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# Relationship between experience of support of clinical psychologists in mental health and welfare activities in disaster-stricken areas and skill proficiency level

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Abstract

In the present study, a survey was conducted on the proficiency level of skills related to mental health activities after the disaster in the regions affected by the Great East Japan Earthquake. This study also aimed to clarify (1) the relationship between support experience and level of knowledge and skills in regional mental health activities at the time of disaster, (2) the relationship between experience to acquire knowledge and skills in regional mental health activities at the time of disaster experience studying and the utility of that knowledge and these skills, and (3) the relationship between experience to acquire knowledge and skills and the subjective difficulty of those skills. The study thus aims to identify elements of educational approaches needed for disaster support by clinical psychologists. As factors significantly related to the high awareness of the importance of knowledge and skills in regional mental health activities at the time of disaster, items such as the following were extracted: "experience of support through interprofessional collaboration", "experience of disaster support through mental health care team activities", and so on. As factors significantly related to high degree of utility of knowledge and skills in regional mental health activities at the time of disaster, "experience in the field of welfare" and "experience of support for educational institutions such as schools" were identified. The principal aim of the present study was to clarify the skills necessary for clinical psychologists, but it is important for psychological professionals to acquire the competency required for developing organizational activities that are not limited to any one occupation. In addition, it is necessary to clarify the skills expected of clinical psychologists by other professionals as related to support through interprofessional collaboration in the event of a disaster.

**Key words**: *clinical psychologist, disaster psychiatric medicine, community mental health care activity, proficiency level*

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## I. Introduction

At 14:46 JST on March 11, 2011, a large-scale magnitude 9.0 earthquake (the Great East Japan Earthquake) occurred off the Sanriku coast (latitude 38.1 degrees north, longitude 142.5 degrees east, depth 24 km) and was followed by a massive tsunami that hit the Sanriku coastal area. In Iwate Prefecture, there were 4,672 victims, 1,122 missing persons, and 26,077 damaged homes (completely/semi-collapsed) [1]. In disaster-stricken areas, mental health problems arose from the beginning of the disaster, and mental health measures in disaster-stricken areas have been implemented.

Stoddard et al. [2] and Kotani et al. [3] indicated that in the process of recovery from a major disaster, there is a biased interest toward physical recovery, and a strong tendency to overlook psychological problems, which are difficult to see. The problems of acute stress, trauma, and post traumatic stress disorder (PTSD) especially tend to be overlooked. Therefore, the need for support by professionals capable of psychological intervention was emphasized. In Iwate Prefecture as well, clinical psychologists worked as a member of a medical team, responded to the residents of disaster-stricken areas, and were active in a wide variety of fields such as health management of workers.

The World Health Organization (WHO) has developed healthcare through interprofessional collaboration since the 1980s; in 2010, the WHO presented the "Framework for action on interprofessional education and collaborative practice" and has been promoting the development of education and practice for realizing interprofessional collaboration [4]. In Japan, support by disaster medical association teams (DMAT) has been developed for physical medical support immediately after a disaster. Teams consisting of physicians, nurses and work coordinators who have completed the prescribed training conduct activities within approximately 48 hours when a disaster occurs.

Moreover, after this large-scale disaster, a support system for psychiatric disaster medical support [Disaster Psychiatric Assistance Team (DPAT)] was developed. In addition to psychiatrists, nurses, work coordinators, and so on, assistance by DPATs is expected to be carried out by interprofessional teams composed of members such as child psychiatrists, pharmacists, public health nurses, mental health care workers, clinical psychologists, and so on, according to the on-site needs. Thus, clinical psychologists have become member of teams, and activity through interprofessional collaboration is expected to play an important role. Therefore, an educational program that assumes that clinical psychologists are active at the time of a disaster is needed. In addition, a bill concerning certification of clinical psychologists was enacted in 2015, and the formulation of a national qualification for clinical psychologists and a related educational program is in progress.

Cox et al. [5] refer to the domains of psychological knowledge and skills at the time of a disaster as "psychosocial support competency domains." Furthermore, the following specific items are indicated: supportive presence, psychological first aid, workforce resiliency, critical incident stress management, crisis intervention, community and family outreach,

mental/behavioral health triage, and multi-faith spiritual care, in addition to death notification, bereavement, and grief support. In addition, Johnstone [6] clarified the effects of group work support utilizing psychological first aid (PFA) in hurricane Katrina relief activities in the United States and cited the ability to operate a group with victims and experts in the event of a disaster as a necessary capability for aid workers.

Furthermore, in Japan, based on the results of a questionnaire survey administered to 20 clinical psychologists who had support experience, Nishimatsu et al. [7] indicated the ability to coordinate duties in the event of a disaster, participation in activities, on-site self-care ability, group adjustment ability, and consultation ability as the qualities and capabilities needed for supporters who provide crisis support. However, in this survey, only those who had experience of support were targeted, and no quantitative examination was performed. In addition, Fukui et al. [8, 9] extracted 59 items by the Delphi method from the 79 required competency items as necessary competencies for DPATs from the survey of disaster mental health experts. However, this survey did not focus on skills that are required for each occupation, and psychological professionals were not considered.

Thus, it can be said that information on knowledge and skills required by clinical psychologists in disaster relief support is limited. Therefore, it is necessary to examine what knowledge and skills are required by clinical psychologists in disaster relief and what kind of educational programs are required. In the present study, it was hoped that answers based on the experience of providing support at the time of a disaster and experiences of receiving support from other prefectures would be obtained: A survey was conducted on the proficiency level of skills related to mental health activities after disaster for members and associate members of the Iwate Society of Certified Clinical Psychologists in the regions affected by the Great East Japan Earthquake. The present study aimed to clarify (1) the relationship between support experience and level of knowledge and skills in regional mental health activities at the time of disaster, (2) the relationship between experience to acquire knowledge and skills in regional mental health activities at the time of disaster experience studying and the utility of that knowledge and these skills, and (3) the relationship between experience to acquire knowledge and skills and the subjective difficulty of those skills and to identify elements of educational approaches needed for disaster support by clinical psychologists.

## II. Methods

### 1. Participants

The population of the present study consisted of 220 members (clinical psychologists and equivalent persons) of the Iwate Society of Certified Clinical Psychologists: Iwate Prefecture is the disaster site of the 2011 Tohoku earthquake and tsunami (Great East Japan Earthquake). The investigation period was October 13–November 4, 2017. The survey was conducted using an anonymous self-administered questionnaire, distributed and collected via postal mail through the Iwate Society of Certified Clinical Psychologists.

2. Investigation items

The investigation items were as follows:

• sex

• age

• educational background (graduation from type 1 designated graduate school, type 2 designated graduate school, professional graduate school specializing in clinical psychologist training, designated university department before start of type 1/type 2 designated graduate school system, designated graduate school before start of type 1/type 2 designated graduate school system, etc.)

• years of practical experience of clinical psychology-related work

• years of acquisition of clinical psychologist certification

• current and past occupational fields (medical care/health, welfare, education, university/ laboratory, legal affairs, law enforcement, industrial/organizational/labor-related/private psychological consultation, etc.)

• classification of support activities (within the disaster-afflicted area, support activities falling under duties; within the disaster-afflicted area, support activities falling outside of duties; outside the disaster-afflicted area, support activities falling under duties; outside the disaster-afflicted area, support activities in falling outside of duties)

• experience of disaster support activities (support for evacuation centers; disaster relief medical team activities; mental health care team activities; emergency dispatch school counselor; dispatch to medical institutions; mental healthcare center work; DMAT; DPAT, etc.; disaster dispatch medical team activities; consultation with persons in other occupations within affiliated organization; salon activities; psychological education; lectures; consultation with persons in other occupations; telephone consultation; support in child rearing areas; support for temporary housing; support for disaster recovery public housing; support for educational areas such as schools; support for supporters and related organizations; support for bereaved family members/grief care)

• experience in support of team medical/ interprofessional collaboration

• 28 items of knowledge and skills of regional mental health activities at the time of disaster [extracted by analysis of preliminary survey using the 79 competencies items of Fukui et al.'s survey and 5 competencies items created independently. (Table 1)]

Concerning these 28 items, responses were requested regarding the following five categories concerning proficiency level: Q1 (Learning experience during training education course; Experience of learning during clinical psychologist training education course in university, graduate school), Q2 (Learning experience since start of employment; participation in training, concerning clinical psychology-related duties), Q3 (Awareness of importance; consider/do not consider important in disaster support), Q4 (Utility; can/cannot perform in disaster support), Q5 (Subjective awareness of difficulty; feel/do not feel unable/difficult to perform in disaster support).

