Chapter 2

Research Report
And Manuscripts Contributed to Other Journals

Research Report

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At the Tohoku University Graduate School of Medicine Department of Preventive Psychiatry, the Tohoku University Psychiatry class including the Tohoku University Graduate School Department of Psychiatry and the Hospital Psychiatry Department continuously conducts support activities and research activities to help the stricken areas. In FY2014, the research activities reported below were conducted in cooperation with the Miyagi Disaster Mental Health Care Center and related organizations.

1. In research on the mental health of supporters in disaster-stricken areas and research on support methods In the case of a large-scale disaster, it was found that people of various occupations are involved in the emergency, recovery, and reconstruction phases. Research that focuses on the mental health of people working after such disasters, mainly on police officers and firefighters who provide support as occupational rescuers in the emergency, has been conducted in past disasters, and it has been reported that depression and symptoms equivalent to PTSD persist in the long term[1)2)].

However, after a disaster, long-term support activities are necessary not only in the emergency period but also in the recovery and reconstruction period, especially with individuals engaged in high public welfare jobs. These occupations include municipal staff, healthcare professionals, social welfare service staff, and teachers; many of whom continue to live in the affected areas as victims, hence requiring support activities in the long-term. Many of these people have continued their support activities since the disaster. In addition to their stress as disaster victims, they are expected to feel more stress related to post-disaster support therefore increasing their risk of developing mental health problems. However, the mental health of supporters working in these local public welfare jobs has not been studied well.

Therefore, we conducted health surveys for local government officials, Councils of Social Welfare officials, and nursing officials in the stricken areas of the Great East Japan Earthquake. They were provided support from a psychiatric perspective, and a longitudinal research study was conducted to clarify the actual situation to provide the necessary support.

In this report, we will show the results of indicators related to mental health in each occupational area, including the results of surveys conducted in FY2014 and those of the longitudinal analyses conducted continuously from FY2013. We will also examine and report on the factors related to mental health issues.

(1) Research Methods

The research subjects were: ① local government employees, ② employees of Social Welfare Councils, and ③ nursing staff in the affected areas of the Tohoku coast. The survey in ① was conducted for 1,888 people from August to September 2014 for multiple local government employees in Miyagi Prefecture, and data was collected from 1,288 (68.2%) people. The survey in ② was conducted from November 2013 to January 2014 for multiple Social Welfare Council employees in Miyagi Prefecture, and out of the 870 targets, data was collected from 779 (89.5%) people. The survey in ③ was conducted for nursing staff at multiple hospitals in Miyagi Prefecture from August to December 2014 for 485 people, and data was collected from 392 (80.8%).

The survey was conducted using a self-administered questionnaire. The survey items were current work status, personal injury status, current health status, a screening questionnaire for depression and anxiety disorders (Kessler Psychological Distress Scale: K6), and the Patient Health Questionnaire (PHQ-9). The post-traumatic stress disorder checklist (PTSD Check List: PCL) was used to evaluate the symptoms of depression and its severity, and to evaluate the severity of PTSD by asking 17 questions.

The questionnaire indicated the voluntary nature of the cooperation and was collected in a sealed form so that the results could not be disclosed to supervisors and colleagues at work. As a post-survey consideration, applicants were advised by a psychiatrist, clinical psychologist, or psychiatrist that they could consult with them without submitting a questionnaire. This survey was conducted with the approval of the Ethics Committee of the Tohoku University Graduate School of Medicine.

(2) Research Results

① Survey on local government officials

This survey targets local government officials in two regions (local government A and local government B), and we will report the results of each municipality.

Subjects of local government A were 36% male and the average age was 45 years. In the FY2014 survey, 16% of staff were aware of high stress with a total score of 13 points or higher for K6, an index of overall mental health status. 16% of staff members with a total score of 10 or higher for PHQ-9 were at high risk for depression. The percentage of staff with a PCL total score of 44 or higher were at a high risk of PTSD was 4%.

