

1999 Marmara Earthquakes: A Review of Epidemiologic Findings and Community Mental Health Policies

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SUMMARY

Disasters are one of the most important priorities of community mental health. The Marmara earthquakes of August 17 and November 12, 1999 strongly demonstrated the negative impacts of disaster trauma. Despite some methodological differences, studies clearly indicate that mental health problems related to earthquakes in Turkey are very prevalent and long lasting. Post Traumatic Stress Disorder (PTSD) and Major Depression (MD) are the most prevalent disorders in population-based and at-risk group studies. In various population-based studies, the PTSD prevalence ranged between 8% and 63% and the prevalence of MD was between 11% and 42%. On the other hand, PTSD prevalence was 2.7%-8.5% and MD was 1%- 4.5% for at-risk populations, such as health professionals and rescue workers. These high rates show the importance and necessity of outreach practices. Additionally, the general population and some organizations and professionals have different requirements ranging from training to psychological support and treatment. These studies highlight the development of mental health services and policies. Turkey is situated in a disaster zone; thus, such knowledge could help prepare the nation's population and national policy for future disasters. In this review, first, mental health effects of disasters and some epidemiological findings of the Marmara earthquakes are discussed in light of the literature, and then mental health approaches and policies for disasters are briefly evaluated

Key Words: Marmara earthquake, psychological trauma, epidemiology, community mental health policies

INTRODUCTION

In terms of public health, disasters could be described as abnormal conditions. The common feature of these conditions is an acute and unforeseeable imbalance among the needs of people affected by a disaster and medical response capacity and resources. (Saçaklıoğlu and Sarıkaya, 2002). Disasters can be placed in three categories: i. Natural disasters; ii. Technological accidents; iii. Disasters deliberately created by human. It has been suggested that disasters created by people have the greatest negative affect on mental health. On the other hand, natural disasters have at least the same effect in terms of size, especially in some regions as well (Vatansever et al., 2002; North, 2003). Thus, it is not easy to accept the type of the disaster as the only leading factor of its influence on human beings. Many factors, such as the foreseeability of the disaster, the characteristics of the population affected by disaster, the size of the area affected, the magnitude of destruction, and the characteristics of the individuals, including the life events they encounter and their psychological development, determine the negative effect of a disaster (North, 1999; North, 2001; North, 2003; Tanrıdağı et al., 2005).

Worldwide, the number of disasters has increased three-fold within the last 40 years, causing the death of 3 million people and affecting 800 million others. Earthquakes have the greatest destructive effect among all natural disasters. They caused

more than one million deaths within the last 20 years. More than 80% of the deaths occurred in only 8 countries (China, Japan, Italy, Iran, Peru, Former Soviet Unions, Chile, and Pakistan). Irregular urbanization and increasing populations of cities play an important role in these dire consequences. Leading factors creating these conditions are underdevelopment and poverty. In light of this information, it is difficult to say that disasters affect human populations randomly. Research findings point out that mostly poor people are affected (Vatansever et al., 2002; North, 2003). The largest proportion of abnormal conditions is seen in Asia and Africa, which are among the poorest regions of the world. Ninety-six percent of deaths due to natural disasters are seen in 2/3 of the poorest regions of the world. While the death toll in developed countries for each disaster is 500, this number rises to 3000 in underdeveloped countries (Saçaklıoğlu and Sarıkaya, 2002; Vatansever et al., 2002). Data regarding earthquakes in Turkey, Iran and Pakistan, and earthquake and tsunami disasters in South Asia show that they caused significant destruction, which confirms these findings. In particular, the magnitude of the demolition in South Asia reflects that disasters are global problems affecting the entire world.

The risk of abnormal conditions due to disaster in Turkey increases continuously. The disasters Turkey experienced in 1999 are an indicator of this fact. Geographically, 92% of Turkey exists in an earthquake zone, as well as 95% of the population and 75% of industrial investments (Yavuz, 2004). Prior to the 1999 earthquakes, Turkey's Marmara Region was susceptible to disasters because of features like irregular urbanization, uncontrolled industrialization, and poverty. Before the 1999 earthquakes, the richest 10% of the Turkish population earned 48.52% of the total income, while the poorest 10% earned only 1.68% and 140,000 people were unemployed. Together with these poverty criteria, the increased settlement rate over fault systems and uncontrolled industrialization were factors that turned the 1999 earthquakes into disasters. These defining features of the susceptibility to disaster also contributed to the continuation of the negative effects after the disaster (Kasapoğlu and Ecevit, 2003; Yavuz, 2004).

