Section II

Research Reports and Other Contributed Manuscripts

Research Report

Tohoku University Graduate School of Medicine,
Endowed Department of Preventive Psychiatry
Associate Professor – Kazunori Matsumoto

At the Endowed Department of Preventive Psychiatry, we engage in support and research activities that will be of use to disaster survivors. This is done alongside the Tohoku University Department of Psychoneurology and the Tohoku University Hospital Department of Psychiatry as an arm of the Tohoku University Department of Psychiatry. In FY 2013, we collaborated with the MDMHCC and affiliated organizations on research activities, the results of which we report below. This report contains material adapted from the following publications: FY 2013 Ministry of Health, Labour, and Welfare Grant-in-Aid for Scientific Research Project Report, "Research on Epidemiological Surveys to Determine the Status of Mental Illness and on the Development of Effective Interventional Methods after the Great East Japan Earthquake" (Principal Investigator: Hiroo Matsuoka); Seishin Medical Research Foundation Annual Report of Pharmacopsychiatry Research, Vol. 46, FY 2012 Disaster Area Support Research Grant Pharmacopsychiatry Research Results Report.

1. Research on Supporter Mental Health and Support Methods in Disaster-Affected Regions

In the event of a large-scale disaster, people of various occupations are involved in support during the emergency, restoration, and reconstruction periods. Research focusing on the mental health of working people after such disasters has primarily targeted police officers and firefighters who provide support as professional rescuers during the emergency period. It has been reported that symptoms corresponding to depression and PTSD persist for a long period.

However, after a disaster, long-term support activities through not only the emergency period but also the recovery and reconstruction periods are necessary, and supporters engaged in selfless public work are indispensable. These occupations include municipal staff, medical personnel, social welfare service staff, teachers, and so on. Unfortunately, most of these individuals carry out long-term support activities while continuing to live as survivors in affected areas. Many of these people have continued their support activities since the emergency period, and in addition to the stress of being a survivor, they are believed to be subject to stress related to post-disaster support, putting them at high risk of mental health problems.

In fact, even now, nearly three years after the Great East Japan Earthquake, many local supporters are still engaged in support activities and reconstruction projects in areas where the damage was severe. There was a newspaper report that the number of municipal employees taking leave owing to mental illness is increasing, and measures to maintain mental health and prevent mental illness in supporters working in the disaster area are the current issues. However, the mental health of supporters working these local public-interest jobs has not been well studied.

Therefore, we have conducted health surveys for municipal staff, medical personnel, SWC members, and firefighters in the areas affected by the Great East Japan Earthquake and provided support from a psychiatric standpoint. At the same time, we have planned a longitudinal survey to clarify the actual health state of staff and to help provide necessary support.

In this year's report, we will demonstrate the results of other surveys conducted in 2012 and of indices related to mental health in each occupational area, and examine and report on factors related to poor mental health.

<Research Methods>

Our targets were (1) municipal staff, medical staff, and firefighters, (2) SWC members from six municipalities, and (3) nursing staff, all from disaster areas along the Tohoku coast.

(1) This survey was conducted with 1,788 people in May 2012, and the data of 1,479 (83%) were analyzed. Here, we report the results of analysis conducted on data collected from municipal staff (610 people), medical staff (357 people), and firefighters (328 people) who have been engaged in support work since the disaster. Survey (1) was also conducted with 1,894 people in 2013, and the data of 1,563 people are currently being analyzed.

(2) This survey was conducted from November 2012 to January 2013 with 1,048 people, and the data of 823 (81.6%) were analyzed. SWC members can be divided into four groups: lifestyle support counselors (190), clerical staff (199), long-term care staff (271), and others (163). In this report, each group was compared. We will also report on the data. Survey (2) was conducted from November 2013 to January 2014, targeting SWC members in five disaster-affected municipalities.

(3) The first survey was conducted from March to May 2012 with 473 nurses from five hospitals in tsunami-stricken areas, and the data of 440 (90.9%) were analyzed. The second survey was conducted in November 2012 with 179 nurses from hospitals affected by the tsunami, and the data of 161 (89.9%) were analyzed. The third survey was conducted in November 2013 with 437 nurses from the hospitals included in the first survey, and the data of 209 (47.8%) people were analyzed.

Survey items included the following: current work status and personal disaster status, current health status, a depression and anxiety screening questionnaire (K6), evaluation of depressive symptoms: Mind and Body Questionnaire (Patient Health Questionnaire, PHQ-9), and a 17-item tool to evaluate PTSD severity (PCL).

The questionnaires clearly stated that participation was voluntary, and responses were only collected after being sealed by the respondent to ensure that results would not be known to others in the workplace. Respondents were made aware of the fact that after the survey, a psychiatrist, clinical psychologist, and/or psychiatric nurse would be available to provide counseling for them, and were told that this counseling service could be used even if they did not submit a response. This survey was conducted with the approval of the Ethics Committee of the Graduate School of Medicine, Tohoku University.

<Research Results>

(1) Survey of Municipal Staff, Medical Staff, and Firefighters (Figure 1)

Of the respondents, 56% were men, with an average age of 43 years. Further, 9% had family members who were dead or missing, 23% had been relocated because of the disaster, and 55% had been through an experience where they had feared for their life. In addition, regarding the workplace 17% experienced a lack of communication and 39% experienced a lack of rest.

Regarding K6 results (valid responses: 967), the proportions of individuals with a total score of ≥13 points, indicating subjective awareness of their own high stress levels, were as follows: 11% for municipal staff, 15% for medical employees, and 3% for firefighters. In the 2010 census, the average among Miyagi citizens was about 6%, making it clear that municipal and medical staff experienced a high degree of mental distress. The proportions of individuals with a score of ≥10 points on the PHQ-9, which indicates a high risk of depression, were as follows: 24% among municipal staff, 22% among medical employees, and 6% among firefighters. In addition, 9% of municipal staff, 9% of medical employees, and 3% of firefighters had a PCL score of ≥44 points, indicating high PTSD risk. In terms of both depression and PTSD risk, the proportion of at-risk persons among firefighters was lower than among municipal and medical personnel.

