



Symptoms of Posttraumatic Stress, Depression and Anxiety among Youths Exposed to a Massive Fire Disaster in Greece

G. Kolaitis^{1*}, G. Giannakopoulos¹, C. Mihas¹, V. Ntre¹, V. Moulla¹, E. Sotiropoulou¹, K. Pafli¹, K. Argyrou¹, K. Kotsirilou¹, V. Leventakou¹, H. Assimopoulos², J. Tsiantis², V. Tomaras¹ and C. Tzavara¹

¹*Department of Child Psychiatry, Athens University Medical School, "Aghia Sophia" Children's Hospital, 115 27 Athens, Greece.*

²*Association for the Psychosocial Health of Children and Adolescents (APHCA), 155 61 Athens, Greece.*

Research Article

Received 11th July 2011
Accepted 17th August 2011
Online Ready 25th August 2011

ABSTRACT

Aim: To evaluate the prevalence of symptoms of posttraumatic stress disorder (PTSD), depression and anxiety among children and adolescents exposed to the 2007 fire disaster in Greece along with the relationships of these symptoms with disaster-related stressors and sociodemographic characteristics four months after the fire.

Methodology: A sample of 343 youths aged 9-18 years from schools in an area severely affected by the fire completed self-reported questionnaires. The Children's Post-Traumatic Stress Disorder-Reaction Index-Revised (CPTSD-RI-R), the Children's Depression Inventory (CDI) and the Screen for Child Anxiety Related Emotional Disorders (SCARED) were used to assess relative symptoms, while fire-related stressors were also examined in respondents.

Results: The estimated prevalence rates of high levels of PTSD, depressive and anxiety symptoms four months after the disaster were approximately 45%, 34% and 32%, respectively. Staying without both parents after the fire was strongly associated with more PTSD symptoms, while housing adversity and loss of property were most strongly associated with elevated depressive symptoms. Life-threatening experience of a loved one and worry for a loved one predicted higher levels of PTSD symptomatology, whereas injury of a loved one was associated with high levels of depressive and anxiety

*Corresponding author: Email: gkolaitis@med.uoa.gr;

symptoms.

Conclusion: A significant proportion of children and adolescents exposed to 2007 Greek forest fires experienced mental health problems four months after the fire. Different types of stressors were associated with PTSD, depressive and anxiety symptoms. These findings highlight the importance of preventive and treatment mental health services in the aftermath of similar disasters.

Keywords: Children; adolescents; natural disasters; posttraumatic stress disorder; depression; anxiety;

1. INTRODUCTION

Massive forest fires broke out in several areas across Greece throughout the summer of 2007, which was the worst fire season on record in the past 50 years. In total 84 people lost their lives and the fire destroyed 1,000 houses, 1,100 other buildings and 2,700 square kilometers (670,000 acres) of forest, olive groves and farmland (Madininos and Vassiliadis, 2011). People in fire-affected areas were exposed to several stressors, such as risk of death, loss of property, housing adversity and community disruption.

