b. DIFFERENT THAN BEFORE THE BURN TRAUMA?	YES/NO*
c. SICKNESS BENEFIT/REHABILITATION PENSION?	YES/NO*
d. DISABILITY PENSION?	YES/NO*
e. OLD AGE PENSION?	YES/NO*

9. IF YOUR OCCUPATION HAS CHANGED, IS THIS BECAUSE OF THE BURN TRAUMA?

YES/NO*

10.HOW MUCH HAVE YOU WORKED SINCE THE BURN TRAUMA?

FULL TIME / MOST OF THE TIME / LITTLE / NOT AT ALL*

11.HOW MANY DAYS HAVE YOU HAD TO HAVE OFF WORK AS A RESULT OF THE BURN TRAUMA?

.....DAYS

12.HOW ARE YOUR FINANCES NOW COMPARED TO BEFORE THE BURN TRAUMA?

BETTER / SAME / WORSE*

13.IF YOUR FINANCES HAVE CHANGED SINCE THE BURN TRAUMA PLEASE

DESCRIBE WHY.....

.....

14.HAVE THERE BEEN OR ARE THERE ANY COMPENSATION ISSUES OUTSTANDING?

YES / NO / MAYBE*

IF YES OR MAYBE, PLEASE DESCRIBE.....

15.HAVE THERE BEEN OR ARE THERE ANY CRIMINAL PROCEEDINGS OUTSTANDING?

YES / NO / MAYBE*

16.DO YOU FEEL THAT ANYTHING WAS LACKING IN THE MEDICAL TREATMENT YOU RECEIVED?

YES/NO*

IF YES, PLEASE DESCRIBE.....

.....

.....

17.DO YOU FEEL THAT ANYTHING WAS LACKING IN THE PSYCHOLOGICAL HELP YOU RECEIVED?

YES/NO*

IF YES, PLEASE DESCRIBE.....

.....

.....

18.DO YOU FEEL THAT ANYTHING WAS LACKING IN THE SOCIAL OR ECONOMIC HELP YOU RECEIVED?

YES/NO*

IF YES, PLEASE DESCRIBE.....

.....

.....

19.DO YOU FEEL THAT ANYTHING ABOUT THE HOSPITAL TREATMENT AND/OR THE ARRANGEMENTS FOR FURTHER CHECK-UPS AFTER LEAVING HOSPITAL SHOULD BE ALTERED?

YES/NO*

IF YES, PLEASE DESCRIBE.....

.....

20. WHAT TREATMENT HAVE YOU RECEIVED SINCE THE BURN TRAUMA?

.....

21. HOW LONG WERE YOU IN HOSPITAL? .....DAYS

22. HOW MANY OPERATIONS DID YOU HAVE? .....

23. HOW MANY TIMES HAVE YOU SEEN YOUR GP SINCE THE BURN TRAUMA?

.....

24. HAVE YOU RECEIVED TREATMENT OR COUNSELLING FOR ANY PSYCHOLOGICAL PROBLEMS SINCE THE BURN TRAUMA?

YES/NO*

IF YES, WAS IT USEFUL? YES/NO*

IF YES, PLEASE GIVE DETAILS.....

.....

25. ARE YOU TAKING ANY MEDICATION AT PRESENT? YES/NO*

IF YES, PLEASE GIVE DETAILS.....

.....

26. HAVE YOU BEEN ABLE TO TALK TO AND SHARE YOUR INNERMOST FEELINGS WITH ANYONE SINCE THE BURN TRAUMA?

YES/NO*

IF YES, WHO?.....

27. HAVE YOU BEEN ABLE TO DISCUSS WHAT HAPPENED WITH THE FOLLOWING PEOPLE SINCE THE BURN TRAUMA?

a. SPOUSE YES/NO*
b. FAMILY YES/NO*
c. FRIENDS YES/NO*
d. WORK COLLEAGUES YES/NO*
e. OTHER, EG CHURCH, OTHER ORGANISATIONS YES/NO*

IF YES, PLEASE STATE WHO.....

THE NEXT QUESTIONS CONCERN YOUR LEVEL OF FUNCTIONING NOW. PLEASE SCORE ON THE 0-8 SCALE BY PLACING A CROSS AGAINST ONE OF THE NUMBERS.

