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Treatments for Common Psychiatric Conditions Among Children and Adolescents During Acute Rehabilitation and Reintegration Phases of Burn Injury

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Abstract

Advances in critical care and surgical management during the last 20 years have decreased mortality rates among children with severe burn injuries. This improved survival rate has prompted researchers to study the psychological aspects of recovering from a burn injury. Initially, research focused primarily on epidemiology, prevention and descriptions of the psychological phenomenon experienced by the children and adolescents. Whereas, previously, interventions were often utilized during the acute phases of burn injury without knowledge of the long-term effects, more recently, priorities have shifted to include long-term treatment outcome studies. The purpose of this paper is to review and discuss the current evidenced-based techniques and their efficacy in the treatment of common psychological and psychiatric conditions among children and adolescents during the 3 major phases of burn injury.

Overview of Common Psychological Problems

Advancement of life saving medical techniques now enables children to survive massive burns with the prospects of adjusting to extensive scarring. This development increased demand for extensive research on the psychological morbidity of burn survivors. Experiencing a burn injury and enduring the painful treatment is often traumatizing to children and adolescents. Trauma symptoms include behavioral difficulties, cognitive difficulties, physical difficulties, and emotional difficulties. Children with trauma symptoms may experience a profound change in the way they see themselves and the way they see the world. Some studies have postulated that children actually experience neurobiological changes that contribute to the maintenance of psychological symptoms (Husain, Browne, and Chalder 2006). It is important to note that even after experiencing a burn injury all children are not traumatized. Several factors influence children's adjustment such as their developmental level, inherent or learned resiliency, coping mechanisms and external sources of physical, emotional and social support. Younger children are more dependent upon their parent's reaction to the traumatic event than older children regardless of trauma severity. If parents demonstrate an ability to cope well, their children are less likely to have long lasting trauma symptoms (Laor, Wolmer, Cohen 2001).

Symptoms and Current Treatment Practices in United States

Burn care clinicians can choose among several effective interventions by careful assessment of the burn injured child. Behaviors may develop as a result of several different factors and as such, adequate assessment is necessary to provide appropriate and effective treatment (Tarnowski, 1994). There are three main overlapping phases of burn treatment: acute phase, rehabilitation phase and reintegration phase. Each phase has some distinctive symptoms that vary in intensity and severity and require specific treatment interventions.

Acute Phase

During the acute phase, anxiety and mood disorders often present in children as a psychological response to the trauma of the burn injury and subsequent treatment for the burn injury. Fear, anxiety and pain often have similar symptoms, especially in younger patients: feelings of fear or dread, trembling, restlessness, muscle tension, rapid heart rate, lightheadedness or dizziness, perspiration, cold hands/feet, shortness of breath, worrying excessively, difficulty falling asleep and nightmares (APA, 1994). Children may avoid any or all reminders of the traumatic burn event. They may demonstrate absence of emotional responses and appear to be dazed and unaware of present surroundings. They may also have temper tantrums, forgetfulness, irritability, helplessness, detachment, difficulty separating from parents and other symptoms indicative of distress.

Diagnostic Complexities

Determining the cause, duration, contextual basis, nature and severity of acute symptoms is imperative in differentiating diagnosis and treatment of psychological and psychiatric disorders. Pre-existing conditions that are of particular importance in childhood are Attention Deficit Hyperactivity Disorder (ADHD), anxiety, depression, conduct disorders and any mental illness that may interfere with medical treatment compliance or exacerbate psychological distress. A healthy family environment is one of the most significant pre-existing mediating factors for post burn injury coping and adjustment (Barakat and Kazak, 1999; Tarnowski and Brown, 2003). Stoddard and Saxe (2001) found that pre-morbid family functioning (i.e., familial cohesion, effective communication within family, family conflict resolution skills, family social support, and attachment patterns within families) can impact a child's ability to cope with an injury. Other relevant pre-morbid risk factors include psychological stability of child, family, environmental stressors, and parental marital discord (Tarnowski and Brown, 2003).

