Psychological impact of disasters on children: review of assessment and interventions

Nilamadhab Kar

Wolverhampton, United Kingdom

Background: **There is a wide range of mental and behavioral sequel in children following disasters, which can last long. This review discusses the nature and extent of the psychiatric problems, their management options and process to organize the psychological interventions for affected children.**

Data sources: **Literatures were searched through PubMed with the words "children, disaster, psychiatry, and mental health" and relevant cross references were included in the review.**

Results: **Proportions of children having post-traumatic symptoms or syndromal diagnoses vary in different studies depending on various factors like nature and severity of disaster, diagnostic criteria used, cultural issues regarding meaning of trauma, support available, etc. Common psychiatric manifestations among children include acute stress reactions, adjustment disorder, depression, panic disorder, post-traumatic stress disorder, anxiety disorders specific to childhood and psychotic disorders. Comorbidities and sub-clinical syndromes are also common. Most of the post-disaster mental health interventions can be provided in the community by the local disaster workers. Supportive counselling, cognitive behavior therapy, brief trauma/grief-focused psychotherapy, and play therapy are the commonly utilized methods of psychological intervention, which can be given in groups. Information about the efficacy of medications is still emerging, while many are being used and found useful.**

Conclusions: **Following disaster, systematic screening for psychological problems in children is suggested. An integrated approach using psycho-socio-educational and clinical interventions is expected to be effective.**

World J Pediatr 2009;5(1):5-11

Key words: **assessment;**
children;
disaster;
intervention;
psychiatric disorders

Review article

Introduction

Children are particularly vulnerable to disaster trauma, and this manifests in a variety of complex psychological and behavioral manifestations. However, often the post-disaster psychological reactions in children are not identified. Studies have noted that parents, teachers and even mental health professionals significantly underestimate both the intensity and the duration of the stress reactions in children.[1,2] Depending upon the developmental stage, level of cognitive and emotional maturity, and limited coping strategies, the psychological reactions in children are expected to be different from those in adults. This is indeed the case and one can not generalize adult findings to children.[3] Besides, methods of intervention for children following disasters understandably vary from those from adults.

This review intends to find out the reported psychological impacts and intervention measures related to post-disaster mental health issues of children. Articles for this review were chosen from the searches in PubMed with the key words "children, disaster, psychiatry, mental health"; additionally the relevant cross references of above articles were also included.

Prevalence

After catastrophic natural disasters, post-traumatic reactions in children may reach epidemic proportions, remain high for a prolonged period, and jeopardize the well-being of the children in the affected region.[4] Prevalence figures vary depending upon various factors including nature of disaster, duration following

Author Affiliations: Wolverhampton City Primary Care Trust, Wolverhampton, United Kingdom (Kar N)

Corresponding Author: Nilamadhab Kar, MD, DNB, DPM, MRCPsych, Corner House Resource Centre, 300 Dunstall Road, Wolverhampton, WV6 0NZ, UK (Tel: 0044-1902-553798; Fax: 0044-1902-553383; Email: nmadhab@yahoo.com)

doi:10.1007/s12519-009-0001-x

disaster, diagnostic criteria used, cultural issues regarding meaning of trauma, support available, etc. Age at the exposure to the traumatic event mediates the prevalence of post-traumatic stress disorder (PTSD).[5,6] Criteria of PTSD in adults may be less sensitive to detect the disorder in children, indicating that PTSD can be missed in children unless age appropriate criteria are used.[3]

Common post-disaster psychiatric morbidities among children are acute stress reactions, adjustment disorder, depression, panic disorder, PTSD, anxiety disorders specific to childhood, and phobias.[3,7,8] Psychotic disorders, even schizophrenia, have also been reported in the survivors.[9] Comorbidities and sub-clinical psychiatric syndromes are also common.[7]