28. AS A RESULT OF THE BURN TRAUMA MY WORK HAS BEEN IMPAIRED:

0	1	2	3	4	5	6	7	8
NOT AT ALL		SLIGHTLY		DEFINITELY		MARKEDLY		VERY SEVERELY I CAN NOT WORK

29. AS A RESULT OF THE BURN TRAUMA MY HOME MANAGEMENT (CLEANING, TIDYING, SHOPPING, COOKING, LOOKING AFTER CHILDREN, PAYING BILLS) HAS BEEN IMPAIRED:

0	1	2	3	4	5	6	7	8
NOT AT ALL		SLIGHTLY		DEFINITELY		MARKEDLY		VERY SEVERELY I CAN NOT DO IT

30. AS A RESULT OF THE BURN TRAUMA MY SOCIAL LEISURE ACTIVITIES (WITH OTHER PEOPLE, eg PARTIES, OUTINGS, VISITS, SPORTS etc.) HAVE BEEN IMPAIRED:

0	1	2	3	4	5	6	7	8
NOT AT ALL		SLIGHTLY		DEFINITELY		MARKEDLY		VERY SEVERELY I CAN NOT DO THESE

31. AS A RESULT OF THE BURN TRAUMA MY PRIVATE LEISURE ACTIVITIES (DONE ALONE, eg READING, GARDENING, WALKING etc.) HAVE BEEN IMPAIRED:

0	1	2	3	4	5	6	7	8
NOT AT ALL		SLIGHTLY		DEFINITELY		MARKEDLY		VERY SEVERELY I CAN NOT DO THESE

32. I AM CONTENT WITH MY LIFE:

0	1	2	3	4	5	6	7	8
NOT AT ALL								TOTALLY

33. DO YOU BELIEVE THAT YOU CAME NEAR TO DEATH IN THE INCIDENT?

YES/NO*

34. DID ANYONE ELSE COME NEAR TO DEATH? YES/NO*

35. DID ANYONE DIE? YES/NO*
IF YES, WHO.....

36. WAS ANYONE ELSE INJURED? YES/NO*
IF YES, PLEASE DESCRIBE WHO.....

37. HAVE YOU LOST ANYTHING ELSE AS A RESULT OF THE INCIDENT?

YOUR HOME? YES/NO*
DAMAGE OF YOUR HOME/PROPERTY? YES/NO*
DAMAGE TO PROPERTY AFFECTING YOUR WORK? YES/NO*
YOUR MOTOR VEHICLE? YES/NO*
TREASURED PERSONAL POSSESSIONS? YES/NO*
OTHER LOSSES?
(PLEASE SPECIFY.....)

38. WHAT WAS THE MOST DISTRESSING PART FOR YOU?.....

.....

39. HOW STRESSFUL WAS THE WHOLE INCIDENT FOR YOU?

0 1 2 3 4 5 6 7 8

NOT AT ALL — AS STRESSFUL AS I CAN POSSIBLY IMAGINE

40. DO YOU HOLD ANYONE OR ANYTHING RESPONSIBLE FOR THE INCIDENT?

YES/NO*

IF YES WHO/WHAT?.....

41. DO YOU FEEL TO BLAME IN ANY WAY? YES/NO*

IF YES, PLEASE EXPLAIN.....

.....

42. HOW MUCH PHYSICAL PAIN ARE YOU IN AT THE MOMENT?

0 1 2 3 4 5 6 7 8

NONE AT ALL — SLIGHT PAIN — DEFINITE PAIN — MARKED PAIN — VERY SEVERE PAIN (THE WORST POSSIBLE)

43. HOW DO YOU SEE THE FUTURE? GOOD/BAD/UNSURE*

44. AS A RESULT OF THE INCIDENT DO YOU FEEL YOUR MENTAL HEALTH HAS

IMPROVED / DETERIORATED / STAYED THE SAME*

45. HOW MUCH DO YOU EXPECT TO RECOVER PHYSICALLY?

0 1 2 3 4 5 6 7 8

NOT AT ALL — TOTALLY

46. HOW MUCH DO YOU EXPECT TO RECOVER MENTALLY?

0 1 2 3 4 5 6 7 8

NOT AT ALL — TOTALLY

47. AFTER THE BURN TRAUMA WERE YOU PSYCHOLOGICALLY DEBRIEFED?

YES/NO*

IF YES, HOW USEFUL DID YOU FIND IT?

USELESS / NOT USEFUL / UNSURE / USEFUL / VERY USEFUL*

48. CAN YOU DESCRIBE ANY FEELINGS TYPICAL OF PEOPLE INVOLVED IN TRAUMATIC INCIDENTS?.....

.....

49. CAN YOU DESCRIBE THE BEST WAYS TO DEAL WITH SUCH FEELINGS?

.....

50. SINCE THE BURN TRAUMA HAS YOUR ALCOHOL INTAKE CHANGED?

NON-DRINKER BEFORE / DECREASED / STAYED THE SAME / INCREASED* (AND NOW)

51. SINCE THE BURN TRAUMA HAS YOUR SMOKING CHANGED?

NON-SMOKER BEFORE / DECREASED / STAYED THE SAME / INCREASED* (AND NOW)

52. WAS THERE ANY MEDIA COVERAGE OF THE BURN TRAUMA YOU WERE INVOLVED IN?

YES/NO*

IF YES, PLEASE DECRIBE.....