Pediatric pain is difficult to manage as it is present in every element of burn treatment. Pain is often the initiating cause of psychological distress in children with burn injuries. Some research has shown that adequate management of pain during the acute phase of burn care is related to reduced symptoms of Posttraumatic Stress Disorder (PTSD) at follow-up (Stoddard and Saxe 2001). Research has indicated that burn patients in the 1980's who did not receive any pain medications showed long-term psychiatric illness (22% PTSD rate) 14 years post-burn injury (Meyer, et al 2007b). Several pediatric pain management protocols have been developed on the basis of the demonstrated importance of pain control in the

acute phases of care (Meyer et al, 2007a; Ratcliff, et al., 2006; Stoddard et al 2002; Walco, et al., 1999).

Distinguishing between pain and other treatment concerns is crucial in managing the pediatric burn patient. Anticipatory anxiety often occurs when a child is aware that a painful procedure is impending (e.g., wound care, physical therapy). They will report pain and request pain medications. Understanding and assessing the context, severity, and duration of the distress leads to appropriate treatment for anxiety and/or pain. Other salient assessments include differentiating pain and itch. This is often difficult with younger children as they experience the itching as painful. The Itch Man Scale is a tool that was specifically developed for assessing the severity of itching in burned children (Ratcliff et al 2006; Morris et al, 2009). The accuracy of pain assessment depends on a complete detailed psychological evaluation as well as daily assessments of the patient's pain and anxiety level – during both acute and long-term treatment.

Acute Stress Disorder (ASD) is a common anxiety disorder seen during the acute phase of burn treatment, any combination of Anxiety Disorders (Generalized Anxiety Disorders (GAD), Phobias, Obsessive -Compulsive Disorder (OCD), Panic disorders) can also initiate during this phase of burn treatment. Children with burn injuries often worry about medical procedures, family visiting/leaving, receiving medication, changing bed linens, timing of bath/shower, meals, and access to play. Panic attacks can also result from anticipation of on-going painful treatments or other medical procedures (i.e. surgery, physical therapy, changing of access lines). OCD can develop with regards to hand washing and cleanliness around burn wounds and burn injury particularly after extensive hospitalization. Although most of these disorders require 6 months of persistent symptoms for diagnosis and are usually not diagnosed until rehabilitation or reintegration phases of burn care, it is imperative to be aware of symptom development during this phase.

Non-Pharmacological Interventions

Interventions during the acute phase should concentrate on mental status, management of pain, itching, nutritional intake, and adherence to treatment demands (Tarnowski and Brown, 2003). A multidisciplinary team approach is important for maximizing the effectiveness of pediatric burn care (Mason, Arceneaux, and Fauerbach, 2009). This approach facilitates time management, coordination, and consistency through cross-disciplinary communications. For instance, instituting a daily routine by posting a schedule within the child's view establishes consistency but also improves communication and scheduling across staff members.

Frequent mental status changes often occur during the intensive care unit (ICU) treatment as result of metabolic complications and infections associated with the burn injury. These changes often impact the central nervous system (CNS). CNS imbalances are associated with sleep deprivation, delirium, ICU psychosis and extensive stays in ICU (Tarnowski and Brown, 2003). Reducing the symptoms of disorientation associated with these conditions usually includes correcting electrolyte imbalances from significant fluid loss initially and ensuring consistent orientation to time, place and purpose through visual aids (calendars, clocks, lights on during day and off at night or orientation to time of day through the use of windows) as well as familiar burn care staff daily (Tarnowski and Brown, 2003).

Pediatric pain management should include some form of evidence-based distraction techniques along with pharmacological management. Due to the frequency and duration of painful procedures in burn care, it is necessary to provide a variety of distraction techniques to minimize the painful experience. Research within the burn literature supports the effectiveness of distraction for painful pediatric burn procedures (Bonham, 1996a,b; Landolt, et al, 2002b; Dise-Lewis, 2001; Martin-Herz, et al., 2003). Specific distraction-based cognitive-behavioral interventions have been established for burn care. The most common distraction interventions utilized in burn care are virtual reality, playing, music therapy, cartoon or television viewing, guided imagery, conversing with the wound care nurse, and video format tools.

