REVIEW

Mental Health and Psychosocial Support after the Great East Japan Earthquake

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(Received for publication on December 14, 2011)
(Accepted for publication on January 10, 2012)

Since the Great East Japan Earthquake, Keio University School of Medicine has, at the request of the Tokyo Metropolitan Government, provided mental health and psychosocial support to those living in Soma City in Fukushima Prefecture. This report covers the types of support provided in Soma City and discusses previous studies that were used as the model for current support practice and the results gained from actual performance. Also included is a summary of the objectives that were or were not achieved for medical support compared with recommendations from previous studies. Furthermore, future directions for medical support are also discussed. (Keio J Med 61 (1) : 15–22, March 2012)

***Keywords*: mental health, disaster medicine, earthquakes, tsunamis, psychiatry**

Introduction

The most significant event of 2011 was, without any doubt, the Great East Japan Earthquake of March 11. There is no disagreement with the fact that it caused unprecedented damage. News reports about the earthquake have become somewhat more moderate in tone now, but there are still news items that can shock us. Fukushima Prefecture not only suffered from the tsunami caused by the earthquake but also from damage to its nuclear power plant that resulted in radiation leaks and the contamination of agricultural products. These multiple problems place Fukushima on a different level from other regions in terms of suffering. Unfortunately, harmful rumors have continued to spread. Japan has been fighting against "invisible radiation threats" for almost 1 year, and it seems that people are exhausted by the situation but do not yet see any end to it. As a result, it would be hard to disagree with the assertion that the people of Fukushima Prefecture have suffered the worst effects of the earthquake.

Damage to the victims of the great earthquake is not only physical but can have a significant psychological component as well.[1–4] In a previous study based on a self-completed questionnaire, about 60% of the victims of the Mid-Niigata Prefecture Earthquake of 2004 answered that their mental health state was poor compared with their condition prior to the event.[5] The maximum impact on mental health is reported to occur directly after a disaster and to persist for about a week; there is usually some improvement after 1 month. However, there are many cases in which an unhealthy mental state persists even after 6 months to 1 year. The most important part of psychiatric care after a disaster is to accurately monitor the changes in the mental state of the victims and to provide appropriate cures and care for their conditions.

This report describes the types of medical support that Keio University School of Medicine offered to Soma City in Fukushima Prefecture, as well as the details of psychiatric care and the method of intervention after the disaster. This article also gives an overview of medical interventions in Soma City and the city's unusual history in relation to psychiatric care, as well as discussing the best support methods for this type of situation.

The Keio University Medical Support Team

The Department of Neuropsychiatry at Keio University School of Medicine received a request from the Tokyo Metropolitan Government to send some staff members to Soma City about 1 month (April 12, 2011) after the

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Great East Japan Earthquake. The Keio Medical Team for Mental Health and Psychosocial Support was made up of one doctor, one clinical nurse, and one clerk who were selected each week for three consecutive weeks (so a total of 9 team members participated). The three doctors participating in the support program were Professor Masaru Mimura, Dr. Hiroyuki Uchida, and Dr. Yutaka Kato, who are the corresponding and co-authors of this article.

The Team was formed to provide support after the earthquake when the Soma General Hospital established a temporary psychiatric outpatient department on March 29, 2011, and has continuously provided voluntary medical care since then. Dr. Nishikawa from Osaka Medical College was the first to participate after arriving on March 29, and other psychiatrists from all regions of Japan joined him later. They moved between the outpatient department of Soma General Hospital and various emergency shelters to provide psychiatric diagnosis, treatment, and mental care for patients and victims. Each day, two to three doctors volunteered to provide support in Soma City. After April 12, a support program also started at the local government level, and we were sent to Soma City to join the first government support group. According to the first interim report (March 11 to July 31, 2011)[6] published by the disaster countermeasures office of Soma City, the participating support groups and activity schedules of the Team were as follows: April 12 to May 10, Tokyo Metropolitan Government; April 19–27, Ibaraki Prefectural Government; May 9 to June 17, Tochigi Prefectural Government; May 17 to June 30, Yokohama City Government; May 23 to July 30, Japanese Society of Psychosomatic Medicine; May 30 to July 23, Association of Aichi Psychiatric Hospitals; May 30 to June 3, Japan Federation of Democratic Medical Institutions; June 7 to July 4, Nozoe Hospital; June 28 to July 29, Niigata Prefectural Government.