Multivariate logistic regression analysis was used to clarify the factors involved in the risk of mental illness. As a result, the factor with the highest odds ratio for PTSD high-risk status was lack of rest, at about five times higher. Lack of communication in the workplace was about three times higher. The odds ratios of employees who answered that their families were dead was about four times higher, and the odds ratio of employees who answered that they had moved because of the disaster was about three times higher. The factors with the highest odds ratios for high depression risk were lack of communication in the workplace and inadequate rest, both of which had odds ratios about three times higher than the average.

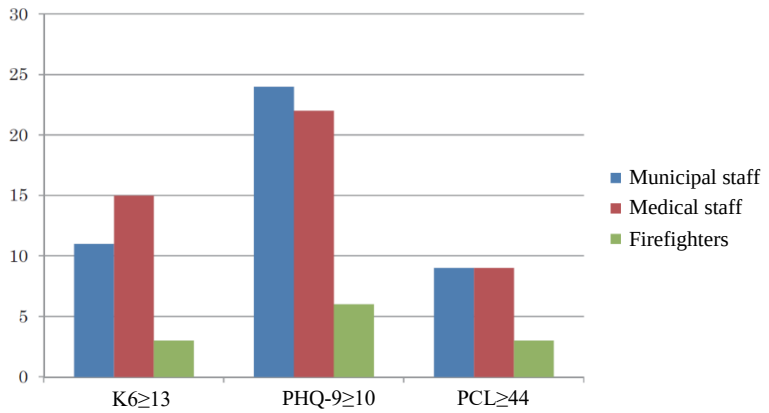

Figure 1: High-Risk Status (%) for Mental Distress (K6), Depression (PHQ-9), and PTSD (PCL) by Occupation (May 2012)

(2) Survey of SWC Members (Figure 2)

Of the respondents, 27% were men, with an average age of 47 years. Among the respondents, 9% indicated that their family members were dead or missing, 66% experienced a fear of death, and 26% had moved because of the disaster. Further, 37% were struggling with relationships in the workplace, 38% experienced a lack of rest, and 30% were having a hard time because of criticism from residents.

Regarding K6 scores (valid responses: 784), the proportion of individuals with a total score of ≥10 points, indicating subjective awareness of their own high stress levels, was 18%. The average of Miyagi citizens in the 2010 census was about 6%, indicating that a high proportion of SWC members were in a state of mental distress. The proportion of individuals with a score of ≥10 points on the PHQ-9 (valid responses: 781), which indicates a high risk of depression, was 13%, whereas the proportion of those with a PCL score (valid responses: 763) of ≥44 points, indicating a high risk of PTSD, was 4%. By occupation, life support counselors and clerical staff experienced more mental distress than care workers and others.

Multivariate logistic regression analysis was used to clarify the factors involved in the risk of mental illness. The highest odds ratio among the factors involved in high stress (K6 ≥10) was for a history of mental health treatment before the earthquake, followed by troubles with relationships in the workplace and anxiety about one's health. The factors involved in depressive symptoms with the highest odds ratios were the same as those for high stress. Among the factors involved in PTSD symptoms, the ones with the highest odds ratios were a history of mental health treatment before the earthquake, having a hard time with criticism from residents, and troubles with relationships in the workplace.

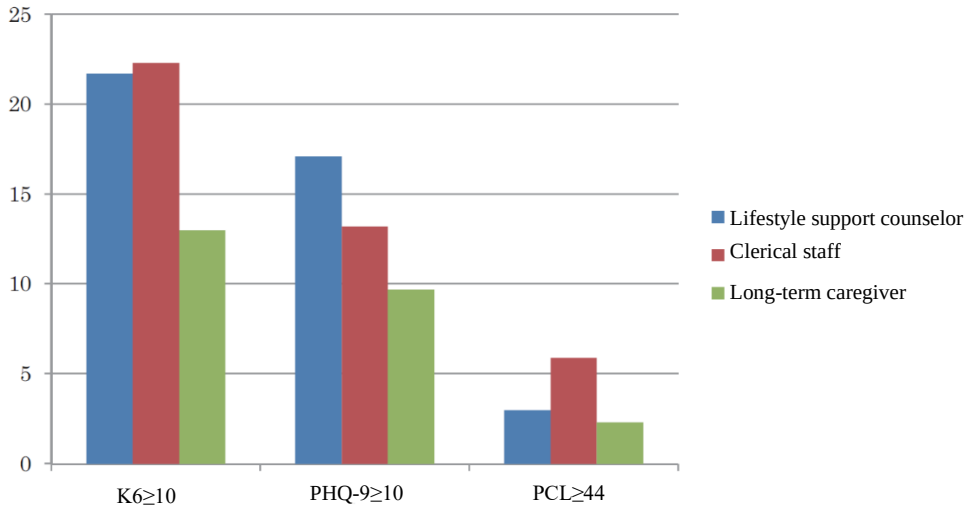

Figure 2: High-Risk Status (%) for Mental Distress (K6), Depression (PHQ-9), and PTSD (PCL) Among SWC Members (November 2012–January 2013)

(3) Survey of Nursing Staff (First Survey)

Women accounted for 98% of respondents, with an average age of 42 years. The proportion of those who had their homes completely or partially destroyed was 40%, and the proportion of those who had moved because of the disaster was 29%. Of the respondents, 14% indicated that their family members were dead or missing. In the analysis, nurses who were working at hospitals that were directly damaged by the tsunami were categorized into the "tsunami-damaged" group, whereas those working at hospitals affected by the earthquake but not directly damaged by the tsunami were categorized into the "tsunami-undamaged" group. The number of valid responses was 136 for the tsunami-damaged group and 279 for the tsunami-undamaged group.

First, we report on the mental health of the entire subject pool. Regarding PTSD, 12.1% were high-risk (total PCL score ≥44 points). The proportion of people at high risk of depression (PHQ-9 overall score ≥10) was 24%. However, it is said that standard cutoff values tend to pick up a larger-than-normal range of high-risk people after a disaster. Therefore, to identify those with higher risk, PCL and PHQ-9 risk assessments were conducted by considering only those who fell

into the top 10% of total scores. As a result, regarding PTSD, the tsunami-damaged group (14.5%) tended to have significantly more high-risk persons than the tsunami-undamaged group (8%). As for depression, there were significantly more high-risk individuals in the tsunami-damaged group (15%) than in the tsunami-undamaged group (8%).