ASD is often experienced following a burn injury. The focus of psychological interventions has been to reduce the symptoms of ASD in an effort to avoid the development of more chronic disorders (e.g., PTSD). Non-pharmacological therapeutic interventions include child cognitive-behavioral treatment, which consist of relaxation, psychoeducation, cognitive training, drawings, writings, role-plays, and imaginal exposures. Supportive therapy and Family Cognitive Behavioral Therapy (CBT) have also proved beneficial (Silverman, et al 2008). Other treatments include problem-solving approaches and contingency management for improving adherence to physical therapy, occupational therapy and other medical procedures.

Pharmacological Interventions

Before considering pharmacologic therapy a review of current and past medication including allergies and side effects is important. Adequate pain management must be initiated. Excessive pain can certainly produce many of the symptoms of depression and anxiety. Some individuals will have delirium secondary to the excessive pain. Even in children, adequate doses of morphine and other opiate are indicated (Meyer and Woodson, 2006). Therefore, the psychotropic treatment of pediatric burn patients is significantly different from that needed by children with other types of chronic medical illnesses. Several protocols for the pain and anxiety management of the acutely burned child have been published (Meyer, et al, 1997; Ratcliff, et al. 2006; Stoddard, et al 2002; Meyer, et al, 2007a).

Delirium is an especially troubling symptom with multiple causes ranging from CNS trauma, metabolic abnormalities, inadequate pain and anxiety management to a brief reactive psychosis. Treatment begins with identifying the cause. Head trauma, anoxic brain injury might have occurred because of cardiac arrest, respiratory arrest or carbon monoxide poisoning. These injuries require the treatment of cerebral edema. Correcting all metabolic parameters is paramount. Sepsis should be ruled out or treated. The content of the patient's speech can help with differential diagnosis. If speech frequently revolves around the accident or related topics, the person may be suffering from ASD. This disorder requires specific pharmacotherapy (see below). Having begun treatment of the primary cause, it is often necessary to treat the psychosis related to the delirium if the patient is uncontrollable. In our experience with severely burned children, high dose benzodiazepines such as lorazepam 0.05 mg/kilo are usually effective. Persistence of symptoms beyond this point is rare; it is necessary to progress to phenothiazine medications in only about 1% of severely

burned children. If treatment is unsuccessful then either haloperidol (1 to 5 mg) IV, or risperidone (0.5mg to 2 mg) orally should be used. To avoid the extrapyramidal side effects of these medication benztropine (0.5 to 2 mg) orally should be given concomitantly (Ratcliff, 2004). Quetiapine Fumarate has also been used in this situation in teenagers. Usually the treatment of the delirium requires only one to three days of treatment.

If the patient meets criteria for major depression during this phase then antidepressant medication should be considered in conjunction with psychotherapy. Few agents are approved for use in children. Serotonin reuptake inhibitors such as fluoxetine and sertraline are approved for children and adolescents (Thomas, et al. 2007). They are metabolized through the cytochrome P-450, a major metabolic pathway for the metabolism of many drugs.

Another major problem requiring pharmacotherapy is anxiety. The most common type of anxiety in pediatric burns is anticipatory anxiety. The treatment for anticipatory anxiety should include benzodiazepines 1 to 2 hours prior to medical procedures (wound care, dressing changes, physical therapy, exercise, etc). Diazepam has been especially useful in these settings due to its muscle relaxation properties. Martyn et al's (1983) research with diazepam in burn patients suggest that diazepam is the better choice for treatment of anxiety; however, recent research conducted with pediatric burns supports utilization of diazepam for background pain, muscle relaxation, and anxiety control particularly with rehabilitation exercises (Meyer, et al, 2007a; Thomas, et al 2007). If anticipatory anxiety persists then the child should be transitioned to a Serotonin-Selective Reuptake Inhibitor (SSRI) or tricyclics.