DISASTERS AND PUBLIC MENTAL HEALTH

Psychiatric problems caused by natural disasters are important priorities regarding public mental health. Post-traumatic Stress Disorder (PTSD) and

Major Depression (MD) are the most commonly encountered disaster-related problems. Psychological problems caused by earthquakes are more frequently seen in developing countries, parallel to the negative affects of the disasters (Karancı and Rüstemli, 1995; Goenjian, 2000; Briere, 2000; Kokai, 2004).

Mental Effects of the Disasters

The prevalence of PTSD following the earthquakes has been reported to be between 3% and 87%, depending on cultural and socio-demographic features (Başoğlu et al., 2002). Methodological differences alone cannot explain the huge range. The magnitude of destruction and number of fatalities caused by an earthquake, and the timing of the study can affect the observed prevalence of the disorders (Başoğlu et al., 2002). In particular, the differences between developed and developing countries regarding the above features are remarkable. The prevalence of PTSD in developing countries is higher compared to the prevalence of PTSD that followed the 1994 California (USA) earthquake, where the prevalence rate was 6%-13% (McMillan, 2000; Goenjian, 1994; Goenjian, 2000; Armenian et al., 2000; Armenian et al., 2002; Kokai et al., 2004; Carr et al., 1995; Lai TJ et al., 2004). The prevalence of PTSD and MD in patients who sought treatment following the Armenian earthquake of 1998 was 74% and 24%, respectively.

A cohort study found that the cumulative incidence of PTSD was 50% 2 years after the earthquake (Armenian et al., 2000; Armenian et al., 2002).

PTSD rates were reported as 10% and 24% in studies conducted at various times following the China (1976), India (1993), and Taiwan (1999) earthquakes (Cao et al., 2003; Sharan et al., 1996; Watanabe et al., 2004; Lai et al., 2004).

These data suggest an important public health problem. Inadequate preparation and lack of societal rehabilitation following these earthquakes were the major factors for the rise in the rate of psychopathology in these countries. Many factors caused by poverty and administrative problems, such as loss of family members, relatives, and friends, the length of time spent trapped in the wreckage, unemployment, economic difficulties, and loss of social networks, are aggravating factors for the development and chronicity of psychopathologies (Armenian et al., 2000; Armenian et al., 2002; Watanabe et al., 2004; Sattler et al., 2002).

Table I. Epidemiological studies in Kocaeli after August 17th.

Researcher	Site	Date	Sample group	Number of subjects	Scales	Result
Başıoğlu, Şalcıoğlu, Livanou	Gölcük tent cities and prefabricated houses	8 months later	House interviews in tent city and cities and prefabricated houses	1000	TSBÖ*	43% PTSD 22% MD
Livanou, Başoğlu, Şalcıoğlu et al	Değirmendere District Center, Gölcük tent cities and prefabricated houses	14 months later	Applications for treatment and counseling	1027	TSBÖ*	63% PTSD 42% MD
Başıoğlu, Kılıç, Şalcıoğlu and Livanou	Değirmendere and Avcılar	14 months later	Randomly chosen sample group	530	TSBÖ*	23% PTSD 16% PTSD + MD
Tural, Coşkun, Önder et al.	Izmit tent city	18 months later	Randomly chosen sample group	910	TSBB-T**	25% PTSD
Şalcıoğlu, Başoğlu and Livanou	Gölcük prefabricated houses	20 months later	House interviews in prefabricated houses	586	TSBÖ*	39% PTSD 18% MD
Önder, Tural, Aker et al.	Izmit City Center	36 months later	Categorized graded randomly chosen sample group representing city center	683	CIDI***	11% PTSD 10.5% MD 4.4% PTSD + MD
Aker, Acicbe, Sorgun et al.	TÜPRAŞ	36 months later	Randomly chosen sample group representing refinery workers	422	TSBÖ*	7.6% PTSD 4.4% MD
Acicbe, Aker, Özten et al.	Kocaeli University Hospital of Faculty of Medicine	36 months later	All workers of the institution except doctors	413	TSBÖ*	2.7% PTSD 1% MD
Duruduygu, Aker and Acicbe	Izmit Metropolitan Municipality Fire Brigade Department	36 months later	All workers	71	TSBÖ*	5% PTSD No MD found

* TSBÖ: Traumatic Stress Symptom Scale-Travmatik Stres Belirti Ölçeği (Başıoğlu et al., 2001).