Next, we examined the factors involved in the risk of mental illness using multivariate logistic regression analysis. The causative factor with the highest odds ratio for high PTSD risk was "dead/missing persons in the family." Regarding depression, the causative factors with the highest odds ratios were "40 years old and over" and "direct tsunami damage to workplace." A causative factor that was observed to reduce risk was "support from family and friends."

<Discussion>

According to this survey, the percentage of individuals aware of the deterioration of their mental health varied depending on their occupational area, and it was clear that the percentage of municipal and medical staff who are at high risk of depression and PTSD is higher than that of firefighters. Past studies have shown that highly disaster-prepared occupations with professional education and training in disaster response have a lower risk of mental illness, and our results are consistent with those analyses. In addition, a survey of SWC members found differences between occupations. Lifestyle support counselors were hired after the earthquake to provide direct earthquake support, and we believe that they may bear a heavy mental burden because of direct exposure to disaster stress and preparation. Likewise, clerical staff bear an increased mental burden because of increases in the amount of coordination required and other administrative work. On the contrary, it was considered that care workers had a lower mental burden than life counseling support and clerical staff because they were performing almost the same work as before the earthquake at the time of the survey one and a half years after the disaster. Regarding factors related to the risk of mental illness, rather than those associated with direct disaster damage, such as financial loss or deaths of family members, individual factors such as mental health treatment history and workplace factors such as relationships were more closely related to psychiatric symptoms. In addition, a survey revealed that many nurses in disaster-affected hospitals had high symptoms of depression and PTSD.

Factors affecting the high risk of depression and PTSD among the people surveyed include the direct impact of disaster loss/grief and environmental changes such as deaths of family members and relocation due to the disaster, as well as post-disaster work environment, such as lack of rest and communication in the workplace. The fact that workplace communication is associated with depression and PTSD risk is consistent with the idea that connections with people are important for recovery from posttraumatic stress and loss/grief.

Although we are limited in the extent to which we can influence the direct consequences of a natural disaster, creating an environment where it is easy to take a breather in the workplace, and enhancing communication in the workplace, are factors that can be dealt with, and in the future, it is important that we consider specific measures in this regard. The results of this study suggest that in workplaces where disaster relief is provided in the medium to long term, in addition to the direct effects of the earthquake, changes in the current workplace environment of subordinate employees may have an impact on the deterioration of mental health. This is an important result for the devising of medium- to long-term intervention methods for disaster supporters. In the future, we plan to continue our longitudinal surveys. Then, we will clarify in more detail which factors affect the medium- to long-term mental health of supporters working in disaster areas.

2. Research on Psychological Support Methods in Disaster Areas

(1) Research on the Dissemination and Implementability of SPR

Miyagi Prefecture was severely damaged by the Great East Japan Earthquake, mainly in its coastal areas, and survivors are experiencing physical and mental pressure. For this reason, it is considered that mental care for disaster survivors is necessary into the long-term, over years. Past studies have shown that in the wake of a large-scale natural disaster, residents of disaster areas have an increased likelihood of psychiatric disorders such as PTSD and depression, as well as sub-symptomatic psychological problems that do not lead to psychiatric disorders. Psychological

support for sub-symptomatic individuals subjectively aware of their own mental illness is, therefore, considered important for prevention.

Post-disaster psychological support has been researched and developed focusing on trauma-focused methods and those performed immediately after the disaster and into the acute phase. However, the effects of psychological support in the acute phase immediately after the disaster were not superior to those of non-specific intervention methods. In addition, while it is known that some psychological support methods are useful for the recovery/reconstruction period, a practical method combining multiple types of psychological support that is useful for a wide range of survivors has not been developed.

SPR is a psychological support method for disaster recovery-phase use developed in 2010 by the American National PTSD Center and the American National Child Traumatic Stress Network. In June 2011, the Research Team of the Hyogo Disaster Mental Health Care Center translated and published a Japanese-language version of this method. SPR has been implemented in a variety of post-disaster situations across countries; however, it has yet to be put to full use in Japan. Therefore, we are conducting research on training for professionals to popularize SPR as well as research on the feasibility of SPR in Japan.

① Research on Specialist Training for Dissemination of SPR

It would be of great practical significance to mental health countermeasures in areas affected by the Great East Japan Earthquake if mental health specialists involved in actual support were trained in SPR and able to use it with disaster survivors. However, in Japan, methodologies for teaching the specialized skills used in psychological support are not well established. In this study, we provided SPR training to specialists involved in mental health care in disaster areas, used questionnaires and qualitative surveys to clarify the utility and challenges presented by SPR training, and sought to examine the feasibility of and issues associated with SPR use in Japan.

<Research Methods>

SPR workshops were held on the following schedule for specialists engaged in mental care in disaster areas. Dr. Tomoko Osawa, a clinical psychologist from the Hyogo Prefecture Mental Care Center, who has acquired the SPR trainer qualification, was asked to serve as a lecturer. After that, as basic training, lectures and workshops on SPR were held for two days. SPR training was conducted thrice in 2012 and once in 2013, in Kesennuma on July 27 and 28. In addition, as a follow-up training, we conducted a case study on SPR utilization cases twice in 2012 and once in 2013, in Kesennuma on December 5.

A questionnaire survey on training content and SPR was conducted anonymously before and after the basic training and after the follow-up training. Datapoints were assigned unique identifiers to allow them to be tracked from the basic training to the follow-up training after being concatenated and anonymized. After the basic training, if the participants provided support to the survivors using SPR in their own fields, they were requested to record this in the skill implementation log, to be submitted during the follow-up training. The skill implementation log listed the technique used for support, support time, number of times support was provided, content of support, and any problems. At the follow-up workshop, group discussions were held to examine the feasibility of SPR and related problems, and the contents were recorded in meeting notes. Participation in the training and consenting to research participation were distinguished from one another, and study participation was limited to those who voluntarily provided their consent. The implementation of this study has been approved by the Ethics Committee of the Graduate School of Medicine, Tohoku University.