The most dramatic of the anxiety disorders is ASD. In the acutely burned patient, pharmacotherapy is often the only acceptable form of therapy because the patient can not participate in psychotherapy due to the extent of their injury. The Shriners Hospital for Children in Galveston has extensive experience in treating acute stress disorder with the tricyclic antidepressant imipramine (beginning with 1 mg/kilo) or fluoxetine (5 to 20 mg depending on weight of patient; Robert, et al., 2008). These medications have been used successfully in children beginning at age 10 months to adulthood (Tcheung et al, 2005). The success rate is nearly 89% with side effects being minimal.

In addition to ASD many of the patients experience generalized anxiety disorder (GAD) because of the Intensive Care Unit (ICU) environment, and the painful nature of the treatment of their wounds. Symptoms of anxiety respond well to scheduled benzodiazepines such as lorazepam (0.05mg/kilo) IV or orally every 4 hours or for mobile patients diazepam (1 mg/kilo) orally q 8 hours. If symptoms of anxiety persist, long-term pharmacological interventions are typically SSRIs (Reinblatt and Walkup, 2005) or tricyclics (Thomas, 2007)

A common inpatient and outpatient problem for the pediatric burn survivor is sleep disturbance. This partly occurs because of the ICU environment, its noise and lights all day and night. At times even when these environmental factors are controlled, the sleep abnormality persists. Determining the cause of the sleep problem is very important. If a child is fearful to sleep due to nightmares, then treatment for ASD is warranted. If pain or itching is the cause of the sleep disturbance then treatment of these problems is essential. If

the cause is not identifiable then the use of a low dose diphenylhydramine, antidepressant, or quetiapine fumarate has been advocated as an adjunct. Encouraging and implementing good sleep hygiene is also an essential component.

The trauma and pain associated with the burn event and subsequent burn treatment places children at an increased risk for developing ASD and PTSD (Holbrook, et al., 2005; Landolt, 2009). Pediatric pain management on a burn unit involves providing adequate pain medication acutely. Studies conducted on pain with pediatric burns have shown that administering dosages of morphine effectively decreases the risk for later development of PTSD (Van Loey and Von Son, 2003; Meyer, et al 2007; Ratcliff et al 2006; Stoddard, et al 1989). Some pediatric burn literature supports the prevention of post burn pathology through the utilization of anxiolytics and mild sedatives, (Bonham, 1996b). This notion is based on the theory that a sustained state of hypoxia alters the mental status of child, which subsequently prevents the formation of traumatic memories. Studies support decreased incidence of anxiety disorders during the acute phase of hospitalization in patients who experienced hypoxic episodes (Rosenberg et al., 2005).

Rehabilitation Phase

Treatment phases of burn injury are overlapping; therefore, the rehabilitation phase frequently begins while the child is hospitalized and at times while still in ICU. The rehabilitation phase is typically characterized when children are conscious and able to begin participation in their care, but may be reluctant due to issues with pain, grief, anxiety, depression, and initial difficulties with body esteem. During this stage, the burn team may request psychological support for disruptive behaviors, fears, aggressiveness, mood disorders, learned helplessness, elimination problems (i.e. enuresis and encopresis), attentional difficulties, sleeping difficulties and feeding refusal (Stoddard, 1982; Brown et al 1994; Stoddard and Saxe, 2001; Tarnowski and Brown, 2003). Patients have limited control over painful medical procedures and in response may demonstrate an increase in behavioral disturbances (Tarnowski and Brown 2003). Research has shown significant rates of post burn injury psychological distress in younger aged burned patients (Stoddard, Norman, and Murphy, 1989; Stoddard, et al., 1989) including high rates of ASD (Stoddard, et al. 2006), PTSD, (Saxe, et al. 2001; Liber, et al. 2006), anxiety (Van Loey & Von Son, 2003), and depression (Byrne, et al. 1986; Blakeney, et al., 1998; Van Loey & Von Son, 2003). Conversely, outcomes research has found that the majority of burn survivors are well adjusted (Tarnowski and Rasnake, et al., 1991; Tarnowski and Rasnake, 1994; Tarnowski and Brown, 2003). This indicates an extensive recovery period for children with most reaching successful recovery (Blakeney, et al., 1998; Sheridan et al., 2000; Tarnowski and Brown, 2003; Meyer et al., 2004).