The experience of a major disaster has been shown to provoke a range of stress responses, maladaptive reactions, mental health symptoms and diagnosable psychiatric disorders among children and adolescents (Bromet and Dew, 1995; Norris et al., 2002). However, relatively little research has been published regarding the impact of a fire disaster on youths' mental health (Dyregrov et al., 2003; Jones and Ribbe, 1991; Jones et al., 1994; Jones et al., 2002; Kim et al., 2009; Lundin and Jansson, 2007; Maja et al., 2008; March et al., 1997; McDermott and Palmer, 2002; Reijneveld et al., 2003; Yelland et al., 2010). In the first two months to over a year after a fire, the prevalence of posttraumatic stress disorder (PTSD) among children and adolescents has been estimated at 11.9% to 27% (Dyregrov et al., 2003; Kim et al., 2009; March et al., 1997; Yelland et al., 2010). The prevalence rates of depression and internalizing problems have been shown to range from 18.5% to 27% four to seven months post-fire (Dyregrov et al., 2003; Reijneveld et al., 2003). Exposure to disaster-related stressors, such as property loss, physical adversity, housing adversity, physical illness or injury and life-threatening experience, has been shown to be a significant predictor of mental health problems among children and adolescents post-disaster (Eksi and Braun, 2009; Kolaitis et al., 2003; McLaughlin et al., 2009; Yelland et al., 2010). Identification of factors that distinguish children who present serious symptoms from those who experience rather mild problems seems to be of great importance for developing post-disaster interventions. Female sex, younger age, and parent psychopathology have been also identified as predictors of more serious symptoms in children and adolescents after natural disasters (McLaughlin et al., 2009; Pynoos et al., 1993; Shannon et al., 1994). These symptoms may last for several months or years, interfering with children's and adolescents' growth and development. This, in turn, may lead to negative long-term health outcomes and hamper normal development (Lundin and Jansson, 2007; McDermott and Palmer, 2002; McFarlane et al., 1987).

To date, there is no published report examining the effects of 2007 Greek forest fires on child and adolescent mental health. The present study was an effort to examine the

prevalence of youth mental health symptoms in an affected area given the possible large extent of the public health issue and the relative lack of preventive and treatment resources in the affected area. The study also evaluates the association between exposure to various disaster-related stressors and mental health problems. Sociodemographic factors are examined too as predictors of youth symptomatology.

2. MATERIALS AND METHODS

2.1 Participants and Procedure

The study was conducted four months after the 2007 fire disaster in Peloponnese, Greece. A sample of 343 youths (156 males, 187 females) aged 9-11 ($N = 60$), 12-13 ($N = 90$), 14-15 ($N = 87$), 16-20 ($N = 106$) volunteered to take part from schools in Lakonia of Peloponnese, Greece. Youths filled in the questionnaire at school. Inclusion criteria for the youths were to be able to read and complete the questionnaires themselves. After approval by relevant ethics committees, parents provided written informed consent for youth participation.

2.2 Measures

2.2.1 PTSD symptoms

The Children's Post-Traumatic Stress Disorder-Reaction Index-Revised (CPTSD-RI-R; Steinberg et al., 2004) was used to screen for serious PTSD symptoms. The CPTSD-RI-R is a 20-item questionnaire assessing posttraumatic stress reactions in children and adolescents. Items referenced the recent fire as the traumatic event. Youths indicated how often they experienced each symptom (0 = *none of the time*; 4 = *most of the time*). The measure yields a total severity score, with scores falling within the categories of doubtful (0–11), mild (12–24), moderate (25–39), severe (40–59), or very severe (60+). The respondents who received a CPTSD-RI-R score of 12 or more were classified as having high levels of PTSD symptoms. The PTSD-RI has been widely used and has good convergent validity, test-retest reliability, and internal consistency (Steinberg et al., 2004). In this study, internal consistency was 0.88.

2.2.2 Depressive symptoms

The Children's Depression Inventory (CDI; Kovacs, 1985) was used to screen for serious depressive symptoms. There are 27 items quantifying symptoms such as depressed mood, hedonic capacity, vegetative functions, self-evaluation and interpersonal behaviours. It covers the consequences of depression as they relate to children and functioning in school and with peers. For each item the child has three possible answers; 0 indicating the absence of symptoms, 1 the mild symptoms, and 2 the definite symptoms. The total score ranges from 0 to 54. The respondents who received a CDI score of 15 or more were classified as having high levels of depressive symptoms (Giannakopoulos et al., 2009a). Previous research has shown that the CDI is adequately reliable and valid with respect to depressive symptoms (Myers and Winters, 2002).