<Research Results>

Regarding the number of participants in the workshop (the number in parentheses is the number of those who have completed the entire training process), 18 people (17 people) participated in the fourth basic training held this year, making a grand total of 99 people (75 people) who had participated since last year. Six people participated in the follow-up training for the third time, bringing the total to 37 people. Among the participants, those who consented to research participation were selected. The number of valid responses was 90 in the basic training questionnaire survey (four times), and 28 in the follow-up survey (three times). Only the first set of responses of those who attended follow-up

training multiple times was used. As a result, only 24 valid responses were tracked from the basic and follow-up training.

The attributes of the respondents of the basic training questionnaire were as follows: men:women=23:67, age group distribution: 19% in their 20s, 43% in their 30s, 19% in their 40s, 17% in their 50s, and 2% in their 60s. Regarding occupations, 32% were psychiatrists, 19% were psychiatric social workers, 18% were public health nurses, 17% were nurses, 6% were psychiatrists, and 8% were classified as "others." By experience of disaster/trauma support, the distribution was as follows: 16% with no experience, 66% with a little experience, 14% with a fair amount, and 4% with a considerable amount.

According to the results of the questionnaire completed after the basic training (Fig. 3), 89% stated that they considered the content of the training session related to their current line of work, and 85% had the desire to implement these skills in their practice. On the contrary, only 33.8% of the respondents answered that they were confident in using it. As a result of the follow-up survey (N=24) in the basic and follow-up training, the average value of the items about SPR increased overall after participating in the follow-up training, and the increase in ease of understanding of the training was particularly significant. Also, in the post-follow-up training survey, the proportion of individuals who provided cases for discussion (N=7), indicating that they would try to use SPR in their work, was significantly larger than the proportion among individuals who did not provide cases.

a. In response to questions about the utility of SPR in one's own activities, we received comments along the lines of the following: "Can't this be used in groups such as consultation services and health classes?" and "The model in which the target person solves their own problem helped lighten the burden I felt regarding my compulsion as a supporter to ensure that all problems were fixed."

b. Regarding whether or not they had actually tried (or wanted to try) using SPR, attendees expressed that while it was difficult to use in structured sessions, they were making use of its essence.

c. Regarding difficulties in using SPR in their own activities, we received the following comments: "It is important to think together because the 'skill guidance' section does not fit into Japanese culture," "Rather than blindly following the manual, you should implement the technique flexibly in accordance with the TPO," "It is necessary to modify the expressions used in the manual based on your own context," and "In terms of skill matching, it's important that you modify the technique when it doesn't quite work out."

d. Regarding what kind of training and supervision systems would make it easier to utilize SPR, there were requests for "case studies" and "timely supervision."

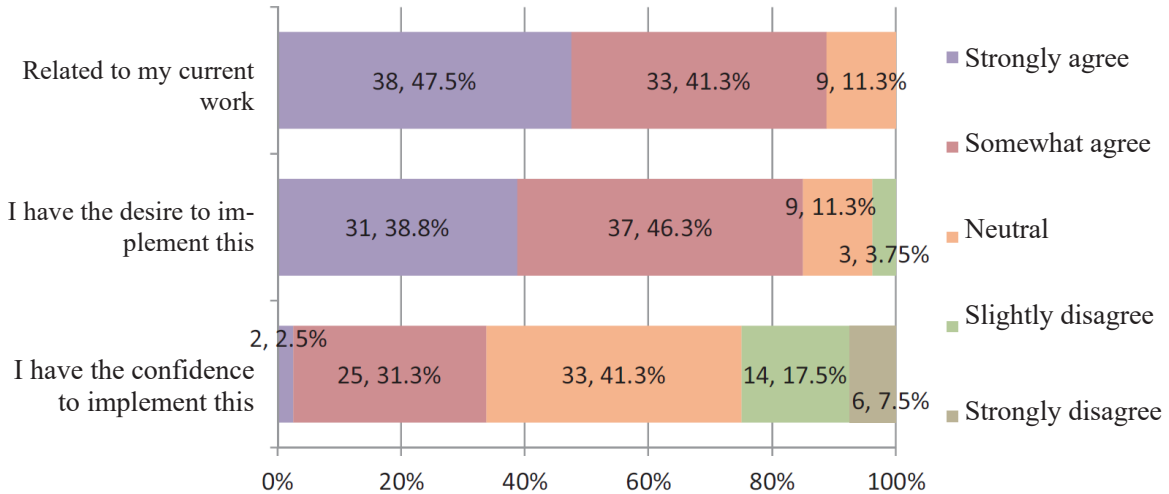

Figure 3: SPR Training Impressions

<Discussion>

From the results of the questionnaire survey after the basic training, it became clear that interest in and motivation to try SPR were high, but confidence was low. After the follow-up training, it became clear that the degree of understanding increased, and while further case studies increased the motivation to actually practice SPR, confidence did not improve.

These results suggest that while SPR training is important and can be beneficial, a format involving just one basic training and one follow-up training is subject to limitations. It became clear that it is necessary to prepare repeated case studies and an appropriate supervision system. In addition, in terms of the possibility of applying SPR in Japan and of using it in various support situations, opinions seemed to indicate that while it may be applicable to a variety of support situations, rather than a rigid structure, specific advice regarding how to flexibly apply the technique in one's field and how to verbally express and develop the elements of the manual was necessary.

Based on the above, we plan to implement regular case studies using Skype, conduct supervision for cases using SPR in the disaster area, and study the effects of these efforts. In addition, we believe application models are necessary to widely disseminate and raise awareness regarding SPR as a support method. We think that a demonstration DVD about SPR utilization may serve this purpose well, and we plan to consider it as a research area for the next FY.

② Research on the Implementability of SPR in Japan

To actually apply SPR in Japan, it is necessary to consider its implementability in disaster areas. Therefore, the purpose of this study is to cooperate with local governments in the disaster area, apply SPR to disaster survivors, and examine its feasibility.

<Research Methods>

We took as our subjects individuals aged 18 or older who were living or working in District A of Miyagi, a disaster area; individuals being treated at a psychiatric institution or with serious mental symptoms were excluded. In addition, participants were limited to native Japanese speakers capable of understanding the research purpose and content and who provided written consent. A memorandum was signed with the municipal government in District A, and with their cooperation, we conducted the "Post-Disaster Stress Recovery Program" to recruit research participants, with a target population of 15 individuals.