3. Analysis of data

Responses were received from 81 participants (26 men, 55 women; 36.8% collection rate) within the investigation period, and these responses were used for analysis. With regard to participants, the frequency concerning the mastery of knowledge and skills related

Table 1. Items concerning knowledge and skills related to disaster-stricken area mental health care activities

| Item No. | Item description |
|---|---|
| 1 | Establishing a relationship of trust with the person being responded to |
| 2 | Possessing basic knowledge concerning diagnosis and treatment of psychiatric disorders and responding based on that knowledge |
| 3 | Understanding of the Act on Mental Health and Welfare for the Mentally Disabled and responding in accordance with the law |
| 4 | Possessing knowledge of specific post-disaster psychological reactions that occur (e.g., traumatic reaction, grief reaction) |
| 5 | Conducting outreach support activities |
| 6 | Responding appropriately to acute exacerbation of persons with mental disorder and severe stress response of disaster victims |
| 7 | Connecting with other specialist teams when specialized knowledge is needed |
| 8 | Understanding the necessity of psychoeducation in response to complaints of anxiety and insomnia of disaster victims and its implementation |
| 9 | Responding to psychological consultation from supporters in the area |
| 10 | Understanding of the necessity of training/implementation of mental health for supporters of various types of occupations in the area |
| 11 | Communicating medium to long term tasks and directions to community supporters from the specialized viewpoint of disaster mental health |
| 12 | Possessing knowledge of exhaustion of supporters caused by disaster stress, prolonged support, etc. |
| 13 | Calming the confusion of overwhelmed disaster victims and supporting them to have a future outlook |
| 14 | Providing disaster victims with useful information to cope with disaster-related stress |
| 15 | Teaching methods of relaxing, breathing, etc. at meetings where residents gather |
| 16 | Conducting public awareness activities on mental health to residents in the disaster area through lectures and other events |
| 17 | Coordination of work duties in the responsible area through role sharing, etc. with related organizations |
| 18 | When information is insufficient, demonstrating mobility, going directly to psychiatric medical institutions, evacuation centers, etc. and collecting information |
| 19 | Obtaining information necessary for activities from meetings held at activity base headquarters, etc. and key persons in the area |
| 20 | Comprehensively making judgments regarding the various types of information obtained and utilizing them in activities |
| 21 | Striving to not force advice on supporters of disaster areas |
| 22 | Organizing a team including members who have extensive knowledge and activity experience regarding mental health care after a disaster |
| 23 | Understanding of the significance of disaster support activities through the workplace to which members belong and support for normal duties during dispatch |
| 24 | Consulting with concerned persons as needed |
| 25 | Performing case management as needed |
| 26 | Coordinating a support system as needed |
| 27 | Performing evidence-based psychotherapy in response to traumatic reaction |
| 28 | Understanding of psychological first aid (PFA) and response based on it |

to mental health care activities in disaster-afflicted areas was obtained.

1) First, in order to clarify the relationship between experience of disaster-stricken area mental health care activities and proficiency level, the participants were assigned to a support experience group (34 persons) or non-support experience group (47 persons), and five categories (Q1 - Q5) related to the proficiency level of 28 items concerning knowledge and skill related to disaster-stricken area mental health care activities were compared between the groups.

2) In order to elucidate the relationship between utility of knowledge and skills in disaster-stricken area mental health care activities and learning experience and awareness of importance, we performed the following analyses: (1) we calculated the average of the number of items for which respondents answered "possible" for Q4 (Utility); (2) based on the average value (11.36 ± 6.89), three groups were set, participants were assigned to the high utility group (14 persons), medium utility group (55 persons), or low utility group (12 persons); (3) we compared the answers to Q1 (Learning experience during training education course), Q2 (Learning experience since start of employment), and Q3 (Awareness of importance) for 28 items regarding knowledge and skills.

3) In order to elucidate the relationship between subjective difficulty of skills in disaster-stricken area mental health care activities and learning experience and awareness of importance, we performed the following analyses: (1) we calculated the average number of items for which respondents answered "cannot/difficult" for Q5 (Subjective awareness of difficulty); (2) based on the average value (9.73 ± 6.01), three groups were set, and participants were assigned to the high difficulty group (14 persons), medium difficulty group (54 persons), or low difficulty group (13 persons); (3) we compared the answers to Q1 (Learning experience during training education course), Q2 (Learning experience since start of employment), and Q3 (Awareness of importance) for 28 items regarding knowledge and skills.

4) For the above, the t-test was used for comparison of variables, Fisher's exact test was used for comparison of two groups, and the chi-squared test for 3 groups, and residual analysis was performed.

5) In order to elucidate the related factors of awareness of importance regarding disaster-stricken area mental health care activities, of the 28 items related to knowledge and skills, the mean value (23.8 ± 5.6) was calculated for the number of items considered to be "important". The results were classified as high or low based on the mean value + 0.5 SD and examined by multiple logistic regression analysis with high-low awareness of importance as a dependent variable and other investigation items as independent variables.

6) In order to elucidate the related factors of utility of disaster-stricken area mental health care activities, of the 28 knowledge and skills on disaster-stricken area mental health care activities, the number of items for which a response of "can" was given for Q4 (Utility) was identified as high or low based on the mean value (11.4 ± 6.9). Using multiple logistic regression analysis (stepwise method), the high and low scores of feasible items were examined as dependent variables and

Table 2. Background of participants

| | All N=81 | Disaster-stricken area support experience group N=34 | Non-support experience group N=47 | p-value |
|---|---|---|---|---|
| Sex | | | | |
| Men | 26 (32.1%) | 16 (47.1%) | 10 (21.3%) | 0.018 |
| Women | 55 (67.9%) | 18 (52.9%) | 37 (78.7%) | |
| Age | 42.23 ± 11.02 | 41.75 ± 8.09 | 42.55 ± 12.62 | 0.735 |
| Number of years since aquiring clinical psychologist certification | | | | |
| 18 years or longer | 14 (17.3%) | 4 (11.8%) | 10 (21.3%) | 0.600 |
| 7–17 years | 35 (43.2%) | 20 (58.8%) | 15 (31.9%) | |
| 6 years or less | 21 (25.9%) | 6 (17.6%) | 15 (31.9%) | |
| Certification not acquired | 11 (13.6%) | 4 (11.8%) | 7 (14.9%) | |
| Primary occupational field | | | | |
| Medicine/healthcare | 31 (38.3%) | 11 (32.4%) | 20 (42.6%) | 0.775 |
| Welfare | 19 (23.5%) | 10 (29.4%) | 9 (19.1%) | |
| Education | 20 (24.7%) | 9 (26.5%) | 11 (23.4%) | |
| Other | 11 (13.6%) | 4 (11.8%) | 7 (14.9%) | |

the other investigation items as independent variables.

7) In order to elucidate the relevant factors concerning the utility of outreach, psychoeducation, public awareness activities, and information collection, which are the basis of mental health activities that considered to be particularly necessary, with respect to multiple logistic regression analysis (stepwise method) was performed on the number of items for which participants responded "can" in Q4 (Utility) with the high and low feasible items as dependent variables and other question items as independent variables.

8) For statistical processing, SPSS 20.0 J for Windows was used, and the significance level was set at 5% in all tests.

4. Ethics approval and consent to participate

The present study was approved by Ethics Committee of Iwate Medical University School of Medicine (No.H28-180). Individual sealed envelopes were used for distribution and collection of questionnaires. All individuals agreed to participate in this study.

## III. Results

1. Background (Table 2)

The mean age of participants (N=81) was 42.23 ± 11.02 years. Regarding clinical psychologist certification, 14 persons had acquired certification 18 years ago or earlier, 35 persons had acquired certification 7–17 years ago, 21 persons had acquired certification within the previous 6 years, and 11 had not acquired certification. Regarding the current main fields of work, 31 participants (38.3%) identified the medical and healthcare field, 19 (23.5%) identified the welfare, 20 (24.7%) identified the school counselor or other educational field, and 11 (13.6%) identified other areas (e.g., university, legal affairs, law enforcement, industrial/labor, private

Table 3. Overall image on proficiency level of knowledge and skills related to disaster-stricken area mental health care activities