The subjects of local government B were 61% male and the average age was 45.3 years. In the FY2014 survey, 13% of staff were aware of high stress with a total score of 10 points or higher for K6, an index of overall mental health status. 14% of staff members had a total score of 10 or higher for PHQ-9 and were therefore at high risk for depression. Besides, 5% of those who had a PCL total score of 44 or higher were at a high risk of PTSD.

To clarify the factors related to the risk of mental illness, the local government B divided the employees into 2 categories: regular staff and temporary staff. They used a chi-square test to determine the factors associated with high-risk PTSD symptoms, general mental health status, and depression. As

a result, for regular employees, “worsening of symptoms,” “not enough support from family and friends,” “feel responsible for my behaviors after the earthquake,” and “not being able to get enough rest due to work,” “feeling mentally distressed due to being criticized by residents,” and “feeling mentally distressed due to being criticized by work-related individuals” were some of the factors.

Factors specific to the degree of PTSD symptoms (PCL) included, “I have a physical illness that has been treated since before the disaster,” “moving houses after the disaster,” “missing family and deaths due to the disaster,” which were found to be associated with the worsening of PTSD symptoms. Factors specific to the degree of depressive symptoms (PHQ-9) included, “I feel that the people in the area do not trust each other.” Regarding the degree of mental health problems (K6) and the degree of depressive symptoms (PHQ-9), “not enough support from supervisors” and “not enough support from colleagues” are associated with worse symptoms.

Regarding dispatched staff, poor overall mental health (K6) was reported, with factors such as "not enough support from friends and family," "not being able to get enough rest due to work," and “being criticized by work-related individuals and feeling mentally distressed,” “not enough support from colleagues,” and “the work I am doing is different from what I was expecting,” and a correlation could be seen with poor overall mental health. Regarding the degree of depressive symptoms (PHQ-9), there was an association between "I was worried about my health before I was assigned to work" and the worsening symptoms.

② Survey on Social Welfare Council staff

26.2% were males and the average age was 46.8 years. In the FY2014 survey, K6 high-risk persons made up 7.9%, PHQ-9 high-risk persons 13.7%, and PCL high-risk persons 4.1%. Besides, the longitudinal analysis was conducted for 610 persons who answered in both the FY2013 and FY2014 surveys. There were some switches between high-risk individuals with depression and those with PTSD symptoms. Approximately half of those with high-risk depressive symptoms and half of those with PTSD symptoms in FY2013 remained at high-risk in FY2014. Besides, some who were at low risk in FY2013 became high risk in FY2014. It became clear that some had chronic mental issue symptoms while some had later onsets.

Next, we used a multivariate logistic regression analysis to clarify factors related to the risk of mental illness. According to the FY2014 survey, K6 (overall mental health) high-risk persons showed the highest odds ratio for “bad communication at work,” followed by “I feel that I can’t see the future for lots of work” which also had a high odds ratio and showed a correlation. Other factors included “I feel like blaming my actions at the time of the earthquake,” and “I have not been able to trust my neighbors.” PHQ-9 (depressive symptoms) high-risk persons showed the highest odds ratio for “I feel that I can’t see the future for lots of work” followed by “have a history of mental health treatment from before the earthquake” which also had a high odds ratio and showed a correlation. Other factors that showed a correlation were “bad communication at work,” “not being able to get rest” “single household,” “age.”

PCL (PTSD symptoms) high-risk persons showed the highest odds ratio for “bad communication at work” followed by “I feel like blaming my actions at the time of the earthquake” which also had a high odds ratio and showed a correlation. Other factors that showed a correlation were “house is completely or almost destroyed.”

③ Survey on nursing staff

99.0% were females, with an average age of 43.3 years. The percentage of PTSD high-risk persons (persons with a total PCL score of 44 or higher) was 4.2%. The proportion of people at high risk for depressive symptoms (PHQ-9 total score of 10 or higher) was 17.4%. K6 was not used in this study.

Next, a longitudinal analysis was conducted on 296 persons who answered in both the FY2012 and FY2014 surveys. Some high-risk persons with PTSD and some with depressive symptoms switched to the other. Regarding PTSD, among those who were at high risk in FY2012, 70% improved in FY2014, but 30% remained at high risk. Besides, although there were a small number of people who were in the normal range in FY2012, there were some who newly became high risk in FY2014. Regarding depression, 60% of those who were at high risk in FY2012 improved, but 40% remained at high risk. Besides, among those who were in the normal range in FY2012, just under 10% were newly at high risk.

