



# Social Relationships and Mental Health among the Victims of The Great East Japan Earthquake; A Multilevel Longitudinal Study



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## Over view of the disaster

Date: March 11th, 2011  
Magnitude: 9.0

Death and missing: over 18,000  
Refugees: 400,000  
Damaged buildings: over 400,000

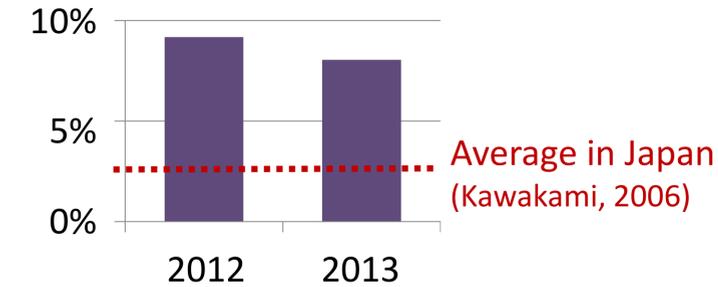


## Introduction & Objective

Three years have passed since The Great East Japan Earthquake (2011). Some victims still live in temporary housings. They might be at high risk of mental illness because they have lost their original community, which is beneficial to their mental health. **The aim of this study was to investigate the longitudinal association between individual and community level social relationships one year after the disaster and change of mental health among the victims in Miyagi, where the damage of the disaster was largest in Japan.**

## Result

Figure. Prevalence of psychological distress



The prevalence of psychological distress among the victims hardly decreased, and remained **three times higher** than the average in Japan.

Table. Social relationships and psychological distress over one year, stratified by K6 at baseline

|                  |                      |              | Low psychological distress (K6 <13) | Severe Psychological distress (K6 ≥13) |
|------------------|----------------------|--------------|-------------------------------------|--|
|                  |                      |              | N= 9,967                            | N= 907                                 |
| Fixed-part       |                      |              | OR (95%CI)                          | OR (95%CI)                             |
| Individual-level | social support       | none         | <b>2.18 (1.63-2.91)</b>             | <b>1.42 (1.01-2.01)</b>                |
|                  | social participation | none         | 1.21 (0.97-1.52)                    | 1.40 (0.96-2.03)                       |
| Community-level  | social support       | < 75%        | 1.30 (0.93-1.81)                    | 0.84 (0.48-1.46)                       |
|                  |                      | (ref. ≥ 85%) | 75-79%                              | 1.18 (0.82-1.68)                       |
|                  | social participation | 80-84%       | 0.99 (0.69-1.42)                    | 0.71 (0.41-1.24)                       |
|                  |                      | (ref. ≥ 61%) | < 39%                               | 1.18 (0.82-1.68)                       |
|                  |                      | 40-48%       | 1.08 (0.75-1.57)                    | 1.64 (0.98-2.74)                       |
|                  |                      | 49%-60%      | 1.02 (0.70-1.48)                    | 1.44 (0.81-2.57)                       |

All covariates were adjusted.

## Findings!

- Lack of individual social support was significantly associated with psychological distress.
- Low community social support and social participation was protectively associated with psychological distress among victims without psychological distress at baseline, but it was marginally significant.

## Conclusion

- Victims of the disaster has higher prevalence of psychological distress than average in Japan.
- Social support was protectively associated with mental health among the victims.
- Continuing care which include making social relationships is needed.

## Method

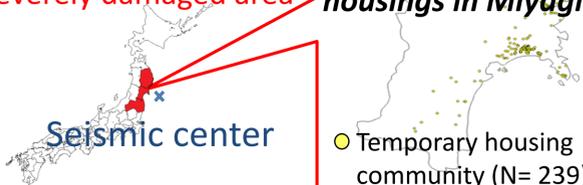
### Design: Multilevel longitudinal study

- Level 1: individual
- Level 2: temporary housing community

### Participants:

Severely damaged area

Adults in all temporary housings in Miyagi



Temporary housing community (N= 239)

### Analysis

- Baseline survey in 2012  
N= 18,562 (response rate= 58.6%)
- Follow-up survey in 2013  
N= 10,874 (follow-up rate= 58.6 %)
- Multilevel logistic regression analysis
  - Stratified by K6 ≥13 or not at baseline
  - Missing values were multiple imputed.

### Variables

#### Outcome

- Psychological distress assessed by K6 scale.
  - The score of 13+ was classified as psychological distress

#### K6 scale (Kessler, 2003)

Consists of 6 questions measuring mental health.  
Total score ranges from 0 (no distress) to 24 (maximum distress)

#### Predictors

- Individual social support, social participation
  - Have / None
- Community social support, social participation
  - the prevalence of the person having social support / social participation, treated as quartile

#### Questionnaires of predictors

Social support: Do you have someone who listens to your concerns? (Yes / No)

Social participation: Do you participate in local events? (Yes / No or Don't know such events)

#### Covariates

- Sex, age, present illness, occupation, number of households, physical activity, access to hospital/ city government/ market