| Item No. | Q1: Items that you have learned in the clinical psychologist training course at university/graduate school | | Q2: Items that you have learned through training, etc. since becoming employed in the field of clinical psychology | | Q3: Items that you consider to be important for disaster support | | Q4: Items that you think you "can perform" in disaster assistance | | Q5: Items that you think that you "cannot perform/ have difficulty with" in disaster assistance | |
|---|---|---|---|---|---|---|---|---|---|---|
| | N | % | N | % | N | % | N | % | N | % |
| 1 | 65 | 80.2 | 63 | 77.8 | 78 | 96.3 | 65 | 80.2 | 5 | 6.2 |
| 2 | 59 | 72.8 | 66 | 81.5 | 68 | 84.0 | 46 | 56.8 | 15 | 18.5 |
| 3 | 21 | 25.9 | 46 | 56.8 | 43 | 53.1 | 17 | 21.0 | 43 | 53.1 |
| 4 | 26 | 32.1 | 72 | 88.9 | 78 | 96.3 | 49 | 60.5 | 12 | 14.8 |
| 5 | 14 | 17.3 | 43 | 53.1 | 72 | 88.9 | 33 | 40.7 | 27 | 33.3 |
| 6 | 10 | 12.3 | 47 | 58.0 | 71 | 87.7 | 16 | 19.8 | 46 | 56.8 |
| 7 | 27 | 33.3 | 59 | 72.8 | 76 | 93.8 | 54 | 66.7 | 11 | 13.6 |
| 8 | 17 | 21.0 | 65 | 80.2 | 74 | 91.4 | 57 | 70.4 | 7 | 8.6 |
| 9 | 16 | 19.8 | 51 | 63.0 | 76 | 93.8 | 53 | 65.4 | 11 | 13.6 |
| 10 | 11 | 13.6 | 56 | 69.1 | 69 | 85.2 | 38 | 46.9 | 20 | 24.7 |
| 11 | 6 | 7.4 | 39 | 48.1 | 67 | 82.7 | 14 | 17.3 | 46 | 56.8 |
| 12 | 11 | 13.6 | 57 | 70.4 | 76 | 93.8 | 28 | 34.6 | 29 | 35.8 |
| 13 | 4 | 4.9 | 36 | 44.4 | 73 | 90.1 | 17 | 21.0 | 39 | 48.1 |
| 14 | 7 | 8.6 | 45 | 55.6 | 73 | 90.1 | 44 | 54.3 | 17 | 21.0 |
| 15 | 11 | 13.6 | 54 | 66.7 | 66 | 81.5 | 46 | 56.8 | 20 | 24.7 |
| 16 | 7 | 8.6 | 42 | 51.9 | 62 | 76.5 | 37 | 45.7 | 26 | 32.1 |
| 17 | 9 | 11.1 | 34 | 42.0 | 67 | 82.7 | 21 | 25.9 | 45 | 55.6 |
| 18 | 3 | 3.7 | 21 | 25.9 | 63 | 77.8 | 18 | 22.2 | 44 | 54.3 |
| 19 | 6 | 7.4 | 25 | 30.9 | 70 | 86.4 | 26 | 32.1 | 33 | 40.7 |
| 20 | 14 | 17.3 | 30 | 37.0 | 70 | 86.4 | 34 | 42.0 | 22 | 27.2 |
| 21 | 12 | 14.8 | 46 | 56.8 | 71 | 87.7 | 59 | 72.8 | 3 | 3.7 |
| 22 | 5 | 6.2 | 30 | 37.0 | 71 | 87.7 | 9 | 11.1 | 50 | 61.7 |
| 23 | 2 | 2.5 | 21 | 25.9 | 62 | 76.5 | 21 | 25.9 | 35 | 43.2 |
| 24 | 21 | 25.9 | 36 | 44.4 | 69 | 85.2 | 33 | 40.7 | 25 | 30.9 |
| 25 | 16 | 19.8 | 30 | 37.0 | 64 | 79.0 | 28 | 34.6 | 31 | 38.3 |
| 26 | 11 | 13.6 | 25 | 30.9 | 66 | 81.5 | 12 | 14.8 | 45 | 55.6 |
| 27 | 13 | 16.0 | 37 | 45.7 | 60 | 74.1 | 14 | 17.3 | 54 | 66.7 |
| 28 | 6 | 7.4 | 48 | 59.3 | 72 | 88.9 | 31 | 38.3 | 27 | 33.3 |

psychological counseling).

2. Overall image of proficiency level of knowledge and skills related to disaster-stricken area mental health care activities (Table 3)

Regarding the 28 items concerning knowledge and skills related to disaster-stricken area mental health care activities, the responses to Q1–Q5 are shown in Table 3. In response to Q1 (Learning experience during training education course), the items that had been studied the most were item No. 1 (80.2%), item No. 2 (72.8%), and item No. 7 (33.3%). Items with the highest response rate of "learned" to Q2 (Learning experience since start of employment) were item No. 4 (88.9%),

Table 4. Relationship between disaster-stricken area mental health care activities and proficiency level

| Item No. | Q1: Learing experience during training education course | | | Q2: Learning experience since start of employment | | | Q3: Awareness of importance | | | Q4: Utility | | | Q5: Subjective awareness of difficulty | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Disaster-stricken area support experience group N=34 | Non-support experience group N=47 | p-value | Disaster-stricken area support experience group N=34 | Non-support experience group N=47 | p-value | Disaster-stricken area support experience group N=34 | Non-support experience group N=47 | p-value | Disaster-stricken area support experience group N=34 | Non-support experience group N=47 | p-value | Disaster-stricken area support experience group N=34 | Non-support experience group N=47 | p-value |
| 1 | 29 (85.3) | 36 (76.6) | 0.405 | 28 (82.4) | 35 (74.5) | 0.432 | 32 (94.1) | 46 (97.9) | 0.569 | 28 (82.4) | 37 (78.7) | 0.782 | 1 (2.9) | 4 (8.5) | 0.392 |
| 2 | 27 (79.4) | 32 (68.1) | 0.317 | 29 (85.3) | 37 (78.7) | 0.567 | 32 (94.1) | 36 (76.6) | 0.063 | 24 (70.6) | 22 (46.8) | 0.042* | 4 (11.8) | 11 (23.4) | 0.250 |
| 3 | 10 (29.4) | 11 (23.4) | 0.612 | 27 (79.4) | 19 (40.4) | 0.001** | 23 (67.6) | 20 (42.6) | 0.042* | 9 (26.5) | 8 (17.0) | 0.408 | 11 (32.4) | 32 (68.1) | 0.002** |
| 4 | 9 (26.5) | 17 (36.2) | 0.470 | 33 (97.1) | 39 (83.0) | 0.072 | 33 (97.1) | 45 (95.7) | 1.000 | 24 (70.6) | 25 (53.2) | 0.167 | 1 (2.9) | 11 (23.4) | 0.011* |
| 5 | 3 (8.8) | 11 (23.4) | 0.136 | 21 (61.8) | 22 (46.8) | 0.259 | 32 (94.1) | 40 (85.1) | 0.291 | 17 (50.0) | 16 (34.0) | 0.174 | 7 (20.6) | 20 (42.6) | 0.056 |
| 6 | 6 (17.6) | 4 (8.5) | 0.307 | 26 (76.5) | 21 (44.7) | 0.006** | 29 (85.3) | 42 (89.4) | 0.735 | 9 (26.5) | 7 (14.9) | 0.260 | 13 (38.2) | 33 (70.2) | 0.006** |
| 7 | 10 (29.4) | 17 (36.2) | 0.635 | 25 (73.5) | 34 (72.3) | 1.000 | 33 (97.1) | 43 (91.5) | 0.392 | 22 (64.7) | 32 (68.1) | 0.814 | 3 (8.8) | 8 (17.0) | 0.343 |
| 8 | 7 (20.6) | 10 (21.3) | 1.000 | 30 (88.2) | 35 (74.5) | 0.162 | 30 (88.2) | 44 (93.6) | 0.446 | 24 (70.6) | 33 (70.2) | 1.000 | 0 (0.0) | 7 (14.9) | 0.020* |
| 9 | 5 (14.7) | 11 (23.4) | 0.405 | 25 (73.5) | 26 (55.3) | 0.108 | 33 (97.1) | 43 (91.5) | 0.392 | 23 (67.6) | 30 (63.8) | 0.815 | 3 (8.8) | 8 (17.0) | 0.343 |
| 10 | 3 (8.8) | 8 (17.0) | 0.343 | 28 (82.4) | 28 (59.6) | 0.032* | 30 (88.2) | 39 (83.0) | 0.753 | 22 (64.7) | 16 (34.0) | 0.008** | 2 (5.9) | 18 (38.3) | 0.001** |
| 11 | 3 (8.8) | 3 (6.4) | 0.692 | 20 (58.8) | 19 (40.4) | 0.119 | 30 (88.2) | 37 (78.7) | 0.375 | 9 (26.5) | 5 (10.6) | 0.079 | 14 (41.2) | 32 (68.1) | 0.230 |
| 12 | 3 (8.8) | 8 (17.0) | 0.343 | 27 (79.4) | 30 (63.8) | 0.147 | 33 (97.1) | 43 (91.5) | 0.392 | 17 (50.0) | 11 (23.4) | 0.018* | 9 (26.5) | 20 (42.6) | 0.163 |
| 13 | 1 (2.9) | 3 (6.4) | 0.635 | 19 (55.9) | 17 (36.2) | 0.113 | 32 (94.1) | 41 (87.2) | 0.457 | 8 (23.5) | 9 (19.1) | 0.783 | 14 (41.2) | 25 (53.2) | 0.368 |
| 14 | 1 (2.9) | 6 (12.8) | 0.229 | 21 (61.8) | 24 (51.1) | 0.373 | 31 (91.2) | 42 (89.4) | 1.000 | 17 (50.0) | 27 (57.4) | 0.652 | 6 (17.6) | 11 (23.4) | 0.591 |
| 15 | 3 (8.8) | 8 (17.0) | 0.343 | 24 (70.6) | 30 (63.8) | 0.635 | 26 (76.5) | 40 (85.1) | 0.390 | 18 (52.9) | 28 (59.6) | 0.651 | 7 (20.6) | 13 (27.7) | 0.603 |
| 16 | 2 (5.9) | 5 (10.6) | 0.693 | 23 (67.6) | 19 (40.4) | 0.024* | 27 (79.4) | 35 (74.5) | 0.791 | 20 (58.8) | 17 (36.2) | 0.070 | 4 (11.8) | 22 (46.8) | 0.001** |
| 17 | 2 (5.9) | 7 (14.9) | 0.291 | 18 (52.9) | 16 (34.0) | 0.112 | 29 (85.3) | 38 (80.9) | 0.768 | 13 (38.2) | 8 (17.0) | 0.041* | 15 (44.1) | 30 (63.8) | 0.113 |
| 18 | 0 (0.0) | 3 (6.4) | 0.260 | 11 (32.4) | 10 (21.3) | 0.309 | 26 (76.5) | 37 (78.7) | 1.000 | 9 (26.5) | 9 (19.1) | 0.589 | 18 (52.9) | 26 (55.3) | 1.000 |
| 19 | 1 (2.9) | 5 (10.6) | 0.393 | 13 (38.2) | 12 (25.5) | 0.235 | 30 (88.2) | 40 (85.1) | 0.754 | 13 (38.2) | 13 (27.7) | 0.343 | 12 (35.3) | 21 (44.7) | 0.493 |
| 20 | 3 (8.8) | 11 (23.4) | 0.136 | 14 (41.2) | 16 (34.0) | 0.642 | 29 (85.3) | 41 (87.2) | 1.000 | 13 (38.2) | 21 (44.7) | 0.651 | 8 (23.5) | 14 (29.8) | 0.617 |
| 21 | 2 (5.9) | 10 (21.3) | 0.064 | 22 (64.7) | 24 (51.1) | 0.261 | 30 (88.2) | 41 (87.2) | 1.000 | 24 (70.6) | 35 (74.5) | 0.802 | 1 (2.9) | 2 (4.3) | 1.000 |
| 22 | 1 (2.9) | 4 (8.5) | 0.392 | 16 (47.1) | 14 (29.8) | 0.162 | 30 (88.2) | 41 (87.2) | 1.000 | 8 (23.5) | 1 (2.1) | 0.003** | 17 (50.0) | 33 (70.2) | 0.104 |
| 23 | 1 (2.9) | 1 (2.1) | 1.000 | 12 (35.3) | 9 (19.1) | 0.127 | 27 (79.4) | 35 (74.5) | 0.791 | 13 (38.2) | 8 (17.0) | 0.041* | 11 (32.4) | 24 (51.1) | 0.115 |
| 24 | 9 (26.5) | 12 (25.5) | 1.000 | 18 (52.9) | 18 (38.3) | 0.258 | 28 (82.4) | 41 (87.2) | 0.546 | 16 (47.1) | 17 (36.2) | 0.365 | 6 (17.6) | 19 (40.4) | 0.032* |
| 25 | 7 (20.6) | 9 (19.1) | 1.000 | 16 (47.1) | 14 (29.8) | 0.162 | 27 (79.4) | 37 (78.7) | 1.000 | 16 (47.1) | 12 (25.5) | 0.059 | 9 (26.5) | 22 (46.8) | 0.070 |
| 26 | 3 (8.8) | 8 (17.0) | 0.343 | 15 (44.1) | 10 (21.3) | 0.050 | 28 (82.4) | 38 (80.9) | 1.000 | 9 (26.5) | 3 (6.4) | 0.023* | 12 (35.3) | 33 (70.2) | 0.003** |
| 27 | 4 (11.8) | 9 (19.1) | 0.542 | 18 (52.9) | 19 (40.4) | 0.366 | 24 (70.6) | 36 (76.6) | 0.612 | 7 (20.6) | 7 (14.9) | 0.560 | 20 (58.8) | 34 (72.3) | 0.238 |
| 28 | 1 (2.9) | 5 (10.6) | 0.393 | 28 (82.4) | 20 (42.6) | 0.000** | 32 (94.1) | 40 (85.1) | 0.291 | 20 (58.8) | 11 (23.4) | 0.002** | 5 (14.7) | 22 (46.8) | 0.004** |