Furthermore, to clarify the factors related to change of PTSD and depressive symptoms at two points, in FY2012 and FY2014, the analysis was performed using a generalized estimating equation (GEE). As a result, regarding PTSD symptoms, changes in PCL total points and PTSD risk; people who answered, “I feel responsible for the time of the earthquake” and “feeling mentally distressed due to being criticized by residents,” had a higher chance of having higher scores and risk, than those who didn’t. Regarding depressive symptoms, people who answered, “I feel responsible for the time of the earthquake” and “not receiving enough support from family,” were more likely to have higher PHQ-9 total scores. Regarding depressive symptoms, people who answered, “I feel responsible for the time of the earthquake,” “not receiving enough support from supervisors at work,” and “working in a temporary location due to the impact of the disaster,” had a higher risk of developing depressive symptoms compared to people who didn’t.

(3) Considerations

The local government staff survey revealed that the risk of depression and PTSD for staff in the stricken areas remained high even after more than three years since the earthquake. It also revealed that more staff members were at risk for depression than PTSD. The municipalities in the stricken areas continue to perform enormous reconstruction operations in addition to their usual operations from before the disaster. The high workload remains persistent, which could also be associated with depressive symptoms. In the future, we will examine what factors are affecting them and conduct longitudinal analyses to clarify the factors related to the high risk of mental health issues in more detail.

According to a survey conducted by employees of the Social Welfare Council, many of them are continuously working close to the affected people at work while maintaining their mental health, while

some of them continue to provide support while coping with mental health issues. There was no change in the proportion of high-risk persons with psychiatric symptoms between FY2013 and FY2014. Looking at the switches, there were individuals with chronic mental health symptoms and those whose mental symptoms worsened later. Considering the factors, although the effects of the disaster itself are gradually diminishing overall, attention was deemed necessary for employees who suffered a great deal of damage, such as losing their families, losing their homes and property, and suffering long-term mental health issues. Besides, human relationships at the workplace and connections with the community after the earthquake have also continuously affected mental health, suggesting the importance of communities, such as improving workplace communication and deepening connections with the community.

A survey of nursing staff revealed that while the overall mental health was improving, some high-risk people switched, and the proportion of people at high risk for chronic depression increased. Examination of the factors indicated that feelings of responsibility during the disaster hindered the recovery of both PTSD and depression. This suggests that it is necessary to consider ways to intervene with this feeling of responsibility that remains over time. Besides, the decline in social support is also a related factor and so, it was considered important to work to maintain and improve connections with people at home and work.

2. Research on psychological support methods in disaster-stricken areas

(1) Psychological Support Methods for Disaster Relief Victims Research on the spread of Skills for Psychological Recovery (SPR) and its feasibility in Japan

Skills for Psychological Recovery (hereinafter referred to as SPR) is a practical psychological support method that can be widely applied to a variety of mental health problems that many victims experience during the period of disaster recovery and reconstruction and was developed by the National Center for PTSD and the National Child Traumatic Stress Network in the United States in FY2010. In June 2011, the Hyogo Prefecture Mental Health Care Center research group created a Japanese version which is the latest psychological support technique. SPR, a specialized support program for the recovery phase of disasters, has been used after some overseas disasters but has not yet been fully applied in Japan. Therefore, we decided to research training for professionals to spread SPR and research on the feasibility of SPR in Japan.