2.2.3 Anxiety symptoms

The Screen for Child Anxiety Related Emotional Disorders (SCARED; Birmaher et al., 1997) was used to screen for serious anxiety problems. The SCARED is a self-report scale for

children suffering from anxiety disorders. It contains 38 items, describing different emotions and behaviors. For each item, the child is asked to report the frequency of that emotion or behavior, over a 3-point scale (0 = never, 2 = frequently). Five scores can be obtained, including somatic problems, general anxiety, separation anxiety, social phobia, and school phobia. Summing all items reveals a total anxiety score. The respondents who received a SCARED score of 25 or more were classified as having high levels of anxiety symptoms. This scale has demonstrated acceptable internal and test-retest consistency (Birmaher et al., 1997).

2.2.4 Disaster-related stressors

The respondents were asked 20 questions regarding exposure to fire-related stressors. Seven categories of stressors were sufficiently common to be included in the analysis: housing adversity (experiencing moves post-fire), staying without both the parents, separation from parents post-fire, property loss, worry for a loved one during fire, injury of a loved one, and life-threatening experience of a loved one during fire.

2.2.5 Sociodemographic characteristics

Age, sex and number of siblings were examined in relation to PTSD, depressive and anxiety symptoms at the time of interview.

2.3 Data Analysis

Continuous variables are presented with mean \pm standard deviation while categorical variables are presented with absolute and relative frequencies. For comparisons of proportions, chi-square and Fisher's exact tests were used. Pearson correlations coefficients were used to explore the association of study scales. *P*-values for trends in the severity of disorders were computed for order categories. In order to find the factors independently associated with depression or PTS symptoms stepwise multiple logistic regression analysis (*p* for removal was set at 0.1 and *p* for entry was set at 0.05) was performed. Adjusted odds ratios (Ors) with 95% confidence intervals were computed from the results of logistic regression analyses. All *p*-values reported are two-tailed. Statistical significance was set at 0.05 and analyses were conducted using SPSS statistical software (version 13.0).

3. RESULTS

3.1 Sociodemographic Characteristics and Disaster-Related Stressors

Sociodemographic characteristics are presented in Table 1. Approximately 5% of the participants had stayed without both their parents after the fire disaster, while 4.4% of the youths in the sample had been separated from their parents post-fire. Almost one-third (30%) of the sample had been worried for a family member or a close friend during fire and 13.1% had at least one loved person who was trapped during the fire.

Table 1. Distribution of sociodemographic characteristics and disaster-related stressors among youths exposed to 2007 Greek forest fires

Sociodemographic characteristics	N	%
Sex		
Male	156	45.5
Female	187	54.5
Age (years)		
9-11	60	17.5
12-13	90	26.2
14-15	87	25.4
16-20	106	30.9
Number of siblings		
None	70	20.4
One	112	32.7
Two	83	24.2
Three or more	78	22.7
Housing adversity		
No	335	97.7
Yes	8	2.3
Staying without both the parents post-fire		
No	327	95.3
Yes	16	4.7
Separation from parents post-fire		
No	328	95.6
Yes	15	4.4
Property loss		
No	333	97.1
Yes	10	2.9
Worry for a loved one during fire		
No	240	70.0
Yes	103	30.0
Injury of a loved one		
No	314	91.5
Yes	29	8.5
Life-threatening experience of a loved one during fire		
No	298	86.9
Yes	45	13.1

3.2 PTSD Symptoms

High levels of PTSD symptoms were found in 45.4% of the youths in the sample. Mild PTSD symptoms were found in 22.0 % of children and adolescents, moderate symptoms were found in 11.7%, severe symptoms in 10.8% and very severe PTSD symptoms in 0.9% of the sample. The proportion of children with mild to very severe PTS symptoms decreased by age (61.7% for those aged from 9 to 11 years, 51.1% for those aged from 12 to 13 years, 41.4% for those aged from 14 to 15 years and 34% for those aged from 16 to 20 years, p for trend < 0.001). No gender differences were found in PTSD symptoms.