Fisher's exact test, *p < .05, **p < .01

item No. 2 (81.5%), and item No. 8 (80.2%). Regarding Q3 (Awareness of importance), the items with the highest number of responses of "think is important" for disaster-stricken area mental health care activities were as follows: item No. 1 (96.3%), item No. 4 (96.3%), item No. 7 (93.8%), item No. 9 (93.8%), and item No. 12 (93.8%). Regarding Q4 (Utility), the items for which there were the most responses of "can" for disaster-stricken area mental health care activities were as follows: item No. 1 (80.2%), item No. 21 (72.8%), and item No. 8 (70.4%). Regarding Q5 (Subjective awareness of difficulty), the items for which there were the most responses of "cannot/difficult" in disaster-stricken area mental health care activities

Table 5. Relationship between Q1 (Learing experience during training education course) and Q4 (Utility)

| Item No. | High utility group (N=14) | | Medium utility group (N=55) | | Low utility group (N=12) | | p-value | Residual analysis |
|---|---|---|---|---|---|---|---|---|
| | (%) | Adjusted residuals | (%) | Adjusted residuals | (%) | Adjusted residuals | | |
| 1 | 12 (85.7) | 0.6 | 47 (85.5) | 1.7 | 6 (50.5) | − 2.9 | 0.017* | *1 |
| 2 | 11 (78.6) | 0.5 | 43 (78.2) | 1.6 | 5 (41.7) | − 2.6 | 0.031* | *1 |
| 3 | 6 (42.9) | 1.6 | 13 (23.6) | − 0.7 | 2 (16.7) | − 0.8 | 0.250 | n.s. |
| 4 | 7 (50.0) | 1.6 | 17 (30.9) | − 0.3 | 2 (16.7) | − 1.2 | 0.182 | n.s. |
| 5 | 4 (28.6) | 1.2 | 9 (16.4) | − 0.3 | 1 (8.3) | − 0.9 | 0.377 | n.s. |
| 6 | 5 (35.7) | 2.9 | 5 (9.1) | − 1.3 | 0 (0.0) | − 1.4 | 0.010* | *2 |
| 7 | 5 (35.7) | 0.2 | 20 (36.4) | 0.8 | 2 (16.7) | − 1.3 | 0.414 | n.s. |
| 8 | 6 (42.9) | 2.2 | 11 (20.0) | − 0.3 | 0 (0.0) | − 1.9 | 0.027* | *2 |
| 9 | 4 (28.6) | 0.9 | 12 (21.8) | 0.7 | 0 (0.0) | − 1.5 | 0.150 | n.s. |
| 10 | 1 (7.1) | − 0.8 | 10 (18.2) | 1.8 | 0 (0.0) | − 1.5 | 0.185 | n.s. |
| 11 | 2 (14.3) | 1.1 | 4 (7.3) | − 0.1 | 0 (0.0) | − 1.1 | 0.382 | n.s. |
| 12 | 0 (0.0) | − 1.6 | 11 (20.0) | 2.5 | 0 (0.0) | − 1.5 | 0.049* | *3 |
| 13 | 2 (14.3) | 1.8 | 2 (3.6) | − 0.8 | 0 (0.0) | − 0.9 | 0.180 | n.s. |
| 14 | 1 (7.1) | − 0.2 | 6 (10.9) | 1.1 | 0 (0.0) | − 1.2 | 0.465 | n.s. |
| 15 | 1 (7.1) | − 0.8 | 9 (16.4) | 1.1 | 1 (8.3) | − 0.6 | 0.566 | n.s. |
| 16 | 1 (7.1) | − 0.2 | 5 (9.1) | 0.2 | 1 (8.3) | 0.0 | 0.973 | n.s. |
| 17 | 2 (14.3) | 0.4 | 7 (12.7) | 0.7 | 0 (0.0) | − 1.3 | 0.409 | n.s. |
| 18 | 1 (7.1) | 0.7 | 2 (3.6) | 0.0 | 0 (0.0) | − 0.7 | 0.629 | n.s. |
| 19 | 1 (7.1) | 0.0 | 5 (9.1) | 0.8 | 0 (0.0) | − 1.1 | 0.552 | n.s. |
| 20 | 2 (14.3) | − 0.3 | 11 (20.0) | 0.9 | 1 (8.3) | − 0.9 | 0.593 | n.s. |
| 21 | 3 (21.4) | 0.8 | 9 (16.4) | 0.6 | 0 (0.0) | − 1.6 | 0.262 | n.s. |
| 22 | 1 (7.1) | 0.2 | 4 (7.3) | 0.6 | 0 (0.0) | − 1 | 0.629 | n.s. |
| 23 | 1 (7.1) | 1.2 | 1 (1.8) | − 0.5 | 0 (0.0) | − 0.6 | 0.434 | n.s. |
| 24 | 6 (42.9) | 1.6 | 14 (25.5) | − 0.1 | 1 (8.3) | − 1.5 | 0.133 | n.s. |
| 25 | 5 (35.7) | 1.6 | 11 (20.0) | 0.1 | 0 (0.0) | − 1.9 | 0.074 | n.s. |
| 26 | 2 (14.3) | 0.1 | 8 (14.5) | 0.4 | 1 (8.3) | − 0.6 | 0.847 | n.s. |
| 27 | 3 (21.4) | 0.6 | 8 (14.5) | − 0.5 | 2 (16.7) | 0.1 | 0.820 | n.s. |
| 28 | 2 (14.3) | 1.1 | 4 (7.3) | − 0.1 | 0 (0.0) | − 1.1 | 0.382 | n.s. |

Pearson's chi-squared test, *$p < .05$
*1: The low group was significantly lower in comparison with the high and medium groups.
*2: The high group was significantly higher in comparison with the medium and low groups.
*3: The medium group was significantly higher in comparison with the high and low groups.

were as follows: item No. 27 (66.7%), item No. 22 (61.7%), item No. 6 (56.8%), and item No. 11 (56.8%).

3. Relationship between disaster-stricken area mental health care activities and proficiency level (Table 4)

Regarding Q1 (Learning experience during training education course), there was no difference in the ratio between the two groups with regard to presence or absence of the disaster-stricken area support experience.