Background of Soma City

Soma City in Fukushima Prefecture is located at the north end of the area called Hamadori (coastal area) and faces the Pacific Ocean. While this city is part of Fukushima Prefecture, its cultural roots are also from the Sendai metropolitan area in the present day. It was a prosperous castle town able to produce 60,000 *koku* (approximately 10.8 million liters) of crops under the Soma-Nakamura clan in the Edo Period (1603–1867), and has been known as an honorable samurai town [it is the venue for the *Soma Nomaoi*, the famous polo-like festival of the samurai since the Heian Period (794–1185)]. Before the earthquake, the population was approximately 38,000, with the elderly accounting for 25%. Primary industry workers totaled 2500, while secondary industry workers totaled 7300, and 10,000 were employed in tertiary industries.

Soma City has a very special place in the history of psychiatric practice in Japan. It is where an unusual incident took place at the end of the 19th century, the Soma incident, which has special implications with regard to psychiatric care even now. The incident gave rise to improvements in the legislation covering mental health in Japan and also was the origin of stigma regarding mental health care. The main character in this incident was Tomotane Soma, the local lord of the Soma-Nakamura clan at that time. Tomotane enrolled at Keio University in 1871. He was about to marry the daughter of a noble family in 1876, when he suddenly claimed that the bride had been exchanged for someone else. This claim was taken by his family members as evidence of a psychotic disorder, and the family asked the Imperial Household Agency to take him into custody. He was shut in the confinement room of the family mansion for a while and then was eventually transferred to a mental hospital.

In 1883, Takekiyo Nishigori, one of the retainers of the Soma-Nakamura clan, became suspicious of Tomotane's condition and imprisonment and claimed that his imprisonment was unjustifiable and part of a plot to steal his inheritance and property. Since the diseases diagnosed by highly reputed doctors were inconsistent, the public first thought of Nishigori's act as loyal and he gradually gained a lot of sympathy. Later on, he gained support from influential people of that era, such as Shinpei Goto (head of the Home Ministry's medical bureau), Toru Hoshi (Chairperson of the Lower House), and Ruikou Kuroiwa (founder of a gossip newspaper called *Yorozu Choho*), which resulted in more public attention. In 1887, Nishigori slipped into the mental hospital of Tokyo-fu (Tokyo Prefecture) where Tomotane was confined and succeeded in rescuing him. When Tomotane died in 1892, Nishigori claimed that the cause of death was poisoning, and tried to prove his theory by exhuming the body. Eventually, Nishigori himself was arrested in 1893 for the sedition. During this period, the citizens of Soma were influenced by the gossip newspaper *Yorozu Choho*, and reports in the mass media attracted interest throughout the whole country. From that time, because it was believed that psychiatric professionals had colluded with the alleged conspiracy, not only psychiatric hospitals and related clinics but also psychiatric outpatient departments at general hospitals were not accepted inside Soma City.

Even just before the earthquake, prejudice toward those with psychiatric disorders was still deeply rooted in this area, so patients were forced to see doctors in neighboring Minami Soma City or Futabamachi, where the infrastructure was better developed, a consequence of the construction of the nearby nuclear power plant. Then the tsunami struck the Fukushima nuclear power plant, and within a few days those hospitals and clinics were shut down because they were in the exclusion zone, reducing care provision in areas where medical facilities were already scarce. The Pacific coastal region that includes Soma City, Futabamachi, and Iwaki City is now

called the "Sousou area," with the initial characters of each city's name making up the term. It is almost the size of a small prefecture and contains 200,000 people, but it lost all facilities relating to psychiatric practice once the earthquake struck.