All the psychiatric health workers (nurses, public health nurses, psychologists, doctors, etc.) who will provide support have undergone training by SPR trainers at the Hyogo Disaster Mental Health Care Center, and SPR will be conducted under the supervision of these trainers and psychiatrists from the Tohoku University Hospital Department of Psychiatry. Pre-intervention evaluations will be conducted after explaining the purpose of the study and obtaining written consent from those who meet the selection criteria. The intervener will visit the participants for a 60-minute interview once every one to two weeks, for a total of about five visits. A post-intervention evaluation and a two-month follow-up evaluation will be performed after the intervention.

The primary endpoint is the total score of the General Health Questionnaire (GHQ-30). Secondary endpoints are quality of life (QOL) (SF-8), posttraumatic stress symptoms (Impact of Event Scale-Revised, IES-R), resilience (Trauma Resilience Scale, TRS), self-efficacy (SE), and program satisfaction (Client Satisfaction Questionnaire, CSQ-8J). In addition, the impressions of the program and each skill and their subsequent utilization will be evaluated by qualitative content analysis. This study will be conducted with the guidance and cooperation of the municipal government of District A.

The intervener will assess the overall mental state (including suicidal ideation) at each interview. In addition, we have made it a requirement that if a participant becomes aware of a serious adverse event or other unforeseen circumstance related to this study, they are to take the necessary measures in cooperation with the section in charge of District A, who will refer involved persons to related organizations including medical institutions, and otherwise make every effort to resolve any possible issues. This study is being conducted with the approval of the Ethics Committee of the Graduate School of Medicine, Tohoku University.

<Research Results>

In July 2013, we started recruiting participants. As of February 2014, the total number of applicants reached 18. Of these, three were unsuitable for the study, six dropped out before receiving the intervention, and one case was postponed. Thus, the remaining eight individuals began the intervention. Of these, four were prior intervention cases, and four were cases in which the intervention was implemented after the start of the survey. No adverse events have been observed up to this stage in any of the eight participants involved, including prior intervention cases.

Of the eight people who started the intervention, four have completed all sessions so far. As a preliminary analysis, we examined the evaluations before and after the four interventions, and found that the overall score on the GHQ-30, which is the primary endpoint, was lower after the intervention than it was pre-intervention (Fig. 4).

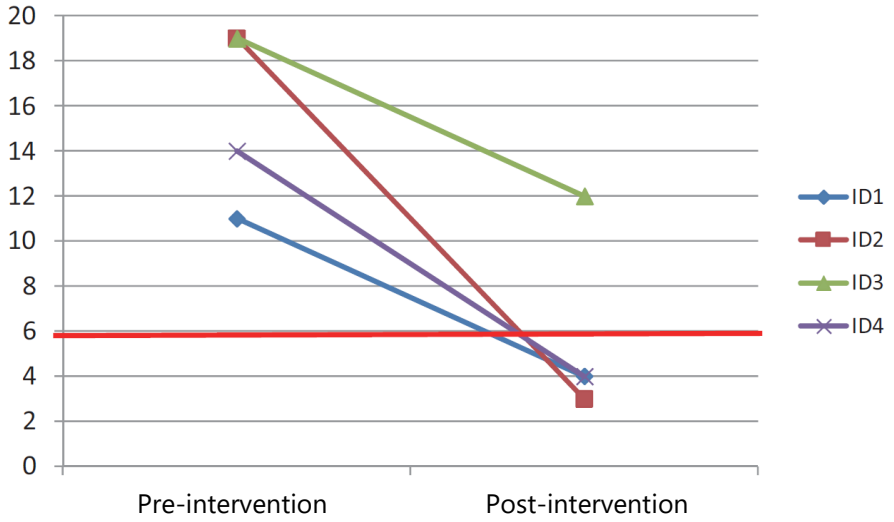

Figure 4: Change in GHQ-30 Score Before and After SPR Intervention (N=4) *Includes Pre-Study Interventions

<Discussion>
This study's intervention began only in 2013, and has not yet reached the target number of cases. For this reason, program feasibility has not yet been verified. However, no adverse events have been observed, and the results of the preliminary analysis show that the GHQ-30 values for the four cases in which the intervention was completed were lower than those before the intervention. Therefore, at present, it is suggested that SPR may be a safe and effective program in Japan as well. In the future, we plan to increase the number of case subjects, analyze the transition to each endpoint when the target number of subjects is reached, and verify the feasibility of the program.

(2) Research on Exercise for the Mind and Heart Training Workshops for Residents and Supporters in Areas Damaged by the Great East Japan Earthquake Aimed at Raising Public Awareness About CBT

CBT is a psychological therapy method that uses approaches from both cognitive and behavioral angles to heighten self-control in an effort to improve various problems in social interactions and resolve latent issues. CBT is indicated for depression, anxiety disorders, and a variety of other mental illnesses and its effectiveness has been widely reported. In addition, it is effective against depressive symptoms that do not quite approach the level of a mental illness and has been shown to prevent mental illness. As a result, it has been applied broadly to non-medical settings as well.

Awareness of CBT in Japan has lagged behind other developed countries; to broadly spread it throughout society, it is necessary that we establish effective training methods. In this study, in an effort to achieve primary prevention, we implemented "Exercise for the Mind and Heart" training workshops for residents and supporters in areas affected by the Great East Japan Earthquake; these sessions were aimed at clarifying the basic ideologies and skills of CBT and at helping attendees learn about stress care in daily life situations. We used post-session surveys to achieve a qualitative analysis of these sessions and thereby clarify the program's utility and challenges. The objective of this study is to clarify the feasibility of raising awareness about CBT in Japan and any issues pertaining thereto.

