CHAPTER

9

The Experience of the Athens Earthquake

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INTRODUCTION

Earthquakes constitute a rather frequent type of natural disaster in Greece, a country that occupies the sixth position in the worldwide rank of seismic activity. The earthquake which struck the Athens Metropolitan Area (AMA) on September 7, 1999 had a magnitude of 5.9 on the Richter scale and it was the second strongest over the last 20 years. Actually, because its epicenter was close to the surface, in certain residential areas, it caused large material and considerable human casualties. The main earthquake was followed by many aftershocks of a smaller magnitude that lasted for about a couple of weeks. The death toll rose to 152; in addition, more than 25,000 individuals were evacuated, mainly to tents close to their place of residence, and a few more thousands moved permanently elsewhere. Although much stronger earthquakes had hit Greece in the past [1,2], the fact that almost a third of the total population of the whole country resides in the capital city of Athens increases many fold the probability for any bio-psycho-social and material consequences caused by a seismic event of such a magnitude [3].

A strong earthquake was not expected in Athens at that time, because this area is considered to be less seismogenic than other regions of the country. Consequently, the central government was not prepared for such a catastrophic event. Needless to say, the population of the capital was far less prepared than the authorities. Fortunately, because the earthquake struck at the periphery of the AMA, heavy damage was limited to relatively sparsely populated residential areas, which border one of the industrial

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zones of the capital. Thus, governmental rescue actions were fairly quickly and sufficiently implemented. Specialized rescue squads, firemen, military forces, emergency medical aid, and volunteers tried to provide support to the victims on the spot. Rescue work on the debris lasted for a couple of weeks.

IMPACT PHASE AND EARLY ACTIONS

During the first days following the 1999 earthquake in AMA, the prevailing feeling, mostly recorded through the mass media, was that the affected population had an increased need for psychological support. This need for psychological first aid, as well as for information dissemination, seemed to be multiplied many fold and to pertain also to people who were not directly affected by the catastrophic earthquake. This should be attributed to the overwhelming television coverage of the disaster, that has brought this devastating experience to the attention of practically everyone, leading to an increase in numbers of potentially traumatized individuals through close identification with the victims.

To meet these needs, most of the psychological support agencies of the public or other sectors rushed to the more heavily affected areas within the first 3 days. The special service for psychological support of earthquake victims of the Department of Psychiatry of the University of Athens was mobilized. Members of this service formed three psychosocial support units, two of them posted at the periphery of the AMA (within the most severely affected regions) and one centrally located in Eginition Hospital (main facility of the Department of Psychiatry in the downtown Athens area). Also, a telephone helpline unit started operating. These three units were staffed with psychiatrists, psychologists, and social workers who volunteered to provide their services to the victims [3].

Primary aims of these units were to provide pertinent information, relief from the traumatic experience and/or crisis intervention to the victims upon their request. The goal of intervention was not simply the prevention of post-traumatic stress disorder (PTSD), but also the management of acute stress reactions, grief, depression, and a host of other maladaptive psychological and behavioral responses according to the individual needs of the victims. Psychological care included mainly listening to the victims while they were referring to their personal experiences and ventilating their emotional overcharge, in addition to prescription of anxiolytic and/or antidepressant medication whenever needed. Also, particular emphasis was given to fostering resilience by providing coping skills training at an elementary level and education about the expected stress response, traumatic reminders and normal versus abnormal functioning. Anxiety

reduction techniques to decrease physiological arousal were applied when feasible.

EARLY POST-IMPACT STRESS REACTIONS

During the 6 weeks of operation of the three psychological support units, 166 individuals sought help from those units, and 66 more had a telephone contact with our staff. The mean interval between the catastrophic event and the time of each subject's assessment was 8.2 ± 4.4 days (range: 3–22 days). The mean age of the subjects was 41.4 ± 14.9 years (range: 12–87). For the majority they were married women with children (males/females: 22% vs. 78%; married: 68%). 90% of the interviewees' houses had suffered repairable damages and 10% had been seriously damaged to the extent that they should be eventually rebuilt. In any event, at the time of the interview, all subjects were identified as evacuees temporarily settled in tents. The main reasons for seeking help were an intense apprehension of another impending earthquake (48.4%), diffuse anxiety (16.4%), and somatization of anxiety (15.6%).

In addition to properly addressing the aforementioned presenting complaints, 102 subjects were fully investigated through a checklist of sociodemographic variables and a semi-structured psychiatric interview focusing on the detection of acute stress reaction (ASR) and PTSD. This interview was devised according to the ICD-10 Research Diagnostic Criteria and consisted of 35 items pertaining to the ASR diagnosis and 10 items pertaining to the PTSD diagnosis. Items were ascertained dichotomously as either present or absent. More specifically, the 35 items assessing ASR were grouped into the eight symptom clusters described in the ICD-10 (i.e., autonomic arousal symptoms, symptoms involving chest and abdomen, symptoms involving mental state, general physical symptoms, symptoms of tension, dissociative symptoms, other "psychic" symptoms, and other non-specific symptoms of stress response), while the 10 items referring to PTSD assessed the presence of symptoms of persistent "reliving" of the stressor, symptoms of avoidance, selective inability to recall some aspects of the stressful event, and persistent symptoms of increased psychological sensitivity and arousal.