Psychosocial Intervention in Soma City

The support program needed to provide psychiatric treatment immediately after the unprecedented earthquake disaster against the above-mentioned historical background, with Soma City being very sensitive to issues surrounding mental illness. When giving psychiatric support, we refrained from introducing ourselves as psychiatrists and assessed the psychiatric symptoms of victims (and volunteer staff from around the country) in an unobtrusive way. For patients with serious mental disorders, we needed to share information with nurses and medical teams to immediately respond to danger signals. Previous reports have shown that victims are particularly able to improve their mental state by sharing their troubles and hardships with others. A study conducted after the Mid-Niigata Prefecture Earthquake revealed that victims who "could not speak" about their troubles and hardships to others had significantly worse mental status compared with those who "could speak"[7]. Accordingly, we considered that victims would need to talk to others about their problems to improve their mental state (taking care not to be re-experiences of the disaster). Fortunately, before we arrived in the disaster area, the psychiatric team of Fukushima Medical University had commenced a support program under the direction of Professor Shinichi Niwa, and a certain level of support had already been established and had progressed step by step. At the time of introduction of medical support to a disaster area, a system with a unified direction is a very important factor because such an organization understands psychiatric treatment in normal times and can collect situational data from various medical volunteers around the country, based on which they can provide appropriate advice. For example, due to the situation at the nuclear power plant in Fukushima Prefecture, Hibarigaoka Hospital and other hospitals instantly lost their capacity of more than 840 beds. Also, these areas were designated as the prefecture's emergency evacuation areas, so these hospitals could not keep more than 5 patients for longer than 72 hours. However, thanks to the system with a unified direction, Fukushima Prefecture took appropriate actions to overcome such sudden changes. This advantage might be due to the presence of one medical university in each prefecture as a national policy.

In addition, as a common issue in disaster support, we found it difficult to provide a sense of stability to patients through continuous medical support because the medical support teams could not give long-term help due to the limitation of the schedule and staff fatigue. Soon after arriving in the disaster zone, we heard victims and their families complaining about their "day-by-day medical care" and recognized that some consideration needed to be given to changing the system despite our limited capacity. Nonetheless, the fact that the Department of Neuropsychiatry from Keio University could provide continuous medical care for at least 3 weeks was helpful. Also, other medical support teams entered the disaster zone after we left and could provide medical services in an organized fashion, so information on the length of support may have been helpful. We performed medical intervention and environmental improvement through outpatient treatment in the Public Soma General Hospital and also examined patients who were suspected to have psychiatric disorders in the emergency shelters.

We based our work on previous study results regarding psychiatric intervention at the time of disasters. Most data were accumulated around the time of the Vietnam War and attracted attention again after the 9/11 terrorist attacks in New York. Although space is limited, below we additionally describe the facts known about medical support programs associated with disaster recovery as well as the focus of our medical support program.

Mental Health and Psychosocial Support

At the time of a disaster, analyzing and understanding the immediate situation is the first priority. According to the Inter-Agency Standing Committee (IASC),[8] the actions to be taken when a disaster occurs can be summarized as analysis of the situation and a needs assessment (**Table 1**, modified from IASC[8]). First, on the assumption that several weeks or months would be needed to complete these actions, immediate assessments were performed by summarizing analysis data from several sources with different viewpoints. Then, the estimation and evaluation of the number of patients with mental disorders such as epilepsy or alcohol and other substance abuse were carried out, and information on the likely changes in these numbers after the occurrence of a disaster was assessed. Further, creating a map of the support programs was needed in order to clarify the role of medical professionals in the treatment of such mental disorders.[9] The prevalence of mental disorders varies significantly depending on the local and cultural background. For example, alcohol consumption is known commonly to increase after the occurrence of natural disasters; however, it did not increase after the Great Hanshin-Awaji Earthquake[10] of 1995. **Table 2** shows the WHO estimates of changes in prevalence of mental disorders before and after a natural disaster. Because the prevalence of severe and mild to moderate disorders after a disaster can double compared with normal times, it is necessary to treat these patients appropriately by providing the support of a psychiatric team. Detailed information on the psychological reaction patterns of patients over time has been report-

Table 1 Situation analysis and needs assessment

Carried out for several weeks or months continuously Performed in numerous areas concurrently Assessed based on cooperation and situation analysis of numerous regions	
Rapid assessment	Epilepsy
	Alcohol and other substance abuse disorders
	Intellectual disability (developmental delay/developmental disorders)
	Psychotic disorders
	Severe emotional disorders
	Other psychological complaints
	Medically unexplained symptoms
Support mapping	Who?
	Where?
	What?
	When?
Cooperation and coordination with organizations concerned	

Table 2 Effect of a disaster on mental disorders (WHO estimates of prevalence)