Diagnostic Complexities

Similar difficulties experienced during the acute phase also prove difficult during the rehabilitation phase. Commonality in overlapping symptoms experienced during this phase could result in a variety of disorders (i.e., adjustment disorders, anxiety disorder, depressive

disorders, sleep disorders and pain). Adequate management of pain, itching, symptoms of anxiety and sleep difficulties is crucial during this phase.

Difficulties with sleep may become chronic during the rehabilitation phase of burn treatment. A majority of pediatric patients report sleep disturbances as result of pain or itching. There is a bidirectional relationship between sleep and pain (Smith, et al, 2008). Smith et al's study also proved that severe pain prior to discharge indicated increased risk of long-term insomnia. Other significant predictors of insomnia and sleep disturbances included in-hospital insomnia and mental illness pre-burn injury. Other sleep difficulties result from nightmares related to ASD/PTSD, uncomfortable positioning due to location of burn injury, and hospital related interruptions during the night.

Non-pharmacological Interventions

Similar to the treatments during the acute phase of care, the rehabilitative phase also requires the use of distraction interventions (virtual reality, playing, music therapy, cartoon or television viewing, guided imagery). These interventions are critical as most children are alert and oriented during wound care, medical procedures and rehabilitation therapy and need to develop strong coping skills to manage burn injury. Psychiatric and psychological treatments for discomforts can change the recovery process for the pediatric burn patients. Being able to provide some moments of relief to the patient is important. Additional psychological interventions include operant conditioning, cognitive interventions (positive self-talk, guided imagery, cognitive reframing), hypnosis, massage therapy, and supportive therapy.

Similar to the psychological interventions in the US, the United Kingdom (UK) burn literature, advocates for early psychological interventions particularly with pain and anxiety, parent-group therapy, supportive therapy, and multi-disciplinary burn teams (Blakeney, et al, 1993a; Blakeney et al., 1993b; Rivilin, 1988). In Canada, as in the US, specific guidelines exist for treating anxiety and pain in pediatric burns; the primary approaches are pharmacological. The use of non-pharmacological strategies include hypnosis, guided imagery, virtual reality, relaxation, cartoon viewing, distraction, music therapy, and massage therapy. Hanson et al (2008) reviewed twelve of the non-pharmacological interventions for wound care distress. They divided the interventions into three groups child mediated (CM), parent mediated (PM) and health care provider mediated (HCPM). Their study concluded that children with burn injuries benefit most from HCPM (Massage Therapy, Music Therapy) and CM (VR, Cartoon Viewing) interventions during wound care. This supports the research emphasizing the benefit of utilizing a combination of pharmacology and psychological interventions to treat pediatric burn pain.

Sleep disturbances during this phase can produce significant problems on a burn unit (Lawrence et al., 1998). When sleep difficulties are related to environmental factors (staff interrupting sleep to measure vital, lights or television left on, or excessive noise on unit), as soon as medically safe these interruptions should be limited (Rose, et al., 2001). Staff should be reminded to turn off lights and television for patients at night and during sleep times. Allowing an environment for sleep promotes healthy sleep hygiene. It is important to have burn patients return to natural sleep cycle and normal sleep wake cycle as soon as possible.

Encouraging parents to bring in items from home that create a comfortable sleeping environment for the child can be helpful. Creating a nighttime routine that mimics the home environment will also help the child feel safe and assist them in falling asleep. Sufficient management of pain and itch reduces some of the difficulties with sleep during this stage; however, some form of medication is often required and should be considered as abnormal circadian rhythm can have long-term effects on children's ability to sleep (Smith, et al., 2008).

Pharmacological Interventions

If sleep disturbance is related to pain and itch then an analgesic (an opioid, acetaminophen or ibuprofen) or antipruritic (hydroxyzine or diphenhydramine) medications should be given. If the itch and pain issues have been addressed and the patient continues to have difficulty with sleep then diphenhydramine (1–1.5 mg/kilo) or melatonin can be given. If sleep symptoms are related to nightmares then imipramine (1 mg/kilo) can be given.