Following natural disasters (earthquakes, cyclone, hurricanes, flood, tsunami, etc), PTSD symptoms are more common than the syndromal PTSD.[10,11] The prevalence of PTSD varied from around 5% to over 43%.[8,12,13] The prevalence of PTSD in high exposure areas is significantly higher than in low exposure areas.[11] Man-made disasters (community violence, mass-shooting, war, terrorism, etc) seem to have a higher prevalence of PTSD than natural disasters. Community violence and post-war adolescent refugee populations have reported that PTSD prevalence rates vary between 30% to 70%;[2] however, figures up to 100%[14] have been quoted in children especially those exposed to sudden, unexpected man-made violence. In fact, exposure to violence has a profound and lasting influence on children's health beliefs and experiences.[15] Reported prevalence of depression (17.6%) and generalized anxiety disorder (12.0%) have been considerable in post-disaster periods.[8,11] Comorbidities are common and reported figures have been up to 39.0%.[8] Depression has been one of the most common comorbid disorders associated with PTSD.[11]

Clinical features of post-disaster mental health sequel

Symptoms of anxiety and depression are most common. Preschool children can present with features of separation anxiety, stranger anxiety, fears of monsters or animals and avoidance of situations. They may be preoccupied with certain words or symbols that may or may not have connection to the event.[4,16] There can be compulsively repetitive play which represents part of the trauma but fails to relieve anxiety (post-traumatic play). Trauma may also be represented by less repetitive plays like normal play activity (play re-enactment). Both these types of play can suggest re-experiencing. In the place of avoidance/numbing, only constriction of play, social withdrawal, restricted range of affect or loss of acquired developmental skills can be present. Some children start believing that there are certain signs which predict a traumatic event and if they are alert, they can detect these signs (omen formation).[17]

Acute PTSD presents more with typical physiological hyperarousal and re-experiencing and sleep problems; the chronic variety presents with dissociation, restricted affect, sadness and detachment.[18] Dissociative symptoms may take the form of hallucinations or disorganized thinking and behavior.[19] The phenomena of re-experiencing, numbing and avoidance and hyperarousal in children are comparable to those in adults. However, there can be major differences in manifestation, for example, in young children, repetitive play may occur, in which themes or aspects of the trauma are expressed; the children may actually re-enact the trauma instead of re-experiencing it; and their dreams may not have any specific trauma related contents. Numbing or avoidance may take the form of restlessness, hyperalertness, poor concentration and behavioral problems.[20]

Many symptoms of PTSD overlap with other childhood disorders namely, attention deficit hyperactivity disorder (ADHD), depression, conduct disorder, oppositional defiant disorder and substance use.[1] Moreover, PTSD is highly comorbid with these conditions. Results of studies on course of PTSD in children are unclear and contradictory. There are reports of the prevalence/symptom severity decreasing,[18,21] remaining the same[22,10] or increasing[23,24] during the follow-ups.

Risk factors

Childhood and adolescence have been identified as specifically vulnerable age for post-disaster psychological morbidity.[25] The risks are more if they have been suffering from psychological or behavioral problems.[25,26] Risk factors for PTSD have been female gender,[23,4] degree of exposure,[2,11,27] extent of loss of family members, separation anxiety,[2] trauma related parental distress, temporal proximity to traumatic events,[27] lower educational level and middle socioeconomic status.[11] Accumulation of multiple stressors,[28,29] previous experience of stressful events and their outcome, and coexisting adverse circumstances have also been noted as risk factors.[30]

The presence of PTSD and the severity of depression in the father contributes to the severity of PTSD in children.[31] In earthquake survivors, when fathers become more irritable and detached because of PTSD symptoms, their symptoms affected children more

significantly.[31] Untreated adolescents exposed to severe trauma are at risk for chronic PTSD and depressive symptoms.[32] Loss of both parents and, to a lesser degree, loss of a father is a significant risk factor for depression, but not for PTSD.[33]

Post-disaster studies do report of children and adolescents who are resilient to the trauma.[26] Protective factors which help in development of resilience and recovery power of children depend on basic human protective systems operating around them in their favor.[34]