.....

53. DO YOU STILL FEEL YOU NEED HELP WITH ANYTHING?

a. MEDICAL PROBLEMS	YES/NO*
b. SOCIAL PROBLEMS	YES/NO*
c. PSYCHOLOGICAL PROBLEMS	YES/NO*
d. FINANCIAL PROBLEMS	YES/NO*

THANK YOU FOR COMPLETING THIS AND THE ATTACHED QUESTIONNAIRES. SHOULD YOU WISH TO MAKE ANY FURTHER COMMENTS, PLEASE DO SO IN THE SPACE BELOW AND OVERLEAF.

RELATIVES' FOLLOW-UP QUESTIONNAIRE

The following questions concern ..... burn trauma and subsequent experiences. In order that we can better understand your experiences and the experiences of other victims of burn trauma and their families we would be grateful if you could answer the following questions as honestly as possible. Your answers will be treated in total medical confidence. When you see an asterix (*) please delete as applicable.

NAME.....ADDRESS.....

.....

.....

TELEPHONE NUMBER.....

DATE OF BIRTH.....AGE.....

1. HAS YOUR RELATIONSHIP WITH ..... ALTERED SINCE THE BURN TRAUMA?

IMPROVED / UNCHANGED / WORSENED*

2. HAVE YOUR RELATIONSHIPS WITH OTHER PEOPLE (FRIENDS, WORK COLLEAGUES) ALTERED SINCE THE BURN TRAUMA?

IMPROVED / UNCHANGED / WORSENED*

3. WHAT IS YOUR OCCUPATION TODAY?.....

4. IS YOUR OCCUPATION THE SAME AS BEFORE THE BURN TRAUMA?

YES/NO*

5. IF YOUR OCCUPATION HAS CHANGED, IS THIS BECAUSE OF THE BURN TRAUMA?

YES/NO*

6. HOW MANY DAYS HAVE YOU HAD TO HAVE OFF WORK AS A RESULT OF THE BURN TRAUMA?

.....DAYS

7. DO YOU FEEL THAT ANYTHING WAS LACKING IN THE MEDICAL TREATMENT ..... RECEIVED?

YES/NO*

IF YES, PLEASE DESCRIBE.....

.....

8. DO YOU FEEL THAT ANYTHING WAS LACKING IN THE PSYCHOLOGICAL HELP YOU RECEIVED?

YES/NO*

IF YES, PLEASE DESCRIBE.....

.....

.....

9. DO YOU FEEL THAT ANYTHING WAS LACKING IN THE SOCIAL OR ECONOMIC HELP YOU RECEIVED?

YES/NO*

IF YES, PLEASE DESCRIBE.....

.....

.....

10. DO YOU FEEL THAT ANYTHING ABOUT THE HOSPITAL TREATMENT AND/OR THE ARRANGEMENTS FOR FURTHER CHECK-UPS AFTER LEAVING HOSPITAL SHOULD BE ALTERED?

YES/NO*

IF YES,PLEASE DESCRIBE.....

.....

11. HOW MANY TIMES HAVE YOU SEEN YOUR GP SINCE THE BURN TRAUMA?

.....

12. HAVE YOU RECEIVED TREATMENT OR COUNSELLING FOR ANY PSYCHOLOGICAL PROBLEMS SINCE THE BURN TRAUMA?

YES/NO*

IF YES, WAS IT USEFUL? YES/NO*

IF YES, PLEASE GIVE DETAILS.....

.....

13. ARE YOU TAKING ANY MEDICATION AT PRESENT? YES/NO*

IF YES, PLEASE GIVE DETAILS.....

.....

14. HAVE YOU BEEN ABLE TO TALK TO AND SHARE YOUR INNERMOST FEELINGS WITH ANYONE SINCE THE BURN TRAUMA?

YES/NO*

IF YES, WHO?.....

15. HAVE YOU BEEN ABLE TO DISCUSS WHAT HAPPENED WITH THE FOLLOWING PEOPLE SINCE THE BURN TRAUMA?

a. SPOUSE YES/NO*
b. FAMILY YES/NO*
c. FRIENDS YES/NO*
d. WORK COLLEAGUES YES/NO*
e. OTHER, EG CHURCH, OTHER ORGANISATIONS YES/NO*

IF YES, PLEASE STATE WHO.....

THE NEXT QUESTIONS CONCERN YOUR LEVEL OF FUNCTIONING NOW. PLEASE SCORE ON THE 0-8 SCALE BY PLACING A CROSS AGAINST ONE OF THE NUMBERS.