Regarding Q2 (Learning experience since start of employment), the ratio of persons who responded "learned since start of employment" was significantly higher in the disaster stricken area support experience group in

Table 6. Relationship between Q2 (Learning experience since start of employment) and Q4 (Utility)

| Item No. | High utility group (N=14) | | Medium utility group (N=55) | | Low utility group (N=12) | | p-value | Residual analysis |
|---|---|---|---|---|---|---|---|---|
| | (%) | Adjusted residuals | (%) | Adjusted residuals | (%) | Adjusted residuals | | |
| 1 | 14 (100.0) | 2.2 | 41 (74.5) | − 1 | 8 (66.7) | − 1 | 0.075 | n.s. |
| 2 | 14 (100.0) | 2.0 | 43 (78.2) | − 1.1 | 9 (75.0) | − 0.6 | 0.141 | n.s. |
| 3 | 10 (71.4) | 1.2 | 31 (56.4) | − 0.1 | 5 (41.7) | − 1.1 | 0.310 | n.s. |
| 4 | 13 (92.9) | 0.5 | 48 (87.3) | − 0.7 | 11 (91.7) | 0.3 | 0.794 | n.s. |
| 5 | 11 (78.6) | 2.1 | 30 (54.4) | 0.4 | 2 (16.7) | − 2.7 | 0.006** | *1 |
| 6 | 12 (85.7) | 2.3 | 30 (54.4) | − 0.9 | 5 (41.7) | − 1.2 | 0.050 | n.s. |
| 7 | 11 (78.6) | 0.5 | 40 (72.7) | 0.0 | 8 (66.7) | − 0.5 | 0.793 | n.s. |
| 8 | 12 (85.7) | 0.6 | 44 (80.0) | − 0.1 | 9 (75.0) | − 0.5 | 0.789 | n.s. |
| 9 | 11 (78.6) | 1.3 | 36 (65.5) | 0.7 | 4 (33.3) | − 2.3 | 0.047* | *2 |
| 10 | 12 (85.7) | 1.5 | 38 (69.1) | 0.0 | 6 (50.0) | − 1.6 | 0.145 | n.s. |
| 11 | 9 (64.3) | 1.3 | 27 (49.1) | 0.2 | 3 (25.0) | − 1.7 | 0.132 | n.s. |
| 12 | 11 (78.6) | 0.7 | 39 (70.9) | 0.2 | 7 (58.3) | − 1 | 0.524 | n.s. |
| 13 | 9 (64.3) | 1.6 | 25 (45.5) | 0.3 | 2 (16.7) | − 2.1 | 0.050 | n.s. |
| 14 | 9 (64.3) | 0.7 | 33 (60.0) | 1.2 | 3 (25.0) | − 2.3 | 0.067 | n.s. |
| 15 | 7 (50.0) | − 1.5 | 41 (74.5) | 2.2 | 6 (50.0) | − 1.3 | 0.091 | n.s. |
| 16 | 9 (64.3) | 1.0 | 30 (54.4) | 0.7 | 3 (25.0) | − 2 | 0.106 | n.s. |
| 17 | 10 (71.4) | 2.5 | 21 (38.2) | − 1 | 3 (25.0) | − 1.3 | 0.035* | *3 |
| 18 | 7 (50.0) | 2.3 | 13 (23.6) | − 0.7 | 1 (8.3) | − 1.5 | 0.043* | *3 |
| 19 | 7 (50.0) | 1.7 | 15 (27.3) | − 1 | 3 (25.0) | − 0.5 | 0.231 | n.s. |
| 20 | 9 (64.3) | 2.3 | 19 (34.5) | − 0.7 | 2 (16.7) | − 1.6 | 0.034* | *3 |
| 21 | 11 (78.6) | 1.8 | 30 (54.4) | − 0.6 | 5 (41.7) | − 1.1 | 0.140 | n.s. |
| 22 | 10 (71.4) | 2.9 | 17 (30.9) | − 1.7 | 3 (25.0) | − 0.9 | 0.013* | *3 |
| 23 | 9 (64.3) | 3.6 | 11 (20.0) | − 1.8 | 1 (8.3) | − 1.5 | 0.001** | *3 |
| 24 | 9 (64.3) | 1.6 | 25 (45.5) | 0.3 | 2 (16.7) | − 2.1 | 0.050 | n.s. |
| 25 | 8 (57.1) | 1.7 | 21 (38.2) | 0.3 | 1 (8.3) | − 2.2 | 0.035* | *2 |
| 26 | 9 (64.3) | 3.0 | 15 (27.3) | − 1 | 1 (8.3) | − 1.8 | 0.005** | *3 |
| 27 | 8 (57.1) | 0.9 | 27 (49.1) | 0.9 | 2 (16.7) | − 2.2 | 0.079 | n.s. |
| 28 | 10 (71.4) | 1.0 | 34 (61.8) | 0.7 | 4 (33.3) | − 2 | 0.114 | n.s. |

Pearson's chi-squared test, *p < .05, **p < .01
*1: The high group was significantly higher in comparison with the medium and low groups, and the low group was significantly lower in comparison with the high and medium groups.
*2: The low group was significantly lower in comparison with the high and medium groups.
*3: The high group was significantly higher in comparison with the medium and low groups.

comparison with the non-experience group for the following items: item No. 3, item No. 6, item No. 10, item No. 16, and item No. 28.

Regarding Q3 (Awareness of importance), concerning item No. 3, the disaster-stricken area support experience group had a higher ratio of persons who responded "important" in comparison with the non-support experience group.

Regarding Q4 (Utility), the ratio of persons who responded "can" was significantly higher in the disaster stricken area support experience group in comparison with the non-experience group for the following items: item

Table 7. Relationship between Q3 (Awareness of importance) and Q4 (Utility)

| Item No. | High utility group (N=14) | | Medium utility group (N=55) | | Low utility group (N=12) | | p-value | Residual analysis |
|---|---|---|---|---|---|---|---|---|
| | (%) | Adjusted residuals | (%) | Adjusted residuals | (%) | Adjusted residuals | | |
| 1 | 14 (100.0) | 0.8 | 52 (94.5) | − 1.2 | 12 (100.0) | 0.7 | 0.479 | n.s. |
| 2 | 13 (92.9) | 1.0 | 47 (85.5) | 0.5 | 8 (66.7) | − 1.8 | 0.167 | n.s. |
| 3 | 12 (85.7) | 2.7 | 25 (45.5) | − 2 | 6 (50.0) | − 0.2 | 0.26* | *1 |
| 4 | 14 (100.0) | 0.8 | 52 (94.5) | − 1.2 | 12 (100.0) | 0.7 | 0.479 | n.s. |
| 5 | 14 (100.0) | 1.5 | 47 (85.5) | − 1.4 | 11 (91.7) | 0.3 | 0.286 | n.s. |
| 6 | 13 (92.9) | 0.7 | 47 (85.5) | − 0.9 | 11 (91.7) | 0.5 | 0.679 | n.s. |
| 7 | 14 (100.0) | 1.1 | 52 (94.5) | 0.4 | 10 (83.3) | − 1.6 | 0.197 | n.s. |
| 8 | 13 (92.9) | 0.2 | 50 (90.9) | − 0.2 | 11 (91.7) | 0.0 | 0.973 | n.s. |
| 9 | 14 (100.0) | 1.1 | 52 (94.5) | 0.4 | 10 (83.3) | − 1.6 | 0.197 | n.s. |
| 10 | 12 (85.7) | 0.1 | 47 (85.5) | 0.1 | 10 (83.3) | − 0.2 | 0.981 | n.s. |
| 11 | 13 (92.9) | 1.1 | 45 (81.8) | − 0.3 | 9 (75.0) | − 0.8 | 0.464 | n.s. |
| 12 | 13 (92.9) | − 0.2 | 52 (94.5) | 0.4 | 11 (91.7) | − 0.3 | 0.919 | n.s. |
| 13 | 13 (92.9) | 0.4 | 50 (90.9) | 0.3 | 10 (83.3) | − 0.9 | 0.678 | n.s. |
| 14 | 12 (85.7) | − 0.6 | 49 (89.1) | − 0.5 | 12 (100.0) | 1.2 | 0.430 | n.s. |
| 15 | 12 (85.7) | 0.4 | 45 (81.8) | 0.1 | 9 (75.0) | − 0.6 | 0.777 | n.s. |
| 16 | 10 (71.4) | − 0.5 | 44 (80.0) | 1.1 | 8 (66.7) | − 0.9 | 0.543 | n.s. |
| 17 | 14 (100.0) | − 0.5 | 44 (80.0) | 1.1 | 9 (75.0) | − 0.8 | 0.157 | n.s. |
| 18 | 14 (100.0) | 2.2 | 40 (72.7) | − 1.6 | 9 (75.0) | − 0.3 | 0.088 | n.s. |
| 19 | 14 (100.0) | 1.6 | 46 (83.6) | − 1.1 | 10 (83.3) | − 0.3 | 0.264 | n.s. |
| 20 | 14 (100.0) | 1.6 | 47 (85.5) | − 0.4 | 9 (75.0) | − 1.3 | 0.167 | n.s. |
| 21 | 13 (92.9) | 0.7 | 47 (85.5) | − 0.9 | 11 (91.7) | 0.5 | 0.679 | n.s. |
| 22 | 13 (92.9) | 0.7 | 48 (87.3) | − 0.2 | 10 (83.3) | − 0.5 | 0.754 | n.s. |
| 23 | 13 (92.9) | 1.6 | 41 (74.5) | − 0.6 | 8 (66.7) | − 0.9 | 0.241 | n.s. |
| 24 | 12 (85.7) | 0.1 | 47 (85.5) | 0.1 | 10 (83.3) | − 0.2 | 0.981 | n.s. |
| 25 | 14 (100.0) | 2.1 | 43 (78.2) | − 0.3 | 7 (58.3) | − 1.9 | 0.033* | *2 |
| 26 | 14 (100.0) | 2.0 | 44 (80.0) | − 0.5 | 8 (66.7) | − 1.4 | 0.082 | n.s. |
| 27 | 10 (71.4) | − 0.2 | 42 (76.4) | 0.7 | 8 (66.7) | − 0.6 | 0.762 | n.s. |
| 28 | 13 (92.9) | 0.5 | 49 (89.1) | 0.1 | 10 (83.3) | − 0.7 | 0.741 | n.s. |

Pearson's chi-squared test, *$p < .05$
*1: The high group was significantly higher in comparison with the medium and low groups, and the mideum group was significantly lower in comparison with the high and low groups.
*2: The high group was significantly higher in comparison with the medium and low groups.