In some of the burn literature the reported incidence of PTSD is significantly reduced by having adequate pain and anxiety therapy early on. However, in a recent study of 363 burn participants, propranolol did not reduce the prevalence of ASD in the pediatric burn patients in the acute or rehabilitation phases of burn care (Sharp, 2009). We do not know if PTSD is influenced by propranolol therapy. The results of a recent study show that ASD does not predict PTSD in a population of aggressively treated children for pain and anxiety (Rosenberg, et al 2008). In fact the PTSD incidence will fall to less than 10% which is significantly lower than the PTSD incidence seen in another group of children not treated for pain (Rosenberg, et al 2008, Ratcliff et al., 2006.)

Pain and anxiety occurs during the rehabilitation period because of the physical therapy and exercise programs. The day-to-day pain of stretching contractures muscles and scars is significant. In general, the pain can be handled by ibuprofen or acetaminophen. However, some patients require oral opioid/acetaminophen (0.2mg per kilo per dose of hydrocodone) every 4 to 6 hours) combination or methadone (0.1mg/kilo) scheduled 1 to 3 times a day to insure good pain control. All of the opioid medications cause significant sedation and can be addictive. However, addiction to opioids used in this setting with children is extremely rare in the authors' experience. Anxiety associated with the fear of rehabilitation treatment often responds well to scheduled diazepam. If the anxiety persists, then imipramine or fluoxetine should be used.

One of the most debilitating problems post burn is pruritis or, itching. The child's response to the itching is to scratch, which can easily break down fresh grafts and create new open areas. Treatment starts with topical including moisturizing creams and ointments, sometimes 1% diphenylhydramine or Preparation H^{RX} is helpful. In addition to topical therapy, oral diphenylhydramine (1.25 mg/kilo) every four hours alternating with hydroxyzine (0.5mg/kilo). If these fail, then cyproheptadine (0.1 mg/kilo) every 6 hours can be used; sometimes all three are alternated. The occasional patient responds to loratidine 10 mg q 12 hours. In recent years 5% doxepin (Purdoxin cream^{TX}) has been used topically to control itch. This can be dangerous if large areas of the body are covered.

Reintegration Phase

The reintegration phase of treatment is often the most uncharted phase of treatment with many problems being unrecognized. This is the phase when most children are beginning to gain more independence and are ready to reintegrate back into their life. Parents report a sense of relief as leaving the rehabilitation center to go home is an indication that their child's life is no longer in danger. Reintegrating is just as important as the other phases of treatment as parents become responsible for their child's care without the assistance of hospital staff. Parents and children often become overwhelmed by the physical changes and limitations as a result of the burn injury during this phase (Nguyen and Thaller, 2008). Poor integration can lead to severe psychological distress and make the heroic efforts in previous phases futile. Many children experience difficulty with adjustment to coping with family stressors (Figley, 1989), social anxiety, self-esteem, body image, peer relationships, major depression and negative reactions to disfigurement. Adequate family support and social support during this period is essential in successful long-term outcomes (Landolt, 2002a). Some research has found that pediatric burn survivors adapt well post injury and do not experience significant long-term psychological pathology (Rosenberg, et al. 2005; Lansdown, et al, 2004). Organized support services, such as summer camps offer an additional and essential resource for those affected by a burn injury (Doctor, 1992). Some children and their families respond more positively to support offered in an informal setting than they do to a more formal clinical setting. There are several organizations that are available to burn survivors and their loved ones beyond the clinical setting (cf, Munster, 1993).