16. AS A RESULT OF THE BURN TRAUMA MY WORK HAS BEEN IMPAIRED:

0	1	2	3	4	5	6	7	8
NOT AT ALL		SLIGHTLY		DEFINITELY		MARKEDLY	VERY SEVERELY I CAN NOT WORK	

17. AS A RESULT OF THE BURN TRAUMA MY HOME MANAGEMENT (CLEANING, TIDYING, SHOPPING, COOKING, LOOKING AFTER CHILDREN, PAYING BILLS) HAS BEEN IMPAIRED:

0 1 2 3 4 5 6 7 8

NOT AT ALL — SLIGHTLY — DEFINITELY — MARKEDLY — VERY SEVERELY I CAN NOT DO IT

18. AS A RESULT OF THE BURN TRAUMA MY SOCIAL LEISURE ACTIVITIES (WITH OTHER PEOPLE, eg PARTIES, OUTINGS, VISITS, SPORTS etc.) HAVE BEEN IMPAIRED:

0 1 2 3 4 5 6 7 8

NOT AT ALL — SLIGHTLY — DEFINITELY — MARKEDLY — VERY SEVERELY I CAN NOT DO THESE

19. AS A RESULT OF THE BURN TRAUMA MY PRIVATE LEISURE ACTIVITIES (DONE ALONE, eg READING, GARDENING, WALKING etc.) HAVE BEEN IMPAIRED:

0 1 2 3 4 5 6 7 8

NOT AT ALL — SLIGHTLY — DEFINITELY — MARKEDLY — VERY SEVERELY I CAN NOT DO THESE

20. I AM CONTENT WITH MY LIFE:

0 1 2 3 4 5 6 7 8

NOT AT ALL — TOTALLY

21. DO YOU BELIEVE THAT ..... CAME NEAR TO DEATH IN THE INCIDENT?

YES/NO*

22. WHAT WAS THE MOST DISTRESSING PART FOR YOU?.....

.....

23. HOW STRESSFUL WAS THE WHOLE INCIDENT FOR YOU?

0 1 2 3 4 5 6 7 8

NOT AT ALL — AS STRESSFUL AS I CAN POSSIBLY IMAGINE

24. DO YOU HOLD ANYONE OR ANYTHING RESPONSIBLE FOR THE INCIDENT?

YES/NO*

IF YES WHO/WHAT?.....

25. DO YOU FEEL TO BLAME IN ANY WAY? YES/NO*

IF YES, PLEASE EXPLAIN.....

.....

26. HOW DO YOU SEE THE FUTURE? GOOD/BAD/UNSURE*

27. AS A RESULT OF THE INCIDENT DO YOU FEEL YOUR MENTAL HEALTH HAS

IMPROVED / DETERIORATED / STAYED THE SAME*

28. HOW MUCH DO YOU EXPECT ..... TO RECOVER PHYSICALLY?

0 1 2 3 4 5 6 7 8

NOT AT ALL — TOTALLY

29. HOW MUCH DO YOU EXPECT ..... TO RECOVER MENTALLY?

0 1 2 3 4 5 6 7 8

NOT AT ALL — TOTALLY

30. HOW MUCH DO YOU EXPECT TO RECOVER MENTALLY?

0	1	2	3	4	5	6	7	8

NOT AT ALL — TOTALLY

31. AFTER THE BURN TRAUMA WERE YOU PSYCHOLOGICALLY DEBRIEFED?

YES/NO*

IF YES, HOW USEFUL DID YOU FIND IT?

USELESS / NOT USEFUL / UNSURE / USEFUL / VERY USEFUL*

32. CAN YOU DESCRIBE ANY FEELINGS TYPICAL OF PEOPLE INVOLVED IN TRAUMATIC INCIDENTS?.....

.....

33. CAN YOU DESCRIBE THE BEST WAYS TO DEAL WITH SUCH FEELINGS?

.....

.....

34. SINCE THE BURN TRAUMA HAS YOUR ALCOHOL INTAKE CHANGED?

NON-DRINKER BEFORE / DECREASED / STAYED THE SAME / INCREASED* (AND NOW)

35. SINCE THE BURN TRAUMA HAS YOUR SMOKING CHANGED?

NON-SMOKER BEFORE / DECREASED / STAYED THE SAME / INCREASED* (AND NOW)

36. DO YOU STILL FEEL YOU NEED HELP WITH ANYTHING?

a. MEDICAL PROBLEMS YES/NO*
b. SOCIAL PROBLEMS YES/NO*
c. PSYCHOLOGICAL PROBLEMS YES/NO*
d. FINANCIAL PROBLEMS YES/NO*

THANK YOU FOR COMPLETING THIS QUESTIONNAIRE. SHOULD YOU WISH TO MAKE ANY FURTHER COMMENTS, PLEASE DO SO IN THE SPACE BELOW AND OVERLEAF.

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