No. 2, item No. 10, item No.12, item No. 17, item No. 22, item No. 23, item No. 26, and item No. 28.

Regarding Q5 (Subjective awareness of difficulty), the ratio of persons who responded "cannot/difficult" was significantly higher in the disaster stricken area support non-experience group for the following items: item No. 3, item No. 4, item No. 6, item No. 8, item No. 10, item No. 11, item No. 16, item No. 24, item No. 26, and item No. 28.

4. Relationship between learning experience and awareness of importance in disaster-stricken area mental health care activities

Table 8. Relationship between Q2 (Learning experience since start of employment) and Q5 (Subjective awareness of difficulty)

| Item No. | High subjective awareness of difficulty group (N=14) | | Medium subjective awareness of difficulty group (N=54) | | Low subjective awareness of difficulty group (N=13) | | p-value | Residual analysis |
|---|---|---|---|---|---|---|---|---|
| | (%) | Adjusted residuals | (%) | Adjusted residuals | (%) | Adjusted residuals | | |
| 1 | 8 (57.1) | − 2 | 45 (83.3) | 1.7 | 10 (76.9) | − 0.1 | 0.110 | n.s. |
| 2 | 8 (57.1) | − 2.6 | 45 (83.3) | 0.6 | 13 (100.0) | 1.9 | 0.014* | *1 |
| 3 | 5 (35.7) | − 1.8 | 32 (59.3) | 0.6 | 9 (69.2) | 1.0 | 0.175 | n.s. |
| 4 | 13 (92.9) | 0.5 | 47 (87.0) | − 0.7 | 12 (92.3) | 0.4 | 0.754 | n.s. |
| 5 | 6 (42.9) | − 0.8 | 30 (55.6) | 0.6 | 7 (53.8) | 0.1 | 0.696 | n.s. |
| 6 | 6 (42.9) | − 1.3 | 32 (59.3) | 0.3 | 9 (69.2) | 0.9 | 0.363 | n.s. |
| 7 | 10 (71.4) | − 0.1 | 39 (72.2) | − 0.2 | 10 (76.9) | 0.4 | 0.935 | n.s. |
| 8 | 12 (85.7) | 0.6 | 41 (75.9) | − 1.4 | 12 (92.3) | 1.2 | 0.351 | n.s. |
| 9 | 7 (50.0) | − 1.1 | 35 (64.8) | 0.5 | 9 (69.2) | 0.5 | 0.520 | n.s. |
| 10 | 10 (71.4) | 0.2 | 36 (66.7) | − 0.7 | 10 (76.9) | 0.7 | 0.756 | n.s. |
| 11 | 9 (64.3) | 1.3 | 24 (44.4) | − 0.9 | 6 (46.2) | − 0.2 | 0.411 | n.s. |
| 12 | 10 (71.4) | 0.1 | 38 (70.4) | 0.0 | 9 (69.2) | − 0.1 | 0.992 | n.s. |
| 13 | 6 (42.9) | − 0.1 | 24 (44.4) | 0.0 | 6 (46.2) | 0.1 | 0.985 | n.s. |
| 14 | 9 (64.3) | 0.7 | 30 (55.6) | 0.0 | 6 (46.2) | − 0.7 | 0.638 | n.s. |
| 15 | 12 (85.7) | 1.7 | 35 (64.8) | − 0.5 | 7 (53.8) | − 1.1 | 0.189 | n.s. |
| 16 | 8 (57.1) | 0.4 | 27 (50.0) | − 0.5 | 7 (53.8) | 0.2 | 0.882 | n.s. |
| 17 | 4 (28.6) | − 1.1 | 24 (44.4) | 0.6 | 6 (46.2) | 0.3 | 0.532 | n.s. |
| 18 | 2 (14.3) | − 1.1 | 14 (25.9) | 0.0 | 5 (38.5) | 1.1 | 0.359 | n.s. |
| 19 | 3 (21.4) | − 0.8 | 16 (29.6) | − 0.3 | 6 (46.2) | 1.3 | 0.359 | n.s. |
| 20 | 3 (21.4) | − 1.3 | 23 (42.6) | 1.5 | 4 (30.8) | − 0.5 | 0.302 | n.s. |
| 21 | 7 (50.0) | − 0.6 | 30 (55.6) | − 0.3 | 9 (69.2) | 1.0 | 0.572 | n.s. |
| 22 | 2 (14.3) | − 1.9 | 22 (40.7) | 1.0 | 6 (46.2) | 0.7 | 0.143 | n.s. |
| 23 | 1 (7.1) | − 1.8 | 14 (25.9) | 0.0 | 6 (46.2) | 1.8 | 0.069 | n.s. |
| 24 | 4 (28.6) | − 1.3 | 25 (46.3) | 0.5 | 7 (53.8) | 0.7 | 0.374 | n.s. |
| 25 | 3 (21.4) | − 1.3 | 20 (37.0) | 0.0 | 7 (53.8) | 1.4 | 0.219 | n.s. |
| 26 | 1 (7.1) | − 2.1 | 18 (33.3) | 0.7 | 6 (46.2) | 1.3 | 0.072 | n.s. |
| 27 | 5 (35.7) | − 0.8 | 24 (44.4) | − 0.3 | 8 (61.5) | 1.3 | 0.385 | n.s. |
| 28 | 7 (50.0) | − 0.8 | 33 (61.1) | 0.5 | 8 (61.5) | 0.2 | 0.740 | n.s. |

Pearson's chi-squared test, *$p < .05$

*1: The high group was significantly lower in comparison with the medium and low groups.

1) Relationship between Q1 (Learning experience during training education course) and Q4 (Utility) (Table 5)

Regarding Q1 (Learning experience during training education course), there were five items for which there was a difference in the ratio distribution when comparing the high, medium, and low utility groups. Residual analysis revealed that of these, the ratio of persons with learning experience concerning item No. 6 and item No. 8 was significantly higher in the high utility group in comparison with the medium and low utility groups. Furthermore, the ratio of persons with learning experience concerning item No. 12 was significantly higher in the middle utility

Table 9. Relationship between Q3 (Awareness of importance) and Q5 (Subjective awareness of difficulty)