Table 2. Proportion of high levels of PTSD, depressive and anxiety symptoms according to sociodemographic characteristics and disaster-related stressors among youths exposed to 2007 Greek forest fires

Sociodemographic characteristics	PTSD symptoms ^a			Depressive symptoms ^b			Anxiety symptoms ^c		
	N	%	$\frac{p}{\chi^2}$	N	%	$\frac{p}{\chi^2}$	N	%	$\frac{p}{\chi^2}$
Sex									
Male	65	41.7	0.231	52	33.3	0.781	33	21.2	0.001
Female	90	48.1		65	34.8		70	37.4	
Age (years)									
9-11	37	61.7	0.003	21	35.0	0.919	23	38.3	0.441
12-13	46	51.1		28	31.1		27	30.0	
14-15	36	41.4		31	35.6		25	28.7	
16-20	36	34.0		37	34.9		28	26.4	
Housing adversity									
No	149	44.5	0.147 ^d	111	33.1	0.021^d	98	29.3	0.056 ^d
Yes	6	75.0		6	75.0		5	62.5	
Staying without both the Parents post-fire									
No	144	44.0	0.050	112	34.3	0.805	96	29.4	0.264 ^d
Yes	11	68.8		5	31.3		7	43.8	
Number of siblings									
None	35	50.0	0.003	22	31.4	0.002	21	30.0	0.026
One	64	57.1		52	46.4		44	39.3	
Two	30	36.1		17	20.5		16	19.3	
Three or more	26	33.3		26	33.3		22	28.2	
Separation from parents post-fire									
No	146	44.5	0.239	108	32.9	0.031	95	30.0	0.932
Yes	9	60.0		9	60.0		8	30.8	

Table 2 Continues.....

Property loss									
No	151	45.3	1.000 ^d	110	33.0	0.035^d	99	29.7	0.495 ^d
Yes	4	40.0		7	70.0		4	40.0	
Worry for a loved one during fire									
No	87	36.3	< 0.001	75	31.3	0.088	61	25.4	0.004
Yes	68	66.0		42	40.8		42	40.8	
Injury of a loved one									
No	132	42.0	< 0.001	102	32.5	0.037	87	27.7	0.002
Yes	23	79.3		15	51.7		16	55.2	
Life-threatening experience of a loved one during fire									
No	122	40.9	< 0.001	99	33.2	0.371	84	28.2	0.056
Yes	33	73.3		18	40.0		19	42.2	

^aCPTSD-RI-R score ≥ 12 ; ^bCDI score ≥ 15 ; ^cSCARED score ≥ 25 ; ^dFisher's exact test

Staying without both parents post-fire, the number of siblings, being afraid to stay at home, being worried for a loved one during fire, injury of a loved one and life-threatening experience of a loved one during fire were significantly associated with mild to very severe PTSD symptoms in univariate analysis (Table 2).

Table 3: Predictors of high levels of PTSD, depressive and anxiety symptoms among youths exposed to 2007 Greek forest fires

PTSD symptoms^a	OR(95% CI)^d	p
Age (years)		
9-11	1.0	
12-13	0.51(0.25-1.07)	0.074
14-15	0.48(0.23-0.98)	0.045
16-20	0.27(0.13-0.56)	< 0.001
Staying without both the parents post-fire		
No	1.0	
Yes	3.89(1.21-12.51)	0.023
Number of siblings	0.77(0.64-0.93)	0.007
Worry for a loved one during fire		
No	1.0	
Yes	3.09(1.81-5.26)	< 0.001
Life-threatening experience of a loved one during fire		
No	1.0	
Yes	3.57(1.63-7.81)	0.001
Depressive symptoms^b		
Housing adversity		
No	1.0	
Yes	5.57 (1.09 - 28.58)	0.039
Property loss		
No	1.0	
Yes	4.39 (1.09 - 17.60)	0.037
Injury of a loved one		
No		
Yes	2.24(1.04-4.82)	0.039
Anxiety symptoms^c		
Sex		
Male	1.0	
Female	2.42 (1.47 – 3.99)	0.001
Injury of a loved one		
No		
Yes	3.73 (1.68 – 8.28)	0.001