① Research on training for professional staff to spread SPR

a. Purpose of Research

Mental health care professionals who are involved in support in the stricken areas of the Great East Japan Earthquake received SPR training and applied it to actual disaster victims. This was considered to have practical significance as a mental health measure in these areas. However, although training for specialized skills is necessary for psychological support, the training method is not well established. The purpose of this study was to provide SPR training to specialists engaged in mental health care in affected

areas, to conduct questionnaires and qualitative surveys to clarify the significance and problems of SPR training, and to clarify the possibility and problems of its use in Japan.

b. Research Methods

SPR workshops were held for experts engaged in mental health care in the affected areas on the following schedule. The lecturer requested was Tomoko Osawa (a clinical psychologist) from one of the mental health care centers in Hyogo Prefecture who had acquired the SPR trainer qualification. As basic training, lectures on SPR and training through workshops were conducted over two days. It was implemented four times by FY2013, and the fifth was implemented in Sendai City in June 2014. Besides, as follow-up training, a case study of SPR utilization cases was conducted for those who wished to participate in the basic training. This training was conducted three times by FY2013 and was conducted in Sendai City in October 2014.

Before and after the basic training and after the follow-up training sessions, a questionnaire survey was conducted on the contents of the training and SPR. Besides, the data was converted to an ID that could be anonymous so that the data could be traced from basic training to follow-up training. After the basic training, if the trainees provided support to the victims using SPR in their fields, they were requested to record them in the skills implementation log and submit them at the follow-up training. The contents of the skill implementation log were the techniques used in the support i.e. the support time, the number of times support was given, the contents of support, and problems. At the follow-up workshop, group discussions were held to examine the feasibility and problems in utilizing SPR, and the details were recorded in the meeting minutes. Participation in the training and consent was differentiated, and the research was conducted only for those who provided consent. This study has been approved by the Ethics Committee of the Tohoku University Graduate School of Medicine.

c. Research Results

The number of participants in the basic training session for the fifth training held in FY2014, comprised 52 people, bringing the total to 151 from the previous year. The fourth follow-up training was attended by 19 participants, bringing the total to 56 people. Of the participants, only individuals who consented to the study were included in the study. The number of valid responses in the basic training questionnaire survey (5 times) was 137, and the number of valid responses in the follow-up training questionnaire survey (4 times) was 41. The first response was used for those who attended the follow-up training more than once. As a result, the number of valid responses to be tracked in the basic training and follow-up training was 35.

The features of the participants at the basic training sessions were as following; male to female ratio = 23:114, 18% were in their 20's, 35% in their 30's, 26% in their 40's, 15% in their 50's, 5% in their 60's and 1% didn't answer. Of the total, 29% of participants were psychologists, 13% were psychiatric social workers, 19% were public health nurses, 18% were nurses, 6% were psychiatrists, and 15% represented other occupations. 12% said they did not have experience in disaster/trauma support, 62% said they had some experience, 20% said they had experienced, and 5% said they were very experienced.

According to the questionnaire results after basic training, about 90% of the respondents answered, "strongly agree" or "slightly agree" to the question, "Do you think this is related to your current job?" About 90% of the respondents answered, "strongly agree" or "slightly agree" when asked if they were willing to try it in their work. When asked, “Do you have confidence in using SPR?” “strongly agree" and “slightly agree” were as low as just under 40%. Respondents who had experience in assisting patients with post-disaster trauma showed significantly higher confidence in using SPR. After basic training and follow-up training, follow-up subjects (N = 35) were questioned on their interest in SPR, difficulty, relevance to work, willingness and confidence to use it, and the usefulness of SPR skills in a questionnaire; but no major changes were observed.

In the group discussion of the follow-up training, with regards to “the usefulness of SPR in your work,” participants said that it could also be used in “consultations” and “health classrooms or in other group settings.” Additionally, “the idea that individuals in need of help can solve their problems on their own is a good way to lower the burden on supporters who feel as though they ‘must solve their problems’.” Concerning “I have used SPR before or have wanted to,” while not many used it in their sessions, some used it in essence. Concerning “difficulties/changes/challenges of using SPR in your work, people commented saying that “the idea of thinking together is important because the teaching of skills is not familiar in Japanese culture,” “it is necessary to use it flexibly according to the TPO instead of according to the manual,” “a step to change the expressions in the manual to match yourself is required,” and “when the use of skills isn’t successful, you need to be able to change them.” Concerning “What kind of training system or SV (supervision) system would make it easier to use SPR?”, people answered saying that “case studies” and “timely supervision” would help.

d. Considerations

The results of the questionnaire survey after basic training revealed that, although the interest in SPR and the motivation to try it was high, the confidence was low. From the follow-up surveys, it could be seen that follow-up training increased the participants’ level of understanding and that providing examples increased the motivation to practice SPR but did not lead to confidence.