** TSSB-T: Post Traumatic Stress Syndrome Screening Test-Travma Sonrası Stres Bozukluğu Tarama Testi (Tural et al., 2004b).

*** CIDI: Composite International diagnostic Interview (Kılıç and Göğüş, 1997).

17 AUGUST 1999 AND MENTAL TRAUMA IN TURKEY

The earthquake of August 17, 1999, which killed 17,000 people, injured 24,000, and damaged 130,000 houses was among the worst disasters Turkey has ever experienced (State Planning Organization of Turkey, 1999). This disaster actually has been a serious warning about the fact that Turkey is located on a natural and unnatural disaster zone. The earthquake

not only affected public mental health, but also the limits of professional responsibility of mental health professionals have been reshaped as a result. Of all the psychological trauma studies published in Turkey between 1970 and 2003, 25% are related to earthquakes; following the 1999 earthquake, the number of psychological trauma studies has doubled (Aker et al., 2004c).

Two important studies prior to the Marmara

earthquake were conducted following the Erzincan (1992) and Adana (1998) earthquakes. Karancı and Rüstemli (1995) conducted a study that included 461 persons from Erzincan and 129 persons from Ankara. The phobic anxiety levels of the subjects from Erzincan were higher than those in Ankara. Similarly, higher anxiety rates were found among the Erzincan subjects 16 months after the initiation of the study. The prospective generation study that began after the 1998 Ceyhan earthquake is currently in its fifth year. The study was initiated with 163 subjects and 63 subjects were interviewed in the fifth year. The prevalence of PTSD was 15.6% in the second year and 17.9% in the fifth year of the study. The rise in the fifth year is thought to have been due to the effect of the Marmara earthquake (Uğuz and Seydioğlu, 2003; Uğuz, 2004).

In addition to studies in the Kocaeli area, there are also important epidemiological studies that were conducted in cities such as Düzce, Bolu, and Istanbul; all after August 17, 1999. Successive studies have been done in Değirmendere, Avcılar, Bolu, Düzce, and Ankara in the first, second, and fourth year following the earthquake. They included 526 individuals who were living in Ankara when studied, but were in the Marmara region during the earthquake, and 2437 individuals chosen through randomized sampling of family members who are currently living in Değirmendere, Avcılar, Bolu, and Düzce. Probable PTSD prevalence rates were 17% for Bolu, 22% for Değirmendere, 26% for Ankara, and 37% for Düzce. Probable MD rates for these 4 regions were 12%, 15%, 11%, and 28%, respectively (Kılıç and Ulusoy, 2003).

Extensive screening and treatment studies were conducted in the Avcılar region of Istanbul after the 1999 earthquake; PTSD evaluations were conducted for 9442 persons within the first 3 months of the earthquake, 15,453 persons between 6 and 8 months, 15,597 persons between 18 and 20 Months, and 1800 people between 29 and 30 months. The PTSD prevalence rates found in these 4 screening studies were 38.8%, 23.4%, 8.1%, and 7.8%, respectively. (Karamustafalıoğlu, 2004).

Earthquake-Related Psychological Problems in Kocaeli Region

Community Based Studies

The earthquakes on August 17 and November 12, 1999 seriously affected many cities of the Marmara region, and especially Kocaeli. Kocaeli

is an important industrial city. Industrialization creates urbanization and environmental pollution problems. Due to its economic power, Kocaeli is a major target of migration. Earthquake added to the problems created by irregular urbanization and caused new problems.

Following the earthquake, epidemiological studies were conducted concurrently with the reurbanization processes. First, studies were conducted in tent cities and prefabricated homes. The prevalence studies conducted during the first 2 years after the earthquake in tent cities, prefabricated homes, and district centers found the rate of PTSD to be 23% and 43%, respectively, and the rate of MD to be 16% and 31%, respectively (Başoglu et al., 2002; Başoglu et al., 2004; Şalçioğlu et al., 2003; Tural et al., 2004a).