Assessment

Children may not report their psychological reactions to the trauma unless they are specifically asked about aspects of trauma.[35] Limited cognitive and expressive language skills of children may make inferring their thoughts and feelings difficult.[36] In addition, children may not be given the opportunities to talk about the event, citing cognitive immaturity as the reason.[30] Parents and teachers have often been shown to be poor reporters of symptoms in children.[20,37,38] Hence, directly asking the child about the symptoms is almost always required.[1] Research has demonstrated that children not only want to discuss their experience, but also welcome the opportunity to do so.[39]

Role of systematic screening

Observations suggest that systematic screening of the children in the disaster affected areas is preferable to routine clinical evaluation as the young survivors may never be brought to the attention. Systematic screening of children can provide critical information for a rational public mental health program after a disaster.[4] Screening should be broad based to include not only trauma-related clinical syndromes, but also other disorders, sub-clinical symptoms, psychosocial, educational and daily life impairments.[40,41] It is important that the assessment is age appropriate, culturally sensitive and valid. The needs of children with pre-existing psychiatric disorders should be specifically assessed.

Semi-structured interview schedules or self/parent report questionnaires may be used for assessment. Formal and objective assessment of play can also aid in the assessment in children.[42] Development of a broad-based, culturally valid instrument to evaluate sequel in various domains such as psychopathology, behavior, psychosocial functioning, education, extracurricular activities and activities of daily life, etc is recommended.

The assessments can be done by the primary healthcare workers; however, training is recommended for this in most instances.[41] It is highlighted that considerable amount of time may be required to elicit symptoms from the children. The assessments should be undertaken as soon as possible, repeated periodically and continued for a long period as the post-disaster psychosocial sequel are known to become chronic.

Interventions

Organizing the intervention process

Disaster workers, involved in rescue and relief measures, need to be trained well in advance in the concepts of emotional first aid, basic communication skills in dealing with traumatized children and the importance of talking to children about the trauma. They need to be sensitized about prevention of abuse and neglect of children in such situations. Mental health support should be blended with other disaster relief work rather than done separately.

It is most helpful to train and support health workers from the affected communities about the post-disaster mental health aspects.[43] Cultural competence is an important issue for counselling in post-disaster situations, which can be easily met by local volunteers than the external mental health professionals. Local volunteers, medical personnel in the primary level of health care and teachers may be trained in handling the psychological impact of the young victims of disasters.

The role of mental health professionals is to train the disaster workers, support them in dealing with the mental health issues of the children and help the workers whose own responses may complicate the recovery,[44] besides managing the referred children with complex psychological manifestations.

It is important that the mental health problems of the children are recognized as early as possible and supportive measures are put in place at home, school and in society.[45] The family context is central to understanding and meeting the needs of traumatized children.[46] Close mother-child, family and relative relationships are important in the healing process[45] and in the immediate aftermath children should be close to their families. Relatives and foster families adopting orphaned children can be extremely helpful. School-based mental health programs can provide accessible services to children affected by disaster, reduce trauma-related psychopathology, and emphasize normalization.[32,47]

Sometimes children may need to be removed from a stressful environment in order to provide them with a comfortable and supportive set up for faster coping and recovery. Recovery of the children from the traumatic experience is also dependent on broad social and economic recovery of the community or country. There

is a need to incorporate public mental health approaches, including systematic screening and trauma/grief-focused interventions, within a comprehensive disaster recovery program.[48]

Psychological support

Early psychological intervention is recommended following disasters[9] especially when the disaster is associated with extreme and widespread damage to property, ongoing economic problems of the stricken community, violence that resulted from human intent, and a high prevalence of trauma in the form of injuries, threat to life and loss of life.[46] The issue is particularly critical in developing countries.

The key factors of post-disaster psychotherapy for children are to listen, clarify, support attachment bonds, facilitate symbolic expression in play and art, and to support the capacity to imagine repair.[49] Many children want to talk about how they and their family are feeling. It is important to help children to make sense of their feelings, and to find words for their feelings. It is recommended to follow the child's lead, avoid probing, and respond only to what the child has spontaneously introduced, and to support containment of overwhelming feelings. In the case of the loss of a parent or family member, facilitating the child's need to remember and talk about their lost loved one is needed.