Based on the above results, although SPR training has a certain significance, there is a limit to training (consisting of basic training and one follow-up training session. As discussed in the group discussion, it became clear that it was necessary to repeat case studies and establish an SV system. Besides, a modeling function was considered necessary to spread it as a support method.

Based on the results, a demonstration DVD on SPR utilization scenes was created and distributed to the trainees along with a questionnaire for viewing. In the future, we plan to analyze the feedback results of the DVDs and consider methods to spread SPR.

② Study on the feasibility of SPR in Japan

a. Purpose of Research

To apply SPR in Japan, it is necessary to consider whether this program can be implemented in the affected areas. Therefore, the purpose of this study was to cooperate with the municipalities in the disaster

areas, apply SPR to the victims, and examine the feasibility of the application.

b. Research Methods

The participant targets were those living or working in District A of the Miyagi prefecture and who were 18 years or older with an awareness of mental health issues. Those excluded were individuals who were receiving treatment at a psychiatric institution or had severe poor mental health symptoms. Besides, participants were native Japanese speakers, who understood the purpose and contents of this study, and who consented in writing. A memorandum of understanding was exchanged with the municipality of District A, and residents were jointly recruited to participate in the "Post-disaster Stress Recovery Program." There were 15 target participants.

All psychiatric health care workers (nurses, public health nurses, psychologists, physicians, etc.) who have received training have been trained by SPR trainers at a mental health care center in Hyogo Prefecture. SPR was conducted under the supervision of the trainer and psychiatrists of the Tohoku University Hospital Department of Psychiatry. Participants who met the selection criteria were given a pre-intervention assessment after explaining the intent of the study and obtaining written consent. The instructor conducted a total of five interviews with the participants for about one hour, once every one/two weeks. After the intervention, post-intervention evaluations and 2-month follow-up evaluations were conducted.

The primary endpoint is the overall score on the GHQ Mental Health Questionnaire (GHQ-30). Secondary endpoints were QOL (SF-8), post-traumatic stress symptoms (IES-R), resilience (TRS), self-efficacy (SE), and program satisfaction (CSQ-8J). Remarks on the program, each skill, and their subsequent utilization were evaluated by qualitative content analysis.

This study was conducted under the guidance of the municipality in charge of District A, which is an area of intervention, and under appropriate cooperation. In each interview, the interventionist assessed the subject's overall mental status (including suicidal thoughts). Besides, if we became aware of any serious adverse events or problems related to this study, we included necessary measures and support in cooperation with the division in charge of District A, such as referrals to related organizations including medical institutions. This study was performed with the approval of the Ethics Committee of the Tohoku University Graduate School of Medicine.

c. Research Results

We began recruiting participants in July 2013. As of March 2015, the number of applicants had reached 24. Of these, 3 did not meet the requirements, 7 canceled before the intervention, and 1 postponed, leaving 13 participants to start the intervention. Of these, four had prior interventions, one did not meet the study eligibility criteria, so the total number studied was eight. No adverse events have been reported in any of the 13 patients, including prior interventions, by March 31, 2015. Of the 13 participants who started the intervention, nine completed the final session by March 31, 2015. After examining the pre- and post-intervention assessments of the nine completed preliminary analyses, the primary endpoint, the GHQ Mental Health Questionnaire (GHQ-30), had lower total scores after the intervention than before.

d. Considerations

This study has not yet reached the target number of cases. Therefore, at the time of this report, we have not reached the stage of verifying the feasibility of the program. However, no adverse events were observed at the present stage in the 13 cases in which intervention was started. Preliminary analyses show that the GHQ-30 value of the 9 cases in which the intervention was completed was lower than that of before the intervention. This suggests that SPR may be a safe and effective program in Japan at this time.

In the future, the number of case subjects will be increased, and when the target number of subjects is reached, the transition of each endpoint will be analyzed to verify the feasibility of the program.