<Research Methods>

Last year, before disseminating it to the general public, CBT-based training was conducted for supporters such as public health nurses who are actually dealing with citizens in the disaster areas of Iwanuma City. It was conducted a total of six times from February to March 2013. This year, we organized training sessions for the general public. In Iwanuma, we held them from June to July 2013 with the cooperation of the Health Promotion Division of the Health and Welfare Department of

Iwanuma City Hall. In Sendai, we held them from October to November 2013 with the cooperation of the Sendai Mental Health and Welfare Center (Heart Port Sendai) and the Family Health Divisions of Aoba Ward, Miyagino Ward, Wakabayashi Ward, and Taihaku Ward. Finally, we held sessions from February to March 2014 in Taihaku, Sendai, with the cooperation of the Heart Port Sendai and the Family Health Division of Taihaku Ward, for a total of six sessions (because it was the end of the FY, these are not included in this analysis).

After each training session, a questionnaire survey was conducted to obtain feedback on the degree of understanding and impressions of the program. In addition, before and after the training program, we used question items to learn the attributes of participants and to clarify the understanding and retention of the training. The SF-8 was used as a measure of QOL, and the Characteristic Self-Efficacy Scale was used to measure whether or not participants' self-efficacy was heightened by learning and implementing CBT. In conducting the training, Dr. Yutaka Ono, Director of the CBT Center, National Center of Neurology and Psychiatry, and Miyuki Tajima, Director of the Clinical Technology Development Office, National Center of Neurology and Psychiatry, both of whom have a wealth of experience in this area, provided valuable technical guidance. The implementation of this study has been approved by the Ethics Committee of the Graduate School of Medicine, Tohoku University.

<Results>

In the training held in Iwanuma City, the number of pre-registered people was 16 and an average of 11 people participated. In Sendai City, the number of pre-registered people was 27 and the actual number of participants was 15 people on average. The total number of participants was 33, of whom four (12.1%) were men and 29 (87.9%) were women, with an average age of 48.7±12.8 years. The most common occupation was housewives (11; 35.5%), followed by five part-time workers (16.1%) and five unemployed people (16.1%). Regarding the damage situation, the homes of three people (9.4%) were completely or partially destroyed, while those of 13 people (40.7%) were mostly or partially destroyed. When asked if they had felt that their lives had been in danger because of the earthquake, 20 people (62.5%) answered that they had either strongly or somewhat strongly felt so.

Regarding satisfaction with training, in Iwanuma City, an average of 95% of the supporters answered that the difficulty level was just right. These figures were 87.5% and 88% for the general public training sessions in Iwanuma and Sendai, respectively. In the training for supporters in Iwanuma City, 99% answered that they could make use of CBT in future. In the training for the general public in both Iwanuma and Sendai, 95% gave this response. Therefore, we believe that the training content was generally understood and accepted by all participants.

We had participants answer questionnaires before and after the training. Seventeen people who attended five or more of the six sessions were surveyed for changes in their QOL and self-efficacy. Regarding the Mental Component Summary (MCS) scores of the SF-8, an improvement was observed, with an average of 41.6±8.4 before the training and an average of 45.6±8.3 after the training, but the difference was not significant (Fig. 5). Regarding characteristic self-efficacy, the average was 68.9±9.9 before the training and 71.5 after the training, showing a trending improvement (Wilcoxon Z=1.942, P=0.052) (Fig. 6).

Regarding understanding the basic ideas of CBT and retention, the results of a pre- and post-survey conducted among the 17 people mentioned above clarified several trends. When asked if they understood their cognitive tendencies, pre-training, only 38% (N=6) answered that they did, but this figure increased to 93% (N=14) post-training. When asked if they knew what thought patterns strengthened feelings of depression or anxiety, 63% (N=10) said yes pre-training compared to 80% (N=12) post-training. When asked if they were able to recognize thought patterns that were harmful to themselves and to actively switch away from them, 25% said yes pre-training (N =4) compared to 47% post-training (N=7). Finally, when asked if they were able to attentively evaluate how an implemented solution to a problem was changing the situation, 19% (N=3) said yes pre-training compared to 47% (N=7) afterward.

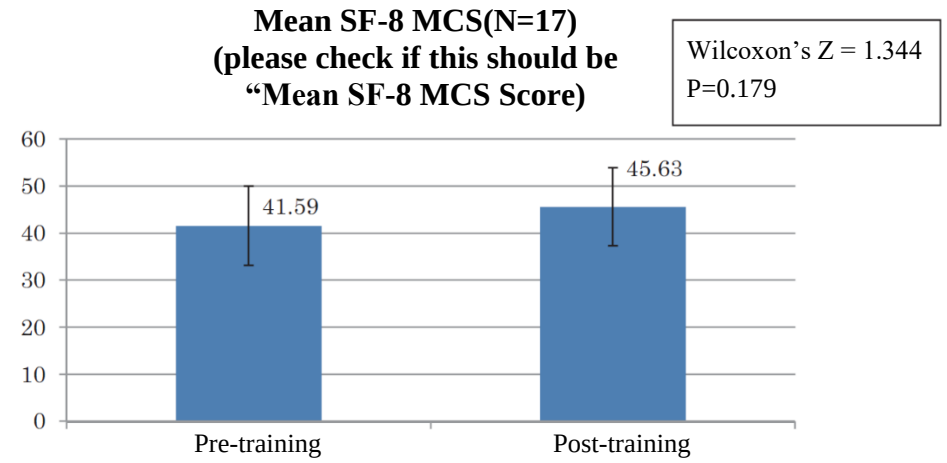

Figure 5: Changes in QOL Before and After the Exercise for the Mind and Heart Training

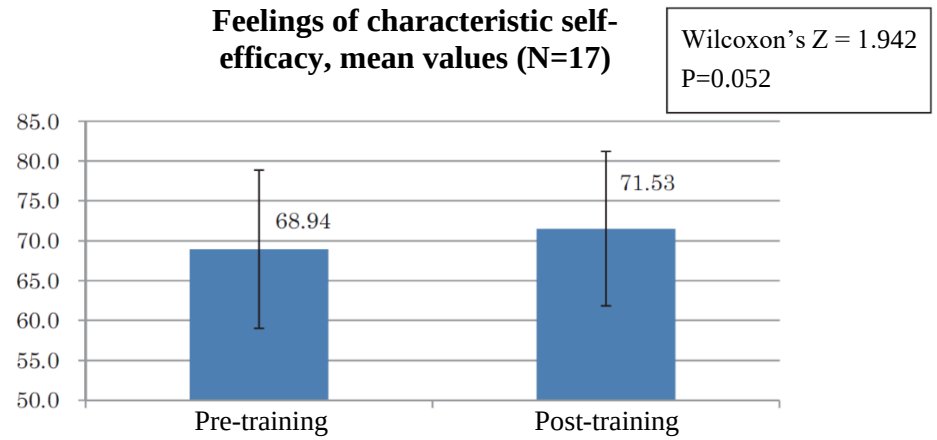

Figure 6: Changes in Self-Efficacy Before and After the Exercise for the Mind and Heart Training