Post-disaster counselling

Post-disaster counselling should be made available for extended periods, with shifting emphasis to meet the changing needs of high-risk groups.[50] Supportive interventions include fostering a sense of safety and efficacy, connecting patients with communities and services, and helping parents talk about the trauma with their children.[51] A community-based approach with trained grass-root health care workers can provide effective psychosocial support and rehabilitation services.[25]

Cognitive behavior therapy

Cognitive behavior therapy (CBT) is considered by many to be the mainstay of treatment of children and adolescents with PTSD.[52,53] The efficacy of CBT in alleviating post-traumatic stress symptoms after catastrophic disaster has been demonstrated.[54] Short-term group CBT has also been found useful with long-term benefit. Significant improvement was reported in children at an 18-month follow-up, with treatment gains being maintained at a 4-year follow-up.[55]

For older children with severe post-traumatic symptoms or with severe PTSD, trauma-focused CBT should be offered in the first month after the traumatic event. Where appropriate, families should be involved in the treatment of PTSD in children and young people.[56] Treatment studies in non-disaster related PTSD in children have indicated that cognitive behavior interventions including direct discussion of the trauma, desensitization and relaxation techniques, cognitive reframing and contingency reinforcement programs for problematic behaviors would be useful.

Brief trauma/grief-focused psychotherapy

It seems that trauma-focused interventions have strong clinical and some empirical support despite controversies. Trauma-focused interventions involve exploration of the traumatic event and its impact with the child. However some clinicians avoid directly discussing the traumatic event for various reasons, e.g., fear of transient increase of symptoms of children, because of their own need to avoid the negative effect associated with such discussion, the idea that repeated questioning may change a child's memory of the event, etc. But the evidence suggests that direct exploration of the traumatic experience through relaxation and desensitization procedures has positive effect, helps in mastering anxiety and grief, produces immediate relief and no further distress.[1] The components of trauma-focused interventions generally include techniques of stress management (relaxation, thought-stopping, positive imagery, deep breathing, etc), evaluation and reconsideration of cognitive assumptions the child would have about the trauma, and inclusion of parents and other supportive individuals in treatment. Few have examined the treatment for PTSD in children faced with disaster in a controlled fashion. Efficacy of a school-based short-term group and individual trauma/grief-focused therapy in adolescents exposed to disaster has been reported.[23] It has been found that un-treated adolescents worsened gradually. Brief trauma/grief-focused psychotherapy is not only effective in reducing PTSD symptoms, but it can also halt the progression of depression.[32]

"Emotional First Aid" techniques have been used to deal with PTSD in disaster situations.[57] The therapeutic tools include clarification of facts about the trauma, normalizing children's PTSD reactions, encouragement of expression of feelings and teaching problem-solving techniques.

Group therapy

Using schools, hospitals and other community settings for this purpose, many authors have focused on the efficacy of group therapy for children affected in a common traumatic event.[23,38,57-61] This kind of approach seems to be the best way of dealing with the problem of a number of children being affected in a typical

disaster. Interventions in groups have been found to be effective to promote catharsis, support, and a sense of identification with the group. Special groups for children should be considered in post-disaster situations.[43]

Play therapy

Play can be used both as a medium of assessment and therapy for children. A play interview is essential when examining a child less than seven years old but should be utilized for all pre-pubertal children.[62] Through play children can express verbally and non-verbally difficult painful emotions, their wishes and fears, concerns, fantasies, reenactments and traumatic experiences. Many phenomena are observed during play which can not be elicited verbally. The manner in which the child plays is as significant as the content of the play. During the play, active attempts should be made to elicit accompanying thought process. This process can involve drawing figures, drawing a person, making up a story, drawing family, "if you could change one thing what would it be", and checking three wishes, etc.[62]

Children can be supported emotionally through the engagement processes, explained about difficult situations, bereavement and suggested coping methods through the play content. Interaction with an empathic, objective, neither judgmental nor over-indulgent therapist enables the child to reintegrate, reorganize and proceed with recovery. Potentially the child may internalize and identify with those qualities in the therapist.[63]

Involving parents and families

It is extremely important to involve parents in assessment and intervention. Psychoeducation of the family members and the children involved in the disaster about the manifestations is particularly helpful in the management of post-disaster mental health sequel. Parents also need help to understand and accept that the child's perplexing and disturbing expressions and behaviors in the post-disaster situation are "normal" to an "abnormal" situation.[49] They should be more accessible, answering child's questions, directly and honestly, without providing more information than children need. They should turn off the television and not expose children to endless repetition of the images of a traumatic event.[57] The families should be encouraged to try to return to ordinary daily life and customary routines as soon as possible.