A study with a sample group consisting of 683 persons representing İzmit City Center was conducted 3 years after the earthquake. The study aimed to determine the prevalence of PTSD and other psychiatric disorders. A constructed diagnostic interview method called CIDI was used for the first time in this study together with other psychopathological tests in face-to-face interviews. The 3-year prevalence of PTSD and MD was 19.2% and 18.7%, respectively, and the prevalence during months when the study was conducted was 11.7% and 10.5%, respectively. The coexistence rate of PTSD and MD was 4.4%, and it is important to note that the treatment of PTSD becomes more difficult in patients with coexistent MD (Tural et al., 2004b).

Treatment Applications

In addition to field studies, the prevalence of PTSD and MD was found to be 63% and 42%, respectively, in 1027 individuals who applied to the centers or offices in district centers, tent cities, and prefabricated houses for treatment or advice, on average, 14 months after the earthquake (Livanou et al., 2002).

PTSD Indicators

Various risk factors have also been determined in these studies. The most significant risk factors identified were, female gender, a history of psychiatric and physical diseases, family history of psychiatric disease, previous traumatic experiences, unmarried or living alone, loss of resources, objective and subjective magnitude of the earth-

quake, loss of relatives, low educational level, old age, and participation in search and rescue efforts (Başoğlu et al., 2002; Başoğlu et al., 2004; Şalcıoğlu et al., 2003; Tural et al., 2004b; Kılıç and Ulusoy, 2003).

The Studies Conducted on High-Risk Populations

Institutions

Studies of high-risk groups that were conducted following the disasters are as important as community-based field studies. Another feature of the earthquake on August 17 was its effect on industrial plants in the region. TÜPRAŞ refinery was the plant most affected by the earthquake. The refinery lost 17 of its workers as a result of the earthquake. These losses occurred outside of the refinery. The fire that started after the 115 m tall chimney fell over the 500-degree ovens and spread to other parts of the plant was extinguished after burning for 4 days, following long and exhausting efforts.

Six storage tanks caught fire and fuel and stationary warehouses burned down as well. The first damage estimation of TÜPRAŞ was 115 million US dollars. The refinery re-started production at 50% capacity 3 months after the earthquake, and reached full capacity after 1 year. It has been reported that work-related accidents in TÜPRAŞ significantly increased following the earthquake (TÜPRAŞ Annual Report, 2000).

A project aiming to provide continuous workplace-centered psychological support for the psychological problems of TÜPRAŞ workers and their families caused by traumatic experiences such as earthquake, fires, work-related and traffic accidents, and death of relatives has been implemented. A cross-sectional study using self-report scales conducted with a sample group of 422 TÜPRAŞ workers found that 7.6% had PTSD and 4.4% had MD. The risk factors for the workers were as follows: Being female, widowed or divorced or living alone, history of psychological disorders, family history of psychological disorders, and lack of social support.

Among the sample group, 38 individuals were involved in work-related accidents. Individuals involved in work-related accidents experienced more accidents, in terms of frequency and type, sought more treatment support, experienced more

severe anxiety, and had higher levels of functional loss. The psychological support unit established at the refinery facilitated the help seeking behaviors of the workers. The rate of help seekers increased to 32.7% with the opening of the unit, which was previously 11.6% (Aker et al., 2003).

Health Professionals

Hospital Workers

Health workers could become exposed to disasters that are the result of human error, technology, or nature. The dimensions of the psychological trauma have been altered by their own experience of trauma and by their efforts to help those affected by trauma. While some took part voluntarily in help efforts, others joined because of their professions.

The mental status and productivity of health professionals are influenced by factors such as inadequate preparation for disaster, not knowing what to do nor when or where to do it, being personally affected by disaster, a history of negative psychological trauma experiences, an inability to cope with the disaster, and lack of support systems. Excessive work load, unclear work definition, conflicting tasks, inability to quit, not participating in the decision-making processes, lack of belief in the necessity of the work, unclear future, lack of work satisfaction, worries about profession, to be affected mentally, social variables, and lack of support are difficult issues for doctors and other health workers (Yavuz, 2004; Freedy et al., 1992; Carr et al., 1995; Aker, 2000).

Three years after the 1999 earthquake, a program was initiated in Kocaeli University Faculty of Medicine (KOÜTF) to determine the psychological problems of health workers due to disasters and other traumatic events, and to provide them with treatment. A study that included 413 individuals observed a PTSD rate of 2.7% and an MD rate of 1%. However, a comparison of workers, health professionals, and aid personnel found that rate of PTSD in health professionals was the highest. The higher rates of trauma experience, history of mental disease, smoking, alcohol and substance use, family history of mental disease, objective magnitude of earthquake, loss of resources, being female, and being exposed in childhood to man-made traumas were factors that increased the rate of PTSD in hospital workers significantly (Acicbe et al., 2003).