<Discussion>

This year, we held Exercise for the Mind and Heart training sessions for the general public in Iwanuma and Sendai in cooperation with the government and related organizations such as Iwanuma City Hall and Sendai City Hall. Last year, advance training was restricted to supporters, but this year we were able to address the general public as well. Satisfaction with training was high, and many people said that they enjoyed learning while actually experiencing the work. Regarding understanding and retention, we received comments such as: "I became aware of my own cognitive habits, and based on the idea of CBT, I became able to understand the relationship between thoughts, moods, and behaviors, and to learn how to deal with stress." From these results, we believe it is possible to implement a cognitive-behavioral intervention in the form of training for the general public after a disaster, and that this specific program is acceptable for the general public in disaster areas.

For changes in QOL and self-efficacy before and after the intervention, the sample size is currently small, and our results are still in their preliminary stages. At present, no significant change was obtained in QOL and self-efficacy, but a trending level change was observed for self-efficacy. Next year, we are planning multiple training sessions with larger sample sizes.

3. Survey of the Effects of Disaster Damage on Mental Health Care

The Great East Japan Earthquake caused massive damage throughout Miyagi Prefecture, particularly in coastal areas. Psychiatric facilities, again primarily in coastal areas, sustained severe damage, and the effects thereof have reached far and wide. In the wake of the disaster, some hospitals have become unable to continue providing care because of the destruction of their facilities, and at the same time, hospitals that sustained comparatively little damage have been met with a veritable deluge of patients. Each facility is currently facing its own problems. Nevertheless, the state of

psychiatric care throughout Miyagi and the specific troubles that have arisen in each psychiatric facility are not entirely known, and thus the whole picture remains unclear.

It is critical that we investigate the impact of the Great East Japan Earthquake on mental health care in Miyagi to prepare for and make use of our experiences in the event of future large-scale disasters. Thus, we implemented this study with the assistance of a Senshin Medical Research Foundation Grant-in-Aid for Disaster Area Support Research Project titled "Status Survey of Psychiatric Care in Psychiatric Institutions in Miyagi Following the Great East Japan Earthquake," and in collaboration with psychiatric hospitals and affiliated organizations in Miyagi Prefecture. In this study, we explore the dynamics of patient movement through psychiatric care facilities after a large-scale disaster. By surveying the damage done to psychiatric hospitals, we aim to clarify the effects of the Great East Japan Earthquake on psychiatric care in Miyagi Prefecture and to contribute to countermeasures against future large-scale disasters.

<Methods>

We conducted a survey on the dynamics of patient movement through psychiatric medical institutions in Miyagi Prefecture in the first year after the earthquake. Our targets were psychiatric institutions (psychiatric hospitals, psychiatric departments in general hospitals, clinics, etc.); we requested consent to participate and distributed survey forms via post in April 2012. The survey asked about the following information: degree of damage to each medical institution, number of new patients immediately and one year after the earthquake, number of returning patients, number of inpatients, number of patients with disaster-associated acute stress disorder (ASD) and PTSD, and revisions made to disaster response policies, among other things. As an additional survey, we focused on four psychiatric hospitals in Miyagi Prefecture, including two psychiatric hospitals in A city in the coastal area, which were severely damaged by the earthquake, for one year after the earthquake and after the earthquake. We investigated the situation of outpatients and inpatients for the previous three years. Furthermore, with their cooperation, we investigated the medical records of two hospitals in Miyagi Prefecture regarding the breakdown of diagnoses and reasons for hospitalization. This survey was conducted with the approval of the Ethics Committee of the Graduate School of Medicine, Tohoku University.

<Results>

Three psychiatric hospitals in Miyagi Prefecture were directly damaged by the tsunami.Two of them had to transfer their inpatients to other hospitals. An additional four hospitals were only able to operate at significantly reduced capacity and were unable to care for outpatients or newly hospitalized patients. Some of the hospitals that were able to continue providing care experienced a large increase in new patients in March, immediately after the disaster. A large number of patients without mental illnesses were seen in psychiatry wards and so on because of their proximity to these facilities. On the contrary, one year after the disaster, only a small number of patients were being seen at psychiatric hospitals for PTSD treatment. While the change in the number of patients returning to hospitals after the disaster varied from facility to facility and we were unable to determine a unilateral increase or decrease, the number of psychiatric patients admitted immediately after the disaster (in March) increased.

Throughout the prefecture as a whole, the number of new hospitalizations increased in March, especially in the psychiatric area. After that, there was no significant difference in the number of patients compared to the 12 months before the earthquake. At psychiatric hospitals that were close to the disaster area and that continued operation, the numbers of new patients as well as inpatients in March increased. Looking at the breakdown of newly admitted patients eight weeks after the disaster at the two hospitals that were close to the disaster area and maintained their functions, the number of patients in psychiatric wards was the highest. When we investigated the reasons for hospitalization at some psychiatric hospitals, more than 60% were related to the earthquake. In some cases, patients had stopped taking their medication because of the disaster, leading to hospitalization. After the disaster, many psychiatric medical institutions were forced to make major revisions to their disaster preparedness. We received responses that it became necessary for certain institutions to stockpile fuel and food, secure storage locations and communication means such as satellite phones, and review evacuation drills and regional networks.