Secondary care

There can be various situations where psychiatric evaluation and treatment are usually required and children are to be referred for secondary care from mental health professionals. Disaster workers need to be informed about this in their training. Criteria for referral usually include very severe symptoms of any kind, persistent symptoms in spite of providing emotional help, suicidal thoughts or behavior, psychotic symptoms, disruptive behavior, substance abuse problems, and children with other life stressors or limited social support.[40]

Role of medications

Literature regarding medicinal treatment of post-disaster psychiatric disorders in children and adolescents is still scant.[53] Various medications like selective serotonin reuptake inhibitors (SSRI), non-SSRI antidepressants, clonidine, propranolol, mood stabilizers, anticonvulsants and anti-adrenergic agents have been used in individual cases or a small series of cases and have shown efficacy for some trauma symptoms.[64] As a general principal, broad-spectrum agents such as the SSRIs are a good first choice.[62,63] The SSRIs are efficacious in treating the core symptoms of PTSD and conditions such as the anxiety disorders and depression that commonly co-occur with PTSD. Adrenergic agents, such as clonidine, used either alone or in combination with an SSRI may be useful when symptoms of hyperarousal and impulsivity are problematic.[65,66] Supplementing with a mood stabilizer may be necessary in severe affective dyscontrol. Similarly, introduction of an atypical neuroleptic agent may be necessary in cases of severe self-injurious behavior, dissociation, psychosis, or aggression.[65]

It is known that PTSD is often treated with medications in the community.[52,53] Reduction in even one debilitating symptom of PTSD can improve a child's overall functioning across multiple domains.[53] Positive responders should be maintained on medication for at least six months after remission of acute PTSD and at least 12 months after remission of chronic PTSD.[64] In the future, early pharmacologic interventions may be effective in dealing with many post-disaster psychiatric disorders.[51]

Pharmacotherapy should be used as one component of the more comprehensive multi-modality treatment package, including psychoeducation of the parent and child, focused exposure-based psychotherapy with adjunctive family therapy when indicated, and long-term booster interventions that use an admixture of psychodynamic, cognitive-behavioral, and pharmacologic interventions.[65]

Conclusions

Available information suggests that there are a wide range of psychosocial issues affecting children

following disaster. Greater awareness about this is needed for planning intervention strategies. The methods for support should be preferably community-based, multi-level and for prolonged period involving related institutions like health, education, local and national governments. An integrated approach using psycho-socio-educational and clinical interventions is expected to provide better outcomes than any approach alone. There is clearly a need for further research on effectiveness of psychological and pharmacological interventions in this population.

Funding: This work was supported in part by Quality of Life Research and Development Foundation, India.
Ethical approval: Not needed.
Competing interest: No competing interest.
Contributors: Kar N conceptualized, did literature search and wrote the article.