Coping with Body Image

Burn disfigurement affects a child's body-esteem, self-confidence, social interaction, and identity (Sheridan et al 2000; Stoddard, et al., 2002; Tarnowski and Brown 2003). In U.S. children, there is an increase in body image disturbance with the more noticeable the burn scars (Abdullah et al 1994); however, predictors of increased self-esteem and positive body image are related to perceived social support in adolescents (Fauerbach, et al, 2000; Fauerbach, et al., 2002; Orr, et al 1989). Some research suggests that adjustment to burn disfigurement is more difficult for adolescents (Brown et al 1994; Jessee, 1992; Bernstein, 1990). In the UK body image and mood disorders among children with burn injuries suggests poor body image and poorer quality of life than children who had not sustained a burn injury, (Pope, et al. 2007). There is a physical and cultural trauma of visible disfigurement from acid burns that is often experienced by young women burned in Bangladesh that is not typically seen in the US. There are numerous support networks for burn survivors that are able to assist with body image disfigurement. Although no evidence exists to date, in the U.S., Angel Faces for Adolescent Girls (<http://www.angelfacesretreat.org/af/index.asp>) and the Be Your Best Program (Behavioral and Enhancement Skills Tools; <http://www.phoenixsociety.org>) program have anecdotally proven to be beneficial for coping with body disfigurement.

One treatment intervention that has proven helpful to children burned in the UK is Rehabilitative Activity Holidays. This is similar to the burn camps in the US and was

developed under the same principal as burn camps. The activity holidays are to assist the children with their daily challenges and make available an environment to participate in fun, developmental and age appropriate activities (Gaskell, 2006). Quantitative results over 5 years did not show significant change; however the qualitative data revealed improved confidence, ability to adapt to scars and cope with changes post burn injury. Gaskell's collection of qualitative and quantitative data is important to the burn literature. There is a component of the U.S. burn camps that is beneficial to the children; but, the quantitative results do not adequately reflect the positive impact reported by staff, burn injured children and their families (Doctor, 1992). UK programs have also provided reintegration programs that are effective as have some social skills training programs for children (Blakeney, et al., 2005).

In the non-western populations treatment approaches are typically modeled after the US and the UK. There are often cultural implications that must be considered and incorporated prior to employing these treatment interventions to improve management and treatment. The Acid Survivors Foundation (ASF) is an organization in Dhaka, Bangladesh that funds long-term rehabilitation and reconstructive surgery for burn survivors (Mannan et al 2005). The ASF also provides a safe environment, regular group and individual psychotherapy and social support. There is a limited amount of research on effective treatment interventions in the eastern populations; however, the therapeutic and supportive nature of the ASF appears to account for part of the positive outcomes in young women with acid burns (Orr, et al 1989; Robinson, et al 1996; Clarke, 1999). Future research internationally should focus on the elements of these and other support programs to identify the specific elements that are beneficial to burn survivors.

Bullying

There is an increase in the prevalence of bullying for many children that is exacerbated in a child with a burn injury. Rimmer et al's (2007) study revealed that bullying does affect children with burn injuries and it has a negative impact on their physical and psychological health. Rimmer has developed a bullying course that provides a venue for children with burns to learn about bullying and find appropriate ways to handle bullying behaviors. Her study found that the bullying course increased the willingness to report bullying and assisted with identifying safe people and places to seek help (Rimmer et al 2007).

Closing Summary

A review of the the psychological and psychiatric responses of children to burn injuries worldwide reveals that many of the symptoms, patterns and treatments are similar. It is appears that there is an international consensus that aggressive pain management in the initial phases of treatment will impact the long-term psychological well-being of children with burn injuries. The treatment and rehabilitation phases of burn injuries are arduous and prolonged. Current research supports the notion that children with burn injury actually are as a whole well-adjusted in the long-term. This does not suggest that intervention is not needed but rather that the aggressive interventions that are provided by psychiatrists and

psychologists during acute and rehabilitation phases of burn care is essential to the long-term positive mental health outcome of the burn injured child.

Within the US, Canada and UK further research is needed in the area of resiliency. There is a group of children with burn injuries that cope well initially and long-term. However, the elements contributing to their positive outcome have not been effectively studied to date. This is an area of great potential for burn researchers. Many of the Eastern countries and South America are in the early stage of researching burn injuries. The focus is primarily on epidemiology and identifying areas for prevention and treatment. Future research in these regions is needed for example to establish and evaluate culturally sensitive and appropriate treatments.

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