	Prevalence 12 months before the disaster	Prevalence 12 months after the disaster
Severe disorders (psychotic disorder/severe depression/anxiety disorder with functional disorders)	2%–3%	3%–4%
Mild/moderate disorders (mild/moderate depression and anxiety disorders)	10%	15%–20% (tends to decrease over time)
Normal stress reactions (without pathologic significance)	No estimate	High (tends to decrease over time)

ed by Norris, et al.[11] and a summary is shown in **Fig. 1**. Among the different patient groups, the resistance (blue), resilience (green), and recovery (orange) groups indicate a good prognosis for recovery. In contrast, the relapsing/remitting (red), delayed dysfunction (purple), and chronic dysfunction (gray) groups show a worse outcome and natural recovery cannot be predicted, suggesting the need for more support. As shown in **Fig. 2**, about 22% of patients were categorized into a poor prognosis group after the natural disasters, including floods, in Mexico. Also, as shown in **Fig. 3**, approximately 27% of patients were categorized into a poor prognosis group after the 9/11 terrorist attacks in New York. It is worth underlining that after both manmade and natural disasters, approximately 75% of victims recover without any medical treatment, even if they show transient reactions to the disaster. However, when we went to the Great East Japan Earthquake disaster zone, the prevalence of poor prognosis patterns was felt to be higher than those cited above. This is because we were involved in the psychiatric treatment of high-risk patients from the stricken area, although it is important to keep in mind the possibility of resilience, as suggested in previous studies.

When introducing psychiatric treatment, the elements that can lead to rejection of psychiatric intervention by victims should be borne in mind (**Table 3**, modified from Hoge, et al. [12]). The information in **Table 3** is not related to natural disasters, but shows perceived barriers to seeking mental health services among American soldiers dispatched to Iran or Afghanistan, including those diagnosed with mental disorders; however, this information might prove generally useful. As a reason for such rejection, in addition to the particular history of Soma City, we need to understand that people do not greatly trust mental health professionals, as indicated by the extremely high rate of 38% of soldiers with mental disorders who do not trust mental health professionals, as shown in **Table 3**. An epidemiological study conducted 11 years after the great Hanshin-Awaji earthquake[13] revealed that people with long-term psychological changes did not exhibit help-seeking behavior, so further consideration is necessary about the appropriate mode of psychiatric intervention.

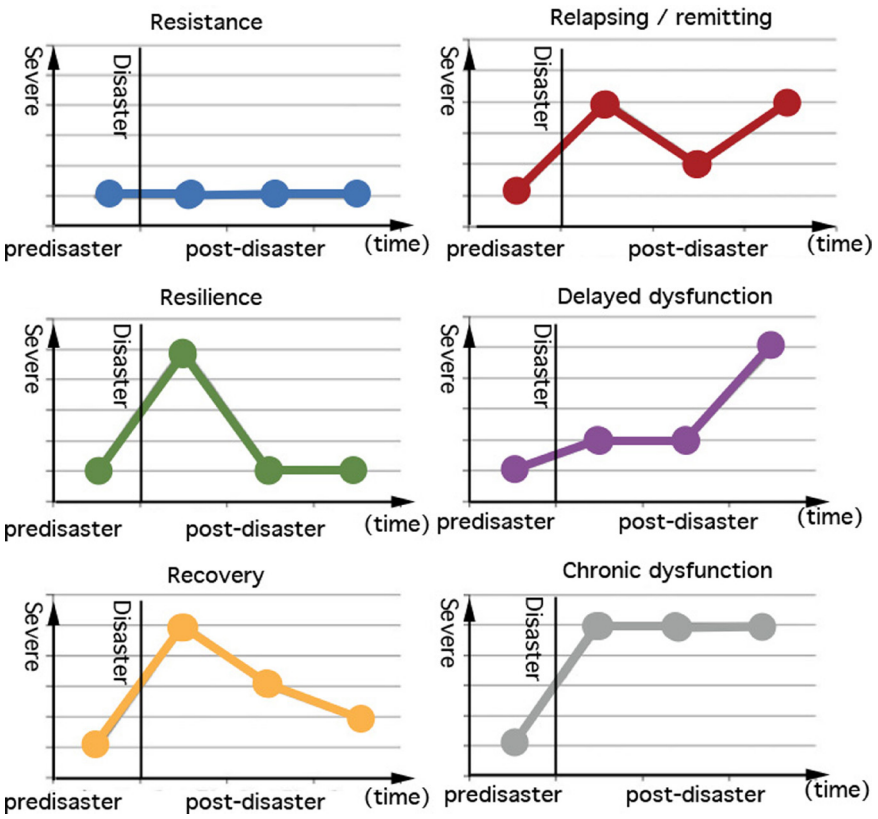

Fig. 1 Hypothesized trajectories of the course of stress responses.
(Modified from Norris, et al.[11])