References

1 American Academy of Child and Adolescent Psychiatry. Practice parameters for the assessment and treatment of post-traumatic stress disorder in children and adolescents. J Am Acad Child Adolesc Psychiatry 1998;37(10 Suppl):4S-26S.
2 Amaya-Jackson L. Posttraumatic stress disorder in children and adolescents. In: Sadock B, Sadock V, eds. Kaplan and Sadock's Comprehensive textbook of psychiatry, 7th ed. Philadelphia: Lippincott Williams and Wilkins, 2000: 2763-2769.
3 Kar N, Jagadisha, Murali N. Post-traumatic stress disorder in children following disaster. Kerala J Psychiatry 2001;16:7-14.
4 Pynoos RS, Goenjian A, Tashjian M, Karakashian M, Manjikian R, Manoukian G, et al. Post-traumatic stress reactions in children after the 1988 Armenian earthquake. Br J Psychiatry 1993;163:239-247.
5 Davidson J, Smith R. Traumatic experiences in psychiatric outpatients. J Trauma Stress 1990;3:459-475.
6 Hoffman MA, Bizzman A. Attributions and responses to the Arab Israeli conflict: a developmental analysis. Child Dev 1996;67:117-128.
7 Kar N. Psychosocial issues following a natural disaster in a developing country: a qualitative longitudinal observational study. Int J Disast Med 2006;4:169-176.
8 Kar N, Bastia BK. Post-traumatic stress disorder, depression and generalised anxiety disorder in adolescents after a natural disaster: a study of comorbidity. Clin Pract Epidemol Ment Health 2006;2:17.
9 Math SB, Tandon S, Girimaji SC, Benegal V, Kumar U, Hamza A, et al. Psychological impact of the tsunami on children and adolescents from the Andaman and Nicobar islands. Prim Care Companion J Clin Psychiatry 2008;10:31-37.
10 McFarlane AC. Post-traumatic phenomena in a longitudinal study of children following a natural disaster. J Am Acad Child Adolesc Psychiatry 1987;26:764-769.
11 Kar N, Mohapatra PM, Nayak KC, Pattanaik P, Swain SP, Kar HC. Post-traumatic stress disorder in children and adolescents one year after a super-cyclone in Orissa, India: exploring cross-cultural validity and vulnerability factors. BMC Psychiatry 2007;7:8.
12 Shannon MP, Lonigan CJ, Finch AJ, Taylor CM. Children exposed to disaster: epidemiology of post traumatic symptoms and symptom profile. J Am Acad Child Adolesc Psychiatry 1994;33:80-93.
13 Asarnow J, Glenn S, Pynoos RS, Nahum J, Guthrie D, Cantwell DP, et al. When earth stops shaking: earthquake sequelae among children diagnosed for pre-earthquake psychopathology. J Am Acad Child Adolesc Psychiatry 1999;38:1016-1023.
14 Schwarz E, Perry BD. The post-traumatic response in children and adolescents. Psychiatr Clin North Am 1994;17:311-326.
15 Berman H. Health in the aftermath of violence: a critical narrative study of children of war and children of battered women. Can J Nurs Res 1999;31:89-109.
16 Drell MJ, Siegel CH, Gaensbauer TJ. Post traumatic stress disorder. In: Zeanah CH, eds. Handbook of Infant Mental Health. New York: Guildford, 1993: 291-304.
17 Terr LC. Chowchilla revisited: the effects of psychic trauma four years after a school-bus kidnapping. Am J Psychiatry 1983;140:1543-1550.
18 Famularo R, Fenton T, Augustyn M, Zuckerman B. Persistence of pediatric post traumatic stress after two years. Child Abuse Negl 1996;20:1245-1248.
19 Spiegel D. Multiple personality as a post traumatic stress disorder. Psychiatr Clin North Am 1984;7:101-110.
20 Malmquist CP. Children who witness parental murder: post traumatic aspects. J Am Acad Child Psychiatry 1986;25:320-325.
21 Laor N, Wolmer L, Mayes LC, Gershon A, Weizman R, Cohen DT. Israeli preschool children under Scuds: a 30-month follow-up. J Am Acad Child Adolesc Psychiatry 1997;36:349-356.
22 Shaw JA, Applegate B, Tanner S, Perez D, Rothe E, Campo-Bowen AE, et al. Psychological effects of Hurricane Andrew on an elementary school population. J Am Acad Child Adolesc Psychiatry 1995;34:1185-1192.
23 Goenjian AK, Karayan I, Pynoos RS, Minassian D, Najarian LM, Steinberg AM, et al. Outcome of psychotherapy among early adolescents after trauma. Am J Psychiatry 1997; 154:536-542.
24 Nader K, Pynoos R, Fairbanks L, Frederick C. Children's PTSD reactions one year after a sniper attack at their school. Am J Psychiatry 1990;147:1526-1530.
25 Somasundaram DJ, van de Put WA. Management of trauma in special populations after a disaster. J Clin Psychiatry 2006;67 Suppl 2:64-73.
26 Vijayakumar L, Kannan GK, Ganesh Kumar B, Devarajan P. Do all children need intervention after exposure to tsunami? Int Rev Psychiatry 2006;18:515-522.
27 Foy DW, Madvig BT, Pynoos RS, Camilleri AJ. Etiologic factors in the development of posttraumatic stress disorder in children and adolescents. J Sch Psychol 1996;34:133-145.
28 Catani C, Jacob N, Schauer E, Kohila M, Neuner F. Family violence, war, and natural disasters: a study of the effect of extreme stress on children's mental health in Sri Lanka. BMC Psychiatry 2008;8:33.
29 Rutter M. Continuities and discontinuities from infancy. In: Osofsky JD, eds. Handbook of infant development, 2nd ed. New York: Wiley, 1987: 1256-1296.