| Item No. | High subjective awareness of difficulty group (N=14) | | Medium subjective awareness of difficulty group (N=54) | | Low subjective awareness of difficulty group (N=13) | | p-value | Residual analysis |
|---|---|---|---|---|---|---|---|---|
| | (%) | Adjusted residuals | (%) | Adjusted residuals | (%) | Adjusted residuals | | |
| 1 | 14 (100.0) | 0.8 | 51 (94.4) | − 1.2 | 13 (100.0) | 0.8 | 0.459 | n.s. |
| 2 | 13 (92.9) | 1.0 | 44 (81.5) | − 0.9 | 11 (84.6) | 0.1 | 0.585 | n.s. |
| 3 | 10 (71.4) | 1.5 | 25 (46.3) | − 1.7 | 8 (61.5) | 0.7 | 0.196 | n.s. |
| 4 | 14 (100.0) | 0.8 | 51 (94.4) | − 1.2 | 13 (100.0) | 0.8 | 0.459 | n.s. |
| 5 | 13 (92.9) | 0.5 | 46 (85.2) | − 1.5 | 13 (100.0) | 1.4 | 0.273 | n.s. |
| 6 | 12 (85.7) | − 0.2 | 48 (88.9) | 0.5 | 11 (84.6) | − 0.4 | 0.889 | n.s. |
| 7 | 14 (100.0) | 1.1 | 51 (94.4) | 0.3 | 11 (84.6) | − 1.5 | 0.239 | n.s. |
| 8 | 14 (100.0) | 1.3 | 47 (87.0) | − 2 | 13 (100.0) | 1.2 | 0.147 | n.s. |
| 9 | 14 (100.0) | 1.1 | 51 (94.4) | 0.3 | 11 (84.6) | − 1.5 | 0.239 | n.s. |
| 10 | 13 (92.9) | 0.9 | 44 (81.5) | − 1.3 | 12 (92.3) | 0.8 | 0.414 | n.s. |
| 11 | 14 (100.0) | 1.9 | 43 (79.6) | − 1 | 10 (76.9) | − 0.6 | 0.166 | n.s. |
| 12 | 14 (100.0) | 1.1 | 49 (90.7) | − 1.6 | 13 (100.0) | 1.0 | 0.264 | n.s. |
| 13 | 14 (100.0) | 1.4 | 48 (88.9) | − 0.5 | 11 (84.6) | − 0.7 | 0.355 | n.s. |
| 14 | 13 (92.9) | 0.4 | 48 (88.9) | − 0.5 | 12 (92.3) | 0.3 | 0.869 | n.s. |
| 15 | 13 (92.9) | 1.2 | 41 (75.9) | − 1.8 | 12 (92.3) | 1.1 | 0.191 | n.s. |
| 16 | 13 (92.9) | 1.6 | 38 (70.4) | − 1.9 | 11 (84.6) | 0.7 | 0.158 | n.s. |
| 17 | 12 (85.7) | 0.3 | 44 (81.5) | − 0.4 | 11 (84.6) | 0.2 | 0.915 | n.s. |
| 18 | 14 (100.0) | 2.2 | 40 (74.1) | − 1.1 | 9 (69.2) | − 0.8 | 0.083 | n.s. |
| 19 | 13 (92.9) | 0.8 | 45 (83.3) | − 1.1 | 12 (92.3) | 0.7 | 0.518 | n.s. |
| 20 | 14 (100.0) | 1.6 | 46 (85.2) | − 0.5 | 10 (76.9) | − 1.1 | 0.195 | n.s. |
| 21 | 13 (92.9) | 0.7 | 45 (83.3) | − 1.7 | 13 (100.0) | 1.5 | 0.211 | n.s. |
| 22 | 13 (92.9) | 0.7 | 46 (85.2) | − 1 | 12 (92.3) | 0.6 | 0.633 | n.s. |
| 23 | 12 (85.7) | 0.9 | 40 (74.1) | − 0.7 | 10 (76.9) | 0.0 | 0.657 | n.s. |
| 24 | 14 (100.0) | 1.7 | 44 (81.5) | − 1.3 | 11 (84.6) | − 0.1 | 0.220 | n.s. |
| 25 | 13 (92.9) | 1.4 | 41 (75.9) | − 1 | 10 (76.9) | − 0.2 | 0.375 | n.s. |
| 26 | 14 (100.0) | 2.0 | 43 (79.6) | − 0.6 | 9 (69.2) | − 1.2 | 0.100 | n.s. |
| 27 | 11 (78.6) | 0.4 | 38 (70.4) | − 1.1 | 11 (84.6) | 0.9 | 0.526 | n.s. |
| 28 | 13 (92.9) | 0.5 | 48 (88.9) | 0.0 | 11 (84.6) | − 0.5 | 0.793 | n.s. |

Pearson's chi-squared test, *p < .05

group. Furthermore, the ratio of persons with learning experience concerning item No. 1 and item No. 2 was significantly lower in the low utility group in comparison with the high and medium utility groups.

2) Relationship between Q2 (Learning experience after employment) and Q4 (Utility) (Table 6)

Regarding the Q2 (Learning experience since start of employment), a comparison of the low/medium/high utility groups revealed that there were 9 items for which there was a difference in the ratio distribution. The results of residual analysis showed that of these, the ratio of persons with learning experience concerning item No. 5, item No. 17, item No. 18, item No. 20, item No. 22, item No.23, and item No. 26 was significantly higher

Table 10. Related factors of Q3 (Awareness of importance) at disaster-stricken area mental health care activities

| Independent variables (explanatory variables) | Odds ratio | Odds ratio with 95% confidence interval | | p-value |
|---|---|---|---|---|
| | | Upper limit | Lower limit | |
| Experience of support in interprofessional collaboration | 20.388 | 2.021 | 205.628 | 0.011 |
| Current occupational field (Healthcare) | 0.085 | 0.016 | 0.469 | 0.005 |
| Current occupational field (Welfare) | 0.035 | 0.004 | 0.352 | 0.004 |
| Educational background: Graduated from designated type 2 graduate school | 5.177 | 1.093 | 24.516 | 0.038 |
| Educational background: Graduated from designated university department before start of graduate school system | 0.033 | 0.003 | 0.337 | 0.004 |
| Field experienced to date (Welfare) | 6.100 | 1.060 | 35.094 | 0.043 |
| Disaster support form: Outside disaster-stricken area, activities outside duties | 0.092 | 0.011 | 0.800 | 0.031 |
| Disaster support experience: mental health care team activities | 38.106 | 2.840 | 511.373 | 0.006 |
| Disaster support experience: consultation with persons in other occupations | 0.001 | 0.000 | 0.070 | 0.001 |
| Disaster support experience: support in the field of child rearing | 24.710 | 2.474 | 246.813 | 0.006 |
| Disaster support experience: support for disaster recovery public housing | 151.104 | 2.359 | 9679.695 | 0.018 |

Multiple logistic regression analysis (stepwise method)

in the high utility group in comparison with the medium and low groups. The learning experiences of item No. 9 and item No. 25 were significantly lower in the low utility group than in the high/medium groups. Overall, learning experience was high in the high utility group and the learning experience in the low utility group tended to be low.

3) Relationship between Q3 (Awareness of importance) and Q4 (Utility) (Table 7)

Regarding Q3 (Awareness of importance), a comparison of the low/medium/high utility groups revealed that there were 3 items for which there was a difference in the ratio distribution. First, the ratio of persons who had awareness of the importance of item No. 3 and item No. 25 was revealed to be significantly high in the high utility group in comparison with the medium and low utility groups.

5. Relationship between learning experiences and awareness of importance with regard to difficulty in performing community mental health activities

1) Relationship between learning experience in Q1 (Learning experience during training education course) / Q2 (Learning experience since start of employment) and Q5 (Subjective awareness of difficulty) (Table 8)

Regarding Q1 (Learning experience during training education course), there was no significant difference between the 3 groups (high, medium, and low difficulty groups). Next, regarding Q2 (Learning experience since start of employment), item No. 2 showed a difference in the distribution of ratios according to the comparison of the 3 groups, and the results of residual analysis, the high difficulty group was significantly lower than the medium and low groups.

2) Relationship between Q3 (Awareness of importance) and Q5 (Subjective awareness of

Table 11. Related factors of Q4 (Utility) at disaster-stricken area mental health care activities

| Independent variables (explanatory variables) | Odds ratio | Odds ratio with 95% confidence interval | | p-value |
|---|---|---|---|---|
| | | Upper limit | Lower limit | |
| Field experienced to date (Welfare) | 13.184 | 1.363 | 127.563 | 0.026 |
| Disaster support experience: support for educational areas such as schools | 19.841 | 3.883 | 101.387 | 0.000 |

Multiple logistic regression analysis (stepwise method)

Table 12. Related factors of Q4 (Utility) of outreach, psychoeducation, public awareness activities, and information collection

| Dependent variable | Independent variable | Odds ratio | Odds ratio with 95% confidence interval | | p-value |
|---|---|---|---|---|---|
| | | | Upper limit | Lower limit | |
| "Can perform" outreach | n.s. | | | | |
| "Can perform" psychoeducation | n.s. | | | | |
| "Can perform" public awareness activities | Disaster support experience: Mental health care team activity | 11.365 | 1.212 | 106.557 | 0.033 |
| | Disaster support experience: Consultation with persons in other occupations | 16.065 | 1.842 | 140.104 | 0.012 |
| | Disaster support experience: Support for bereaved family members | 4.301 | 1.104 | 16.754 | 0.035 |
| "Can perform" information collection | Current occupational field (Healthcare) | 0.075 | 0.007 | 0.756 | 0.028 |
| | Current occupational field (Welfare) | 0.052 | 0.004 | 0.727 | 0.028 |
| | Current occupational field (Education) | 0.061 | 0.005 | 0.77 | 0.031 |
| | Field experienced to date (Welfare) | 19.008 | 2.334 | 154.821 | 0.006 |
| | Disaster support form: Outside disaster - stricken area, activities outside duties | 19.668 | 2.675 | 144.606 | 0.003 |

Multiple logistic regression analysis (stepwise method)

difficulty) (Table 9)

Regarding Q3 (Awareness of importance), comparison of the low/medium/high difficulty groups revealed that there were no items for which there was a significant difference in ratio distribution.

6. Factors related to awareness of the importance of knowledge and skills for disaster-stricken area mental health care activities (Table 10)

As factors significantly related to the high awareness of importance, the following items were extracted: "experience of support through interprofessional collaboration" (odds ratio = 20.39), "experience of disaster support through mental health care team activities"

(odds ratio =38.10), "experience of disaster support through support in the field of child rearing" (odds ratio = 24.71), "experience of support for disaster recovery public housing" (odds ratio = 151.10).

7. Factors related to utility of knowledge and skills for disaster-stricken area mental health care activities (Table 11)

As factors significantly related to high degree of utility, "I have work experience in the field of welfare" (odds ratio = 13.18) and "I have experience of support for educational areas such as schools" (odds ratio = 19.84) were identified.