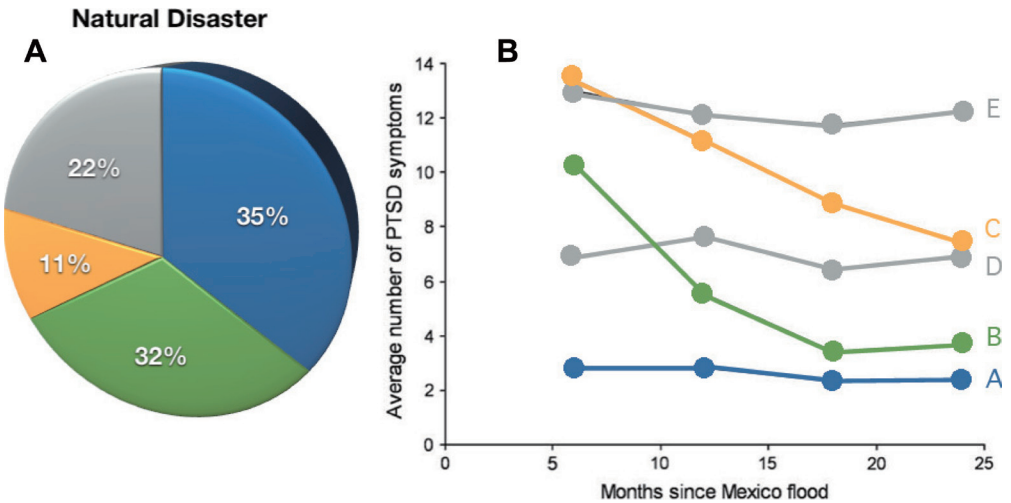

Fig. 2 Trajectories of post-traumatic stress disorder (PTSD) symptoms among residents of Villahermosa and Teziutlán in Mexico (*n* = 561) after the 1999 flood.
(A) Resistance (blue), resilience (green), and recovery (orange) indicate a good prognosis, whereas chronic dysfunction (gray) indicates a poor prognosis.
(B) A: Resistance (blue): 34.5%, B: Resilience (green): 32.0%, C: Recovery (orange): 11.4%, D&E: Chronic dysfunction (gray): 22.0%. (Modified from Norris, et al.[11])

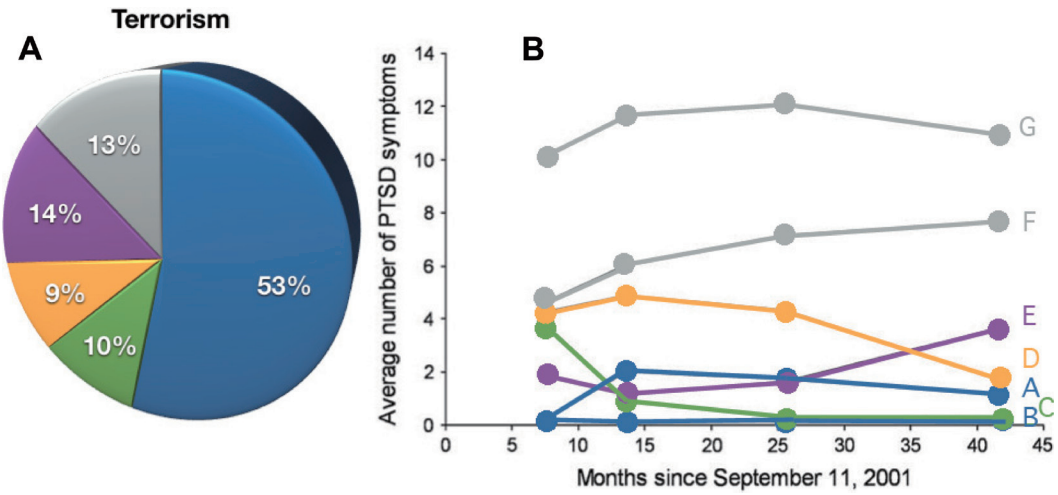

Fig. 3 Trajectories of PTSD symptoms among residents of the New York City metropolitan area (n = 1267) after the September 11, 2001, attacks.
(A) Resistance (blue), resilience (green), and recovery (orange) indicate a good prognosis, delayed dysfunction (purple) and chronic dysfunction (gray) indicate a poor prognosis.
(B) A&B: Resistance (blue): 53.4%, C: Resilience (green): 10.1%, D: Recovery (orange): 9.3%, E: Delayed dysfunction (purple): 14.3%, F&G: Chronic dysfunction (gray): 13.0%. (Modified from Norris, et al.[11])