30 Hoare P. Essential child psychiatry. Edinburgh: Churchill Livingstone, 1993.
31 Kiliç EZ, Ozgüven HD, Sayil I. The psychological effects of parental mental health on children experiencing disaster: the experience of Bolu earthquake in Turkey. Fam Process 2003;42:485-495.
32 Goenjian AK, Walling D, Steinberg AM, Karayan I, Najarian LM, Pynoos R. A prospective study of posttraumatic stress and depressive reactions among treated and untreated adolescents 5 years after a catastrophic disaster. Am J Psychiatry 2005;162:2302-2308.
33 Goenjian AK, Walling D, Steinberg AM, Roussos A, Goenjian HA, Pynoos RS. Depression and PTSD symptoms among bereaved adolescents 6(1/2) years after the 1988 Spitak earthquake. J Affect Disord 2009;112:81-84. Epub 2008 Jun 10.
34 Caffo E, Belaise C. Psychological aspects of traumatic injury in children and adolescents. Child Adolesc Psychiatr Clin N Am 2003;12:493-535.
35 Wolfe DA, Sas L, Wekerle C. Factors associated with the development of post traumatic stress disorder among child victims of sexual abuse. Child Abuse Negl 1994;18:37-50.
36 Scheeringa MS, Zeanah CH, Drell MJ, Larrieu JA. Two approaches to diagnosing post traumatic stress disorder in infancy and early childhood. J Am Acad Child Adolesc Psychiatry 1995;34:191-200.
37 Sack WH, Angell RH, Kinzie JD, Rath B. The psychiatric effects of massive trauma on Cambodian Children, II: The family, the home and the school. J Am Acad Child Psychiatry 1986;25:377-383.
38 Rigamer EF. Psychological management of children in a national crisis. J Am Acad Child Psychiatry 1986;25:364-369.
39 Berman H. Stories of growing up amid violence by refugee children of war and children of battered women living in Canada. Image J Nurs Sch 1999;31:57-63.
40 Kar N, Misra BN. Mental health care following disasters: a handbook for disaster workers. Quality of Life Research and Development Foundation: Bhubaneswar, 2008.
41 Jones L. Responding to the needs of children in crisis. Int Rev Psychiatry 2008;20:291-303.
42 Almqvist K, Brandell-Forsberg M. Refugee children in Sweden: post-traumatic stress disorder in Iranian preschool children exposed to organized violence. Child Abuse Negl 1997;21:351-366.
43 Austin LS, Godleski LS. Therapeutic approaches for survivors of disaster. Psychiatr Clin North Am 1999;22:897-910.
44 Pfefferbaum B. Caring for children affected by disaster. Child Adolesc Psychiatr Clin N Am 1998;7:579-597.
45 Nagao K, Okuyama M, Miyamoto S, Haba T. Treating early mental health and post-traumatic symptoms of children in the Hanshin-Awaji earthquake. Acta Paediatr Jpn 1995; 37:745-754.
46 Norris FH, Friedman MJ, Watson PJ. 60,000 disaster victims speak: Part II. Summary and implications of the disaster mental health research. Psychiatry 2002;65:240-260.
47 Pfefferbaum B, Call JA, Sconzo GM. Mental health services for children in the first two years after the 1995 Oklahoma City terrorist bombing. Psychiatr Serv 1999;50:956-958.
48 Goenjian AK, Molina L, Steinberg AM, Fairbanks LA, Alvarez ML, Goenjian HA, et al. Posttraumatic stress and depressive reactions among Nicaraguan adolescents after hurricane Mitch. Am J Psychiatry 2001;158:788-794.