Acute Stress Reaction

In our sample of help-seekers, the majority of subjects (85%) fulfilled ICD-10 criteria for ASR within the first 48 hours following the earthquake. Even the remaining 15% had some symptoms of acute stress, particularly symptoms

of autonomic hyperarousal, but they did not meet the criteria for a formal diagnosis of ASR. Among those who received a diagnosis of ASR, the most frequently encountered symptoms were "non-specific symptoms of stress response", i.e. exaggerated startle response, difficulty getting to sleep because of worrying and difficulty in concentrating, and symptoms of autonomic hyperarousal. These symptoms essentially constitute an immediate, potentially transient reaction to any traumatic experience and considerably overlap with the normally expected emotional and behavioral response to stress. It is noteworthy that symptoms of dissociation, which according to DSM-IV, but not the ICD-10, are purportedly cardinal symptoms of acute stress disorder, were rather scarcely reported by the interviewees. This observation raises an essential diagnostic issue regarding the prerequisites for the DSM-IV diagnosis of acute stress disorder.

In contrast to the findings of some previous studies, no significant differences were detected between those who developed ASR and those who did not, regarding most variables that have been reported to predict poor post-disaster adjustment [3–6]. Thus, no statistically significant age and gender difference was found in terms of the presence either of the diagnosis of ASR, or of the individual ASR symptoms. The same holds true for a series of sociodemographic variables, several factors related to the recent earthquake, and the pre-existence of a mental disorder. This lack of significant effects of various sociodemographic factors for the occurrence of ASR should be presumably attributed to the nature of the sample of this study, i.e. the fact that our subjects were help-seekers while those studied by other investigators were not.

The only statistically significant difference between the ASR group and the non-ASR group pertained to previous exposure to a similar stressful catastrophic event (81% in the ASR group vs. 50% in the non-ASR group, $p<0.05$). This is in agreement with the findings of some other studies (7,8) and a recent large-scale epidemiological survey (9), which show that cumulative stress and previous exposure to stressful life events, rather than any single recent traumatic experience alone, are the significant risk factors for the development of post-traumatic syndromes.

Early Post-Traumatic Stress Disorder

Applying the ICD-10 criteria for PTSD, which set a 48-hour period as the lower time limit for the diagnosis of PTSD instead of the 1-month period required by the DSM-IV, we also assessed help-seekers for the presence of early PTSD symptoms, i.e. within the first month following the earthquake. Among addressees to our psychosocial support units, 43% were found to meet the ICD-10 criteria for PTSD; a highly significant association was

observed between the occurrence of ASR and the development of early PTSD. Thus, within the group of help-seekers that developed early PTSD, almost everyone had been initially recorded as having suffered ASR, while this was not the case for individuals who did not eventually develop PTSD. A similar finding has been previously reported in several studies, demonstrating that the short-term reaction to stressful events is highly predictive of the occurrence of PTSD in the long run [10–13]. In our sample, one out of four individuals who did not develop early PTSD had not initially presented an acute stress reaction. Consequently, it is of paramount importance to identify, among victims who show signs of intense distress in the early aftermath of a disaster, those who are more likely to remain symptomatic.

Furthermore, we observed that self-reports of accelerated heart rate and feelings of derealization during the acute post-disaster phase, i.e. the first 48 hours following the earthquake, had a specific predictive value for the development of PTSD. This observation corroborates the findings that occurrence of dissociative symptoms [14–17] and increased autonomic responses [18,19] shortly after exposure to psychic trauma are associated with the subsequent development of PTSD. As a matter of fact, these particular symptoms of stress had been the main focus of attention and treatment by our mental health professionals who handled the psychological problems of the victims.

Longitudinal follow-up assessments are deemed necessary for monitoring the course of stress-related disorders. Unfortunately, in our study, this was hard to achieve, given the time-limited operation of our psychological support services and the difficulty in contacting the victims for follow-up visits.

CONCLUSIONS

Large-scale disasters have affected and even devastated communities of the Aegean region in the past and certainly will do so in the future. These are unpredictable events, which leave us powerless in preventing or controlling them. However, organizing and implementing pertinent pre- and post-disaster interventions can mitigate their impact on the individual and society at large. They present a challenge to mental health professionals, who should adequately prepare to assist the traumatized population in multiple ways. Although a considerable body of experience has been accumulated, many more issues should be also addressed, such as the identification of post-disaster psychological needs and priorities. Along these lines, defining the psychological profile of the victims is expected to be helpful in the early detection of ASR and the assessment of its severity

by care providers, which may facilitate adequate case management, a prerequisite for the prevention of the more disabling chronic stress-related disorders, such as PTSD. Therefore, the recognition of highly symptomatic individuals – presenting in particular with "non-specific symptoms of stress response" and "symptoms of autonomic hyperarousal" – with a history of previous traumatic experiences might serve as a sensitive predictor in order to take appropriate actions both for prevention and intervention.

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