Table 3 Perceived Barriers to Seeking Mental Health Services among All Study Participants (Soldiers and Marines)*

Perceived Barrier	Respondents Who Met Screening Criteria for a Mental Disorder (N=731)	Respondents Who Did Not Meet Screening Criteria for a Mental Disorder (N=5422)
	no./total no. (%)	
I don't trust mental health professionals.	241/641 (38)	813/4820 (17)
I don't know where to get help.	143/639 (22)	303/4780 (6)
I don't have adequate transportation.	117/638 (18)	279/4770 (6)
It is difficult to schedule an appointment.	288/638 (45)	789/4748 (17)
There would be difficulty getting time off work for treatment.	354/643 (55)	1061/4743 (22)
Mental health care costs too much money.	159/638 (25)	456/4736 (10)
It would be too embarrassing.	260/641 (41)	852/4752 (18)
It would harm my career.	319/640 (50)	1134/4738 (24)
Members of my unit might have less confidence in me.	377/642 (59)	1472/4763 (31)
My unit leadership might treat me differently.	403/637 (63)	1562/4744 (33)
My leaders would blame me for the problem.	328/642 (51)	928/4769 (20)
I would be seen as weak.	413/640 (65)	1486/4732 (31)
Mental health care doesn't work.	158/638 (25)	444/4748 (9)

*Data exclude missing values, because not all respondents answered every question. Respondents were asked to rate "each of the possible concerns that might affect your decision to receive mental health counseling or services if you ever had a problem." Perceived barriers are worded as on the survey. The five possible responses ranged from "strongly disagree" to "strongly agree," with "agree" and "strongly agree" combined as a positive response. Reproduced from Hoge, et al.[12] Copyright ©2004 Massachusetts Medical Society. All rights reserved.

Table 4 shows a comparison between IASC recommendations and the activities that the current support team actually carried out in the disaster zone. IASC recommendations are listed on the left side, and the actions our support team took and their problems are listed on the right side (modified from Kashima et al.[14]). When con-

Table 4 Comparisons of actions between IASC recommendation and actual provision after the earthquake

IASC recommendations	Actions taken after the Great East Japan Earthquake
Establish a comprehensive cooperation and coordination group for disaster support	A cooperation/coordination group was established at the headquarters of the disaster response committee of the Japan Society of Psychiatry and Neurology
Collect and analyze data to judge actions actually taken and assess their types	Data collection and analysis were done at the level of each prefecture. However, actions and data sharing at the municipal and national levels were insufficient
Recognize a variety of effects on victims. While there are victims who are seriously affected and require special support, those with high resilience are highly functional	Responded to a wide range of problems flexibly without excessively labeling victims' reactions as pathological. Some media reports were overly focused on the trauma of victims and the necessity of treatment
Using the local language, inquire about mental health in a safe and supportive way, while keeping confidentiality	Although large-scale screening was planned, it was cancelled due to objections from the academic societies and an incomplete follow-up system
Improve government administration and integrate the mental health service for victims into the general health care service (and the mental health service of the community, if possible)	Cooperation between the Caring for the Mind Team and the general medical team was considered to be the key issue
Provide a wide range of support including psychological first aid (PFA) to those who are suffering from acute stressful conditions	As an early intervention, PFA was provided more often than psychological debriefing
Identify those who are seriously affected and establish effective support systems for them	In most cases, the Caring for the Mind Team provided supportive care after being introduced to patients by the local health nurse
Develop medical care programs suitable for the community to support those at risk of institutionalization	Transfer of patients from devastated hospitals and adjustment of admission status was performed at a relatively early time. A medium/long-term reconstruction plan is being considered from the viewpoint of hospitalization and area support
Utilize media and other tools to provide accurate information about stress relief and support services to victims	Local TV stations in the affected area reported medical support information by telop text. With regard to mental health services, we attended media conferences and responded to inquiries from the media so as to promote the understanding of the people concerned

sidering the specialty of psychiatric care, we recognized through this support program that the most necessary and most difficult thing was "securing a treatment sequence." Taking into account the special background of Soma City with respect to mental health problems, it would be difficult to achieve dramatic expansion and enhancement of psychiatric treatment in this region by using the disaster as a trigger. In fact, we found that the situation was beyond the capacity of the medical university staff and volunteers. We hope that the sharing of our experiences during these support activities and discussion of the problems we detected can contribute to better preparation for future disasters.

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