Emergency Help Service Workers

Emergency Help Workers who are expected to serve within the first 24 h of a disaster is an important risk group. A study that included 92 health workers from the Kocaeli Emergency Help Service was conducted to determine the levels of personal preparedness for a probable disaster and to measure the prevalence of psychological problems. The factors that enable individuals to work efficaciously were no loss of relatives and knowing that the workers themselves and their relatives were safe and secure. Unclear definitions of work and responsibilities are the major sources of concern in disaster situations. Workers experience traumatic stress symptoms, such as reorganization of life, escaping-blunting, and hyperexcitation at a rate of 10%-29%, and 9% of the individuals require psychological therapy. However, when psychological problems did arise, most of the help was provided by relatives (Çakmak et al., 2004).

Rescue Teams and Fire Brigade Workers

Dealing with dead and injured people and with the images and smells of dead bodies, to be frequently exposed to life-threatening situations, and to work in bad physical conditions with relatively insufficient equipment puts the mental health of fire brigade workers in jeopardy (Al-Naser and Everly, 1999; Bryant et al., 1995; Wagner et al., 1998). A support program designed for the fire brigade workers in the City of Izmit found a 8.5% prevalence rate of PTSD, but no major depression among those workers. Encountering different types of trauma increases the symptoms of PTSD in fire workers. Individuals with a mental disease history and with overt anxiety due to past traumas have increased risk. However, people with higher levels of education, self or family history of mental disorders, overt anxiety, and impaired functionality more often requested help (Duruduygu et al., 2003).

A summary of community-based and epidemiological studies conducted with at risk populations is shown in Table 1.

Epidemiological Data Results in the Kocaeli Region After the Earthquake and Suggestions Regarding Mental Health Services

Both community-based and high-risk group studies following the earthquake provided a picture of the structure of health services

after the earthquake. Results and suggestions regarding this matter are as follows:

1. Even many years after the earthquake, syndromes caused by trauma, mainly MD and PTSD, remain a common public health problem.

2. The coexistence of MD and PTSD makes treatment more difficult. Therefore, concentration should be given to these 2 diseases in screening and service programs.

3. By providing mental health services after disasters, usual psychiatry treatment should be replaced with community based or on field studies.

4. Work-place-centered models are facilitating mental status screening and help seeking behavior.

5. Even though at a lower rate than the general population, disasters also cause traumatic stress symptoms, disturbances, and functional losses in hospital workers, particularly in health professionals.

6. Hospital workers, especially health professionals, might be considered as a special group, taking many traumatic events they encounter into consideration⁷. The preparedness of health professionals to disasters and the security of the work place will positively affect the quality of their service and mental status.

8. Fire workers, considered another special group, should be taken into account of psychosocial support since they are exposed to traumas and also must help traumatized people.

9. Studies designed for the screening of psychological problems in at risk groups must be supported by psychological support programs.

DISASTER AND MENTAL HEALTH SERVICES

In light of the presented information and suggestions limited to conditions in the Marmara region following the earthquake, the planning of mental health services and the revision of the discussions regarding practical studies seem to be important in terms of public mental health policies.

Continuity of Services

Disasters are dynamic concepts and responding to a disaster requires very dynamic approaches. To limit the effects of a disaster to a short time span

like before and just after the disaster, will prevent us from producing adequate policies. Health policies must be designed to be long-lasting for many years following a disaster. Thus, it is clear that different approaches and practices regarding the concept of priority-based ranking (triage) are needed.

Priority-based ranking refers to the categorization of patients when the number of patients exceeds the limits of local health services capacity. Patient care priority decisions are based upon which health institutions they will be deployed to, the localization of the disaster, and transport criteria among hospitals and hospital units. The priority-based ranking process should be simple and should also have the capacity to be used by individuals who are not health workers, but have basic information. The application sources should be standard as well, should be designed beforehand, and tested and revised frequently, making necessary changes. All doctors in the region should be familiar with it, but its deployment should be conducted by responsible officials. One of the most important conditions is that it should be applied continuously to all people affected by the disaster (Durak and Vatansever, 2002). All these features emphasize the importance of priority-based ranking and provide guidance for the provision and construction of mental health services.