3. Research on mental exercise training for general citizens and supporters in the affected areas of the Great East Japan Earthquake to spread awareness on cognitive behavioral therapy

(1) Purpose of Research

Cognitive-behavioral therapy (CBT) is a psychotherapy that enhances self-control through both cognitive and behavioral approaches to improve and resolve various social life issues. CBT has indications for various mental disorders such as depression and anxiety disorders, and its effectiveness has been reported[3)4)]. It is effective not only for mental illnesses but also to prevent depressive symptoms that are not yet considered to be mental illnesses and have been widely applied in fields other than for medical practices[5)].

In Japan, the spread of CBT is slower than in other developed countries, and effective training methods must be established to spread it throughout society. In this study, from the perspective of primary prevention, a workshop on stress care in daily life was conducted for the general public and supporters in the disaster areas based on the basic concept and skills of CBT. The significance and problems of the training were examined by conducting surveys using questionnaires. The purpose of this study was to clarify the future of CBT and the possibilities and issues with spreading awareness of this method.

(2) Research Methods

In FY2013, training was held four times in Iwanuma City, Sendai City, and Ishinomaki City for the general public, and the fifth training was held in Ishinomaki City from May to June 2014.

A questionnaire was conducted after each training session to obtain feedback on the degree of understanding and remarks of the training program. Before and after the entire training program, participants learned about (i) the characteristics of participants, (ii) questions to clarify their understanding and retention of the training, (iii) SF-8 as a scale to measure the quality of life (QOL). A self-efficacy scale was used to determine whether self-efficacy was enhanced by learning and utilizing CBT. In conducting the training, we received technical guidance from Dr. Hiroshi Ohno (Director of the Center for Cognitive Behavioral Therapy at the National Center of Neurology and Psychiatry) and Professor Miyuki Tajima (Director of the Clinical Technology Department Office at the National Cognitive Behavioral Therapy Center of the National Research Center of Neurology and Psychiatry). This study was performed with the approval of the Ethics Committee of the Tohoku University Graduate School of Medicine.

(3) Results

The first to fifth training sessions have been conducted in Iwanuma City, Sendai City, and Ishinomaki City thus far. The total number of participants was 180, consisting of 19 males (10.6%) and 161 females (89.4%). The average age was 45.53 ± 14.27 years (range: 22-91 years).

Questions to measure the understanding of the training sessions and self-efficacy scale (SES) were conducted before and after the training sessions for 46 people (2 males, 44 females, average age 47.8 ± 13.7 years) who attended at least 5 times out of the 6 sessions.

Self-efficacy was compared before and after interventions using the Wilcoxon signed-rank test. Self-efficacy significantly improved from 69.2 before training to 73.4 after training ($p < 0.01$, $z = 2.73$).

Seven questions were asked about their understanding of the training, and scores before and after the intervention were compared by using the Wilcoxon signed-rank test. A 5-point scale from 0 (not applicable) to 4 (applicable) was used, and a significant change before and after the intervention was observed for the four following items, “I know the habits of the way I think,” “I know what kind of thinking makes me feel depressed and anxious,” “I can recognize the ideas that hurt me, and I know how to change what I think about,” and “ I carefully evaluate how the situation changes after implementing the solution.”

Participants were satisfied with the training and commented saying that they were able to enjoy learning while experiencing the exercises.

(4) Considerations

Although the results should be interpreted with caution, as it is a preliminary pre- and post-survey with no controls, it was suggested that this training program would help improve the self-efficacy of the disaster victims. Our trials have revealed that there is a need to learn the cognitive-behavioral approach and use it in disaster-stricken areas and that training programs can be implemented to respond to this. In the future, it will be necessary to try the practice in even more regions, revise the program, and train program implementers.

Based on the above, the program was revised with a focus on cognition, focusing on the assertion (communication) of cognitive reconstruction methods in cognitive behavioral therapy skills. At the end of FY2014, we conducted a workshop to spread the skills of CBT for the general public in the stricken areas and started a randomized controlled trial. We plan to verify the effectiveness of the training in the future.

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