49 Coates S, Schechter D. Preschoolers traumatic stress post-9/11: relational and developmental perspectives. Psychiatr Clin North Am 2004;27:473-489.
50 Covell NH, Donahue SA, Allen G, Foster MJ, Felton CJ, Essock SM. Use of Project Liberty counseling services over time by individuals in various risk categories. Psychiatr Serv 2006;57:1268-1270.
51 Fetter JC. Psychosocial Response to Mass Casualty Terrorism: Guidelines for Physicians. Prim Care Companion J Clin Psychiatry 2005;7:49-52.
52 Silva RR, Cloitre M, Davis L, Levitt J, Gomez S, Ngai I, et al. Early intervention with traumatized children. Psychiatr Q 2003;74:333-347.
53 Donnelly CL, Amaya-Jackson L. Post-traumatic stress disorder in children and adolescents: epidemiology, diagnosis and treatment options. Paediatr Drugs 2002;4:159-170.
54 Shooshtary MH, Panaghi L, Moghadam JA. Outcome of cognitive behavioral therapy in adolescents after natural disaster. J Adolesc Health 2008;42:466-472.
55 Giannopoulou I, Dikaiakou A, Yule W. Cognitive-behavioural group intervention for PTSD symptoms in children following the Athens 1999 earthquake: a pilot study. Clin Child Psychol Psychiatry 2006;11:543-553.
56 NICE (National Institute for Clinical Excellence). Post-traumatic stress disorder (PTSD): The management of PTSD in adults and children in primary and secondary care. NICE Clinical Guideline No. 26. London: National Institute for Clinical Excellence, 2005. http://www.nice.org.uk/nicemedia/pdf/CG026NICEguideline.pdf.
57 Pynoos RS, Nader K. Psychological first aid and treatment approach to children exposed to community violence: research implications. J Trauma Stress 1988;1:445-473.
58 Stoddard FJ. Care of infants, children and adolescents with burn injuries. In: Lewis M, eds. Child and adolescent psychiatry. Washington DC: American Psychiatric Press, 1996: 1016-1033.
59 Young JG, Kaplan D, Pascualvaca D, Brasic JR. Psychiatric examination of the infant, child and adolescent. In: Kaplan HI, Sadock BJ, eds. Comprehensive textbook of psychiatry. Baltimore: William and Wilkins, 1995: 2169-2206.
60 Kernberg PF. Individual Psychotherapy. In: Kaplan HI, Sadock BJ, eds. Comprehensive textbook of psychiatry. Baltimore: William and Wilkins, 1995: 2399-2412.
61 Putnam FW, Hulsmann JE. Pharmacotherapy for survivors of childhood trauma. Semin Clin Neuropsychiatry 2002;7:129-136.
62 Donnelly CL. Pharmacologic treatment approaches for children and adolescents with posttraumatic stress disorder. Child Adolesc Psychiatr Clin N Am 2003;12:251-269.
63 Cohen JA, Mannarino AP, Rogal S. Treatment practices for childhood posttraumatic stress disorder. Child Abuse Negl 2001;25:123-135.
64 Putnam FW, Hulsmann JE. Pharmacotherapy for survivors of childhood trauma. Semin Clin Neuropsychiatry 2002;7:129-136.
65 Donnelly CL. Pharmacologic treatment approaches for children and adolescents with posttraumatic stress disorder. Child Adolesc Psychiatr Clin N Am 2003;12:251-269.
66 Cohen JA, Mannarino AP, Rogal S. Treatment practices for childhood posttraumatic stress disorder. Child Abuse Negl 2001;25:123-135.

Received October 6, 2008
Accepted after revision November 7, 2008