CPTSD-RI-R score ≥ 12 ; ^bCDI score ≥ 15 ; ^cSCARED score ≥ 25 ; ^dOdds ratio (95% Confidence Interval)

Sociodemographic characteristics are presented in Table 1. Approximately 5% of the participants had stayed without both their parents after the fire disaster, while 4.4% of the youths in the sample had been separated from their parents post-fire. Almost one-third (30%) of the sample had been worried for a family member or a close friend during fire and 13.1% had at least one loved person who was trapped during the fire.

Multiple logistic regression analysis showed that age, staying without both parents post-fire (OR=3.88; 95% CI: 1.21-2.51), being worried for a loved one during fire (OR=3.09; 95% CI: 1.81-5.26), and a life-threatening experience of a loved one during fire (OR=3.57; 95% CI: 1.63-7.81) were independently associated with increased likelihood for having PTSD symptoms. Furthermore, the larger number of siblings was associated with lower odds for having high levels of PTSD symptoms (Table 3).

3.3 Depressive Symptoms

High levels of depressive symptoms were found in 34.1% of the youths (117 cases). No age or sex differences were found for serious depressive symptoms both in univariate and multiple analyses. Separation from parents post-fire and the number of siblings were associated with serious depressive symptoms only in univariate analysis (Table 2). Multiple logistic regression analysis revealed that staying without both the parents post-fire (OR=5.57; 95% CI: 1.09-28.58), property loss (OR=4.39; 95% CI: 1.09-17.60) and injury of a loved one (OR=2.24; 95% CI: 1.04-4.82) independently increased the odds for high levels of depressive symptoms (Table 3).

3.4 Anxiety Symptoms

High levels of anxiety symptoms were found in 32.2% of the youths. The proportion of children and adolescents with high levels of anxiety symptoms increased as the magnitude of PTSD symptoms increased; high levels of anxiety symptoms were present at 0.0% in children with doubtful PTSD symptoms, 12.8% with mild PTSD symptoms, 45.2% with moderate PTSD symptoms, 75.7% with severe PTSD symptoms and at 33.3% in youths with very severe PTSD symptoms, p for trend < 0.001). Also, 18.1% of the children and adolescents (62 cases) had both high levels of depressive and anxiety symptoms. Being female was significantly associated with high levels of anxiety symptoms both in univariate analysis (Table 2) and multiple logistic regression analysis (OR=2.42, CI: 1.47 – 3.99). Number of siblings was associated with high levels of anxiety symptoms only in univariate analysis (Table 2). Being worried for a loved one and injury of a loved one were associated with high levels of anxiety symptoms in univariate analysis. Furthermore, logistic regression analysis indicated that injury of a loved one was a significant predictor for high levels of anxiety symptoms (OR=3.73; CI: 1.68 – 8.28).

4. DISCUSSION

The estimated prevalence rates of high levels of PTSD, depressive and anxiety symptoms among children and adolescents exposed to 2007 Greek forest fires four months after the disaster are approximately 45%, 34% and 32%, respectively. These are in contrast to the 4% to 9% prevalence of diagnosable mental disorders reported in epidemiological studies (Bloom and Cohen, 2007; Costello et al., 1996; Giannakopoulos et al., 2009b; Giannakopoulos et al., 2009c). The prevalence of PTSD, depressive and anxiety symptoms, has been previously reported after fire disasters with varying results. The prevalence of