8. Factors related to utility of outreach, psychoeducation, public awareness activities, and information collection (Table 12)

There were no factors significantly related to the utility of outreach and psychoeducation. Factors significantly related to high level of utility of public awareness activities were "disaster support experience through consultation with persons in other occupations" (odds ratio = 16.07), "have disaster support experience through mental health care activities" (odds ratio = 11.37), and "disaster support experience of support for bereaved family members and grief care" (odds ratio = 4.30). Furthermore, factors that were significantly related to the high utility of information collection were as follows: "experience working in the field of welfare" (odds ratio = 19.01) and "experience of disaster support outside disaster-stricken area and outside duties" (odds ratio = 19.67).

## IV. Discussion

1. Concerning experience of disaster relief

Among persons with disaster support experience, items associated with a higher ratio of persons with learning experience after the start of employment in comparison with those who did not have experience included understanding of the Act on Mental Health and Welfare for the Mentally Disabled, responding to persons with mental disorders, implementing mental health training for supporters, conducting public awareness activities on mental health to residents, and responses in accordance with PFA.

Furthermore, for items related to mental health and mental disorders, it is considered that understanding of the Act on Mental Health and Welfare for the Mentally Disabled is important from non-experienced persons who have engaged in disaster support, and in addition, the ratio of persons who responded "can" was high, and the ratio of those who responded "subjectively difficult" was small.

Especially for support immediately after a disaster, support of the affected psychiatric medical institutions, support for continuing treatment of patients receiving treatment due to psychiatric disorders, intervention for symptoms caused by disaster stress, and other measures are needed. In order to engage in disaster relief assistance, dispatching persons with such knowledge and skills is required, and it is assumed that such knowledge and skills have been strengthened through the practice of support activities.

2. Concerning utility of knowledge and skills in regional mental health activities at the time of disaster

In times of disaster, emergency response to crisis situations is also required. The people with high scores for utility of knowledge and skills had learning experience concerning

knowledge of response to psychiatric disorders and psychoeducational support for anxiety and other disorders during education. In addition, the people who had high utility of knowledge and skills had learning experience after start of employment concerning the following items that were not specialized with regard to disaster or occupation: information collection, comprehensive determination of information, case management, coordination, and so on.

However, it is difficult to determine whether what was demonstrated as utility of a skill in times of disaster was due to growth through disaster support experience or a skill acquired before engaging in disaster support activities. In addition, the results of the multiple logistic regression analysis suggest that multicollinearity is suspected, which limits the interpretation of the results.

However, based on the results of the present study, in training education for clinical psychologists, it is necessary to develop not only approaches and intervention methods specialized for disaster support, but also to provide education to acquire practical skills in community work and coordination skills.

3. Concerning awareness of importance of knowledge and skills in regional mental health activities at the time of disaster

As previously mentioned, various methodologies are required at work sites, but it was revealed that work experience of interprofessional collaboration (including mental health care team activities) is the key to a high degree of awareness of importance. In the support activities conducted by an interprofessional group, there is an opportunity to learn about skills that can not be learned by conventional work duties of clinical psychologists by observing the characteristics and support methods of other occupations and fields of specialization. As a result, through interprofessional support experiences, views on supportive approaches may be broadened and awareness of the problems of disaster victims and disaster-stricken areas may be deepened. However, the results of the multiple logistic regression analysis suggest that multicollinearity is suspected, which limits the interpretation of the results.

The PFA [10] is widely known as a manual showing a method of general psychological support at the time of a disaster. In PFA, contact and engagement, safety and comfort, stabilization (if needed), information gathering (needs and current concerns), practical assistance, connection with social support, information on coping, and linkage with collaborative services are listed as practice items.

In Iwate Prefecture, which was the focus of the present study, comprehensive mental health measures have been implemented since the Great East Japan Earthquake. Evacuation center patrol, high risk care, and medical system construction were regarded as initial goals, and in the mid-term, support for temporary housing evacuees, salon activities, support for health classrooms, and so on, aimed at strengthening regional mental health welfare intervention during reconstruction through cooperation among specialists have been regarded as goals [11,12]. In providing support such as in the case of the Great East Japan Earthquake, in which wide-ranging and long-term reconstruction is necessary, in addition to the approaches presented in PFA, the skills required for

professionals are also diverse. However, as the results show, understanding of clinical psychologists concerning the Act on Mental Health and Welfare for the Mentally Disabled, outreach support, experience gathering information, and coordination experience are insufficient. Therefore, the following appears to be necessary for the education of clinical psychologists: 1) deepening the understanding of community mental health approaches during normal times, 2) being able to assess target areas and groups to present the necessary interventions and issues, and 3) providing diverse support that can be offered in regional activities. In order to implement education for these items, not only education through training courses, but also educational opportunities for professionals after acquisition of certification are required.

4. Concerning the role of clinical psychologists in interprofessional teams

At disaster sites, it is necessary for persons with various occupations to provide support through cooperative support with persons from different occupations. In order for clinical psychologists to practice psychological clinical activities in disaster-stricken areas, it is naturally also important to prioritize interprofessional collaboration.

In case of working in a team in the event of a disaster, psychological support for staff members is also needed. Examples include psychological intervention for members exposed to a traumatic experience and intervention in psychological conflicts in reviewing cases in small groups in which team members participate. Fuji [13] showed that from the experience of managing a support group of disaster supporters, disaster supporters have a feeling of helplessness and guilt as secondary traumatic stress, but it was indicated that because of occupational identity and pride, aid workers are unlikely to ask for assistance.

The results of the present study revealed that the high utility group had learning experience of coordination of the support system at the time of need and response through psychological counseling with supporters within the area. Therefore, it is necessary to further examine what kind of education is necessary. For example, Figley [14] noted the following as necessary skills for recovery from trauma: (a) specific assistance such as providing necessary resources, (b) clarifying insight, (c) rectifying cognitive distortion, and (d) supporting reconstruction of cognition. Catherall [15] added "empathic harmony" to Figley's four items and promoted the efficacy of a peer group of experts on sympathetic fatigue (secondary traumatic stress). In addition, Fuji [13] indicated that it is effective for the supporter to experience communication with others in a safe group that takes into account the features of supporters' traumatic stress. Thus, clinical psychologists may also be required to play a support role when exposed to a traumatic experience.

Furthermore, another important proposal is to organize a debriefing session after the members return from support activities. Debriefing meetings are important for the following reasons: for the stability of the mental health of members engaged in the support activities, and for the staff who take on the burden of tasks while the absent members are engaged in the support activities. At the time of disaster, skills in caring for supporters are necessary as well

as skills in caring for disaster victims. In the support team, it is desirable for clinical psychologists to provide psychological care for support members.

5. Limitations

The response return rate was 36.8%. The reason for the low response rate may be related to the difficulty of conducting a survey in the disaster-afflicted area. Targeting these areas means that persons who have suffered themselves, have lost their family members and acquaintances, or who have a fear/aversive feeling to remember a crisis situation immediately after its occurrence may be included, and it can be predicted that a certain number of such persons were included as participants of this study. It can also be assumed that of those from whom a response could not be obtained, there were persons who did not conduct disaster relief activities and those who were not conducting activities as clinical psychologists. The survey period was over 6 years after the Great East Japan Earthquake, and it appears that many people chose not to respond to the survey because they did not want to recall the disaster, wanted to deny the disaster occurrence, felt guilty about not being involved in support, or felt helpless with regard to the current state of reconstruction that is still in process.

Furthermore, in addition to Iwate Prefecture, the prefectures affected by the Great East Japan Earthquake were Miyagi Prefecture, Fukushima Prefecture, Ibaraki Prefecture, and others, and there is a possibility that the results may have been influenced by regional characteristics, making it difficult to explain the overall trend.

6. Conclusion

The principal aim of the present study was to clarify skills necessary for clinical psychologists, but it is important for psychological professionals to acquire the competency required for developing organizational activities that are not limited to any one occupation. In addition, as a future task, it is necessary to clarify the skills expected of clinical psychologists by other professionals (e.g., physicians, nurses, public health nurses) as related to support through interprofessional collaboration in the event of a disaster. Furthermore, by clarifying the degree of agreement, gap, and so on, of the professional identity of clinical psychologists, increased learning opportunities for psychological professionals leading to the development of more flexible psychological professionals can be expected.

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# 被災地の精神保健福祉活動に関する 臨床心理士の支援経験と技能の習得度との関連について

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要旨

本研究は臨床心理士を対象に，災害後の精神保健福祉活動に関する技能習得度の実態を調査し，支援経験の有無と習得度の関連や，学修経験と実行可能性・自覚的苦手さとの関連を明らかにし，災害支援に必要とされる教育的アプローチの要素を検討した．東日本大震災被災地の臨床心理士 81 名の回答を解析した．結果，災害時地域精神保健活動の知識・技能への重要性の認識の高さと有意に関連する因子として，多職種連携での支援経験やこころのケアチーム活動の支援経験等が抽出された．また災害時地域精神保健活動の実行可能性の高さと有意に関連する因子として，福祉領域での業務経験と教育領域への支援経験が抽出された．本研究の主な目的は災害時に臨床心理士に必要とされるスキルを明らかにすることであったが，災害支援として職種に限られない，組織的活動の展開に必要とされるコンピテンシーを身につけることが，心理専門職にとっても重要であると考えられた．