<Discussion>

After the Great East Japan Earthquake, three hospitals in Miyagi Prefecture were damaged by the tsunami, and other hospitals were also damaged. From the immediate post-disaster period to the acute period, significant changes were observed in the trends of outpatients and inpatients at psychiatric hospitals, and their characteristics differed depending on the local disaster situation. Many community residents other than patients with mental illness also visited psychiatric hospitals that were operating in disaster-stricken areas, and support was provided to patients with physical as well as mental illness. From the period immediately after the disaster to the acute period, the number of psychiatric inpatients in Miyagi Prefecture increased as a whole, and in particular, the number of new hospitalizations for patients with schizophrenia increased. These findings suggest that the immediate impacts of the disaster (earthquakes, tsunamis, and evacuation) affected psychiatric patients, a vulnerable population, more strongly than it did others. Additionally, a variety of factors including local disaster damage, reconstruction status, and changes in hospital admittance affected patient dynamics, and we found it difficult to identify unilateral increases or decreases in the number of psychiatric patients.

In a large-scale disaster, psychiatric medical institutions can be directly damaged. Our results clarify that during the immediate post-disaster and acute phases, there is a possibility that the hospitalization demand for patients transferred from damaged hospitals, patients whose condition has worsened because of the disaster, or who have difficulty living in the community will increase sharply. In addition, it has become clear that psychiatric hospitals that were operating in disaster areas played important functions in disaster medicine, such as seeing not only their own patients but also psychiatric patients from other hospitals and general physical medicine patients. The results of this survey indicate that it is necessary for psychiatric medical institutions to establish disaster-preparedness systems for collaboration and cooperation during peacetime, and that it is necessary to establish a system for the provision of support to psychiatric medical institutions during the immediate post-disaster and acute phases.

4. Qualitative Research on the Experiences of Psychiatric Hospital Nurses in Disaster Areas

Many medical institutions were damaged by the Great East Japan Earthquake. Some coastal psychiatric hospitals were hit by the tsunami and were forced to become isolated. In such hospitals, their own lives were at stake, and there was a struggle to protect a large number of patients with mental illness and to carry out large-scale evacuation and transportation. In addition, even at psychiatric hospitals not directly affected by the tsunami, utilities were often cut off, and medical care had to be continued in a situation where no medicine could be delivered.

In this way, nurses at psychiatric hospitals in the disaster area observed patients' mental and physical conditions in extreme conditions, and made decisions and acted with limited resources and information. No past natural disaster in Japan has devastated this many psychiatric institutions. Therefore, we believe that there is incredible significance in recording the experiences of these nurses for posterity, as it will lead to the examination of preventive measures and support methods in the field of psychiatric nursing in the event of a future disaster.

The purpose of this study is to clarify disaster experiences unique to psychiatry from the experience of psychiatric hospital nurses in areas affected by the Great East Japan Earthquake, and to acquire knowledge useful for the development of future disaster prevention and mitigation measures for psychiatric hospitals.

<Methods>

An approximately hour-long semi-structured interview will be conducted with 10–20 nurses from psychiatric hospitals in coastal areas of Miyagi Prefecture. We will explain the purpose of this study to the nursing managers of eligible psychiatric hospitals, request cooperation, and recruit nurse research collaborators through these managers if cooperation is obtained. We will ask about their experiences as psychiatric nurses immediately after the earthquake, and what measures they think, in retrospect, were most useful or necessary. Data obtained through this process will be analyzed qualitatively. This survey has been approved by the Ethics Committee of the Graduate School of Medicine, Tohoku University.

<Results>
From August to September 2013, we interviewed 17 nurses from five psychiatric hospital facilities in coastal areas of Miyagi Prefecture. We are currently analyzing the data we have collected.
<Note> This study is being conducted with the assistance of an FY 2013 Japan Society for Mental Health and Nursing Research Grant, and is part of the activities of the Japan Society for Mental Health and Nursing Disaster Assistance Special Committee.

References

1) Kumiko Muramatsu, Hitoshi Miyaoka, Kunitoshi Kamijima, Yoshiyuki Muramatsu. Useful evaluation tool for depression screening in primary care-About Patient Health Questionnaire (PHQ-9). Psychiatry Therapeutics, 23 (11), 2008, 1299–1306.
2) Kazunori Matsumoto. Psychiatric care and mental health immediately after the Great East Japan Earthquake and in the acute phase: Situation and support activities in Miyagi Prefecture. Journal of Psychiatry and Neurology, 116 (3), 2014, 175–188.
3) Kazunori Matsumoto, Hidekatsu Shirasawa, Toshiharu Iwadate, Keizo Hara, Manabu Kodama, Shigehito Rengi, Toshiyasu Shingai, Akira Kodaka, Nobuyoshi Miura, Satoko Obara, Mizuho Hayashi, Ikki Ueda, Atsushi Sakuma, Hiroo Matsuoka. The situation of psychiatric care after the earthquake in Miyagi prefecture-One year after the earthquake. Journal of Psychiatry and Neurology, 115 (5), 2013, 492–498.
4) Kazunori Matsumoto. Care for supporters and working people-From the experience of the Great East Japan Earthquake. Psychiatric, 72, 2013, 31–40, Critics.
5) Kazunori Matsumoto, Satoko Obara, Mizuho Hayashi, Keizo Hara, Hidekatsu Shirasawa. Activities of psychiatrists in Miyagi prefecture during the Great East Japan Earthquake. Psychiatry, 55 (4), 2013, 391–400.
6) Kazunori Matsumoto, Yoko Takahashi, Tomoko Osawa. Support after a large-scale disaster: Efforts to popularize the situation in the disaster area and cognitive-behavioral psychological support. Cognitive Therapy Study 6 (2), 2013, 118–120.
7) Kazunori Matsumoto. From the experience of mental health care and Miyagi in the Great East Japan Earthquake. Voice of Treatment, 13, 2012, 77–84.
8) Kazunori Matsumoto, Atsushi Sakuma, Ikki Ueda. Depression after a large-scale earthquake. Internal Medicine, 110, 2012, 1085–1089.
9) Yoko Takahashi, Kazunori Matsumoto. Trauma in the Great East Japan Earthquake. Mental Science, 165, 2012, 50–55.
10) Kazunori Matsumoto. Mental health care for survivors. Journal of the Japan Medical Association, 141, 2012, 56–60.
11) Kazunori Matsumoto. Current situation and issues in Miyagi prefecture. Psychiatry, 19, 2011, 543–547.
12) Matsumoto K. Mental health of disaster relief supporters. Japan Medical Association Journal, 56 (2), 2013, 70–72.