PTSD among children and adolescents was estimated at 11.9% to 27% two months to over a year after a fire in previous research (Dyregrov et al., 2003; Kim et al., 2009; March et al., 1997; Yelland et al., 2010). Similarly, the prevalence rates of depression and internalizing problems have been shown to range from 18.5% to 27% four to seven months post-fire (Dyregrov et al., 2003; Reijneveld et al., 2003). The estimated prevalence of PTSD, depressive and anxiety symptoms in the present sample is significantly higher, but these estimates are difficult to compare mainly because each study used different measures of psychopathology and recruited different age groups of youths. Nonetheless, the high prevalence of these symptoms among children and adolescents exposed to 2007 Greek forest fires suggests that the impact of the disaster on youth mental health was at least similar to previous fire and natural disasters elsewhere (Shannon et al., 1994; Yelland et al., 2010). Moreover, in the present study, younger age and small number of siblings is associated with more symptoms of PTSD, while female sex is associated with elevated symptoms of anxiety. These relations have been typically reported in other studies of natural disasters (Green et al., 1991; Yelland et al., 2010). However, the absence of other relations between sociodemographic factors and levels of symptoms may suggest that the intensity of trauma and distress associated with the fire increased risk for mental health problems in children and adolescents across many groups.

The study also examined exposure to the various component stressors related to the fire disaster and finds multifaceted relations between these stressors and the prevalence of PTSD, depressive and anxiety symptoms. Staying without both parents after the fire is strongly associated with more PTSD symptoms, while housing adversity and loss of property are most strongly associated with elevated depressive symptoms. Life-threatening experience of a loved one and worry for a loved one predict higher levels of PTSD symptomatology, whereas injury of a loved one is associated with high levels of depressive and anxiety symptoms. Although these findings are not surprising since exposure to disaster-related stressors has been associated with child psychopathology in previous research, the present analysis suggests that different aspects of fire disaster exposure is associated with different aspects of child psychopathology. Differentiating the effects of stressors on various types of symptoms provides some guidance for the types of treatment that may be most effective for exposed children and adolescents. For example, perception of loss seems to be critical in the development of depressive symptoms, while perception of harm to self or a loved one is most strongly associated with PTSD and anxiety-related symptomatology. Future research may enhance our understanding about the pathways that underlie the complex associations between fire-disaster stressors and youths' mental health problems.

The current results demonstrate that elevated PTSD, depressive and anxiety symptoms among the children and adolescents exposed to 2007 Greek forest fires are quite common and thus suggest a need for preventive and treatment health services among natural disaster-exposed youths. Beyond responding to economic adversity and treating physical illness or injury, policy makers and public health sector should take into account the complex cluster of mental health problems and needs which possibly burden youths and eventually remain unmet.

A number of limitations of the present study must be acknowledged. First, PTSD, depressive and anxiety symptoms were estimated using screening scales rather than a diagnostic interview. Thus, the findings could not be indicative for presence or absence of PTSD, depression and anxiety-related disorders, but merely suggest a high probability of serious levels of symptoms that need to be further evaluated through clinical assessment and

validated structured diagnostic interviews. Second, data were based on youth self-reports. Although children and adolescents are considered the best informants for internalizing symptoms, future research might include multiple informants. Third, the evaluation was conducted at one time point, missing to monitor trajectories of risk and recovery over time. Fourth, assessment of fire-related stressors was retrospective, although evidence suggests that reports of acute traumatic events are reliable. Finally, unmeasured confounders, such as family income and social support, may be responsible for the reported associations, which should be interpreted with caution.

4. CONCLUSION

- A significant proportion of children and adolescents exposed to 2007 Greek forest fires experienced mental health problems four months after the fire.
- Different types of stressors were associated with PTSD, depressive and anxiety symptoms.
- These findings highlight the importance of preventive and treatment mental health services in the aftermath of similar disasters.