Mental Health Policies After The Disaster

Every disaster has its own unique conditions and the information and experiences obtained will provide guidance for future disasters. Thus, the recording of data, planning, research, and producing will be among the most helpful tools for future disasters.

The importance of protective approaches against disasters is undeniable. We can summarize these protective approaches in 3 categories; primary, secondary, and tertiary protection. Like all other public health approaches, priority is on primary protection and aims to prevent a particular factor (disaster) from affecting people. Mental health professionals must work at every stage in greater collaboration than ever with related units and sectors. Furthermore, mental health professionals will play an important role in the preparation of the public, but especially health and emergency help workers, rescue teams, and workers of the various institutions that respond to disasters. The preparation stage is the most important stage

of the health administration of abnormal conditions. It includes all activities aiming to prepare the public to disasters. Organization, legal arrangements, preparation of plans to prevent the negative consequences of disasters, training, monitoring, and evaluation should be carried out at this stage (Yavuz, 2004). Mental health professionals can intervene in many occasions at this stage. To be prepared and to predict the effects of disaster are mentally protective factors (Başoglu et al., 1997; Norwood et al., 2000).

Mental health treatment services are more likely to be used during and after the secondary protection stage. At this period, people have already encountered the disaster and what is important at this stage is to prevent problems and diseases from becoming chronic. However, since most people who experience a disaster are not psychologically ill, known psychiatric practices are becoming rather insufficient and unnecessary (North, 2003). Therefore, a multiple treatment approach is required at this stage.

To begin and continue collaboration among institutions will have a very important function. One of the most important functions of secondary protection is the screening of high-risk groups and the determination of which individuals are at risk of a possible problem or disease (Aker et al., 2004a). This way it will be possible to decide “care and deployment” priorities more accurately and efficiently. The support of screening programs with treatment, or at least with activities like psychological education and support, is an ethical must. These practices should be administered in collaboration with the primary stage and the health professionals working in this stage should be supported in terms of education and mental status. The coordination of the education program prepared for the primary stage will be much more useful, at least in affected regions (Aker et al., 2004b). The education should not be limited to health professionals and should be generalized for officials, teachers, and rescue teams who will have important functions in disaster situations.

The aim of secondary protection is to prevent diseases from arising and if they do arise, to treat them as soon as possible. In other words, these are “early stage or preventative” approaches. PTSD and MD are most important among these diseases. Since co-morbidity could affect the process negatively, the evaluation of psychological trauma

should not be limited to PTSD. Loss of functionality, anxiety due to problems, and help seeking behavior are areas that require special care.

The frequency of help seeking behaviors might not be related to the severity of ability loss and psychopathology (Aksoy and Kılıç, 2001). For this reason, planned field studies are especially important in the secondary protection stage. Informative programs with service features, which will facilitate obtaining treatment, should be emphasized. Services after disasters should not only be provided to sick people, but also to people suffering from certain symptoms who have the risk of becoming chronic. Treatment methods with proven efficacy and easy administration features should be preferred. Furthermore, since an increase in the number of general medical conditions, especially cardiovascular system diseases, is highly probable after a disaster, the examination of individuals in terms of all medical requirements would be appropriate (Durak and Vatansever, 2002).

Although early interventions during the secondary protection stage are important, it should be kept in mind that the problems of patients can become chronic at a certain rate and thus, mental health services should be provided permanently. For individuals with chronic diseases and ability losses despite the permanence of health services,

the tertiary protection stage will be put into use (North, 2003). The provision of rehabilitation services in the tertiary protection stage is as important as field studies. Treatment guidelines, which are prepared to include the secondary and tertiary protection stages will have important contributions to both the administration of services and the planning of policies, as well as to the discussion of existing policies.

While determining whether or not a psychological problem exists following a disaster, one should not be restricted by dilemmas like normal response-pathologic response, psychologist-psychiatrist, or state-civil community organizations. Therefore, the appropriate and efficient use of education with a flexible and continuously improving understanding, with different approaches ranging from support and sharing to treatment is important.

By not restricting services solely based on disease models and by emphasizing preventative medicine, one should concentrate more on community-based disaster psychiatry. In addition, common sense regarding problems like decreased quality of health services, in terms of quality and quantity after a disaster, serious economic difficulties in disaster zones, and the shortcomings of current health policies should be taken into consideration for future policy planning.

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