REFERENCES

- Birmaher, B., Khetarpal, S., Brent, D., Cully, M., Balach, L., Kaufman, J., Neer, S.M. (1997). The Screen for Child Anxiety Related Emotional Disorders (SCARED): scale construction and psychometric characteristics. *J. Am. Acad. Child Adolesc. Psychiatry.*, 36, 545-53.
- Bloom, B., Cohen, R.A. (2007). Summary health statistics for U.S. children: National Health Interview Survey, 2006. *Vital Health Stat.*, 10, 1-79.
- Bromet, E., Dew, M.A. (1995). Review of psychiatric epidemiologic research on disasters. *Epidemiol. Rev.*, 17, 113-9.
- Costello, E.J., Angold, A., Burns, B.J., Erkanli, A., Stangl, D.K., Tweed, D.L. (1996). The Great Smoky Mountains Study of Youth. Functional impairment and serious emotional disturbance. *Arch. Gen. Psychiatry.*, 53, 1137-43.
- Dyregrov, A., Frykholm, A.M., Lilled, L., Broberg, A.G., Holmberg, I. (2003). The Goteborg discotheque fire, 1998. *Scand. J. Psychol.*, 44, 449-57.
- Eksi, A., Braun, K.L. (2009). Over-time changes in PTSD and depression among children surviving the 1999 Istanbul earthquake. *Eur. Child Adolesc. Psychiatry.*, 18, 384-91.
- Giannakopoulos, G., Kazantzi, M., Dimitrakaki, C., Tsiantis, J., Kolaitis, G., & Tountas, Y. (2009a). Screening for children's depression symptoms in Greece: the use of the Children's Depression Inventory in a nation-wide school-based sample. *Eur. Child Adolesc. Psychiatry.*
- Giannakopoulos, G., Kazantzi, M., Dimitrakaki, C., Tsiantis, J., Kolaitis, G., Tountas, Y. (2009b). Screening for children's depression symptoms in Greece: the use of the Children's Depression Inventory in a nation-wide school-based sample. *Eur. Child Adolesc. Psychiatry.*, 18, 485-92.
- Giannakopoulos, G., Tzavara, C., Dimitrakaki, C., Kolaitis, G., Rotsika, V., Tountas, Y. (2009c). The factor structure of the Strengths and Difficulties Questionnaire (SDQ) in Greek adolescents. *Ann. Gen. Psychiatry.*, 8, 20.
- Green, B.L., Korol, M., Grace, M.C., Vary, M.G., Leonard, A.C., Gleser, G.C., Smitson-Cohen, S. (1991). Children and disaster: age, gender, and parental effects on PTSD symptoms. *J. Am. Acad Child Adolesc. Psychiatry.*, 30, 945-51.

- Jones, R.T., Ribbe, D.P. (1991). Child, adolescent, and adult victims of residential fire. Psychosocial consequences. *Behav. Modif.*, 15, 560-80.
- Jones, R.T., Ribbe, D.P., & Cunningham, P. (1994). Psychosocial correlates of fire disaster among children and adolescents. *J. Trauma. Stress*, 7, 117-22.
- Jones, R.T., Ribbe, D.P., Cunningham, P.B., Weddle, J.D., & Langley, A.K. (2002). Psychological impact of fire disaster on children and their parents. *Behav. Modif.*, 26, 163-86.
- Kim, B.N., Kim, J.W., Kim, H.W., Shin, M.S., Cho, S.C., Choi, N.H., Ahn, H., Lee, S.Y., Ryu, J., Yun, M.J. (2009). A 6-month follow-up study of posttraumatic stress and anxiety/depressive symptoms in Korean children after direct or indirect exposure to a single incident of trauma. *J. Clin. Psychiatry.*, 70, 1148-54.
- Kolaitis, G., Kotsopoulos, J., Tsiantis, J., Haritaki, S., Rigizou, F., Zacharaki, L., Riga, E., Augoustatou, A., Bimbou, A., Kanari, N., Liakopoulou, M., Katerelos, P. (2003). Posttraumatic stress reactions among children following the Athens earthquake of September 1999. *Eur. Child Adolesc. Psychiatry.*, 12, 273-80.
- Kovacs, M. (1985). The Childrens Depression, Inventory (Cdi). *Psychopharmacology Bulletin.*, 21, 995-998.
- Lundin, T., Jansson, L. (2007). Traumatic impact of a fire disaster on survivors--a 25-year follow-up of the 1978 hotel fire in Boras, Sweden. *Nord. J. Psychiatry*, 61, 479-85.
- Maditinos, Z., Vassiliadis, C. (2011). Mega fires: can they be managed effectively? *Disaster Prev. Manag.*, 20, 41-52.
- Maja, D., Koning, I.M., Stams, G.J., Buist, K.L. (2008). Factors associated with traumatic symptoms and internalizing problems among adolescents who experienced a traumatic event. *Anxiety Stress Coping.*, 21, 377-86.
- March, J.S., Amaya-Jackson, L., Terry, R., Costanzo, P. (1997). Posttraumatic symptomatology in children and adolescents after an industrial fire. *J. Am. Acad. Child Adolesc. Psychiatry.*, 36, 1080-8.
- McDermott, B.M., Palmer, L.J. (2002). Postdisaster emotional distress, depression and event-related variables: findings across child and adolescent developmental stages. *Aust. N. Z. J. Psychiatry.*, 36, 754-61.
- McFarlane, A.C., Policansky, S.K., Irwin, C. (1987). A longitudinal study of the psychological morbidity in children due to a natural disaster. *Psychol. Med.*, 17, 727-38.
- McLaughlin, K.A., Fairbank, J.A., Gruber, M.J., Jones, R.T., Lakoma, M.D., Pfefferbaum, B., Sampson, N.A., Kessler, R.C. (2009). Serious emotional disturbance among youths exposed to hurricane katrina 2 years postdisaster. *J. Am. Acad. Child Adolesc. Psychiatry.*, 48, 1069-78.
- Myers, K., Winters, N.C. (2002). Ten-year review of rating scales. II: Scales for internalizing disorders. *J. Am. Acad. Child Adolesc. Psychiatry.*, 41, 634-59.
- Norris, F.H., Friedman, M.J., Watson, P.J., Byrne, C.M., Diaz, E., Kaniasty, K. (2002). 60,000 disaster victims speak: Part I. An empirical review of the empirical literature, 1981-2001. *Psychiatry.*, 65, 207-39.
- Pynoos, R.S., Goenjian, A., Tashjian, M., Karakashian, M., Manjikian, R., Manoukian, G., Steinberg, A.M., Fairbanks, L.A. (1993). Post-traumatic stress reactions in children after the 1988 Armenian earthquake. *Br. J. Psychiatry.*, 163, 239-47.
- Reijneveld, S.A., Crone, M.R., Verhulst, F.C., & Verloove-Vanhorick, S.P. (2003). The effect of a severe disaster on the mental health of adolescents: a controlled study. *Lancet.*, 362, 691-6.
- Shannon, M.P., Lonigan, C.J., Finch, A.J., Jr., Taylor, C.M. (1994). Children exposed to disaster: I. Epidemiology of post-traumatic symptoms and symptom profiles. *J. Am. Acad. Child Adolesc. Psychiatry.*, 33, 80-93.

- Steinberg, A.M., Brymer, M.J., Decker, K.B., Pynoos, R.S. (2004). The University of California at Los Angeles Post-traumatic Stress Disorder Reaction Index. *Curr. Psychiatry Rep.*, 6, 96-100.
- Yelland, C., Robinson, P., Lock, C., La Greca, A.M., Kokegei, B., Ridgway, V., Lai, B. Bushfire impact on youth. *J. Trauma. Stress.*, 23, 274-7.
- Yelland, C., Robinson, P., Lock, C., La Greca, A.M., Kokegei, B., Ridgway, V., Lai, B. (2010). Bushfire impact on youth. *J. Trauma. Stress*, 23, 274-7.

© 2011 Kolaitis et al.; This is an Open Access article distributed under the terms of the Creative Commons Attribution License (<http://creativecommons.org/licenses/by/3.0>), which permits unrestricted use, distribution, and reproduction in any medium, provided the original work is properly cited.