Mental health consequences of the Fukushima disaster and care for affected people

Masaharu Maeda, M.D.,Ph.D.
Department of Disaster Psychiatry, School of Medicine, Fukushima Medical University
Ambiguous loss

Community exists physically but not do psychologically

Odaka, Minamisoma (Apr.2012)
# Differences between natural and nuclear disasters

<table>
<thead>
<tr>
<th></th>
<th>Natural disasters</th>
<th>Fukushima disaster</th>
</tr>
</thead>
<tbody>
<tr>
<td>Impact of trauma</td>
<td>Acute, instant</td>
<td>Chronic, continuous</td>
</tr>
<tr>
<td>Affected area</td>
<td>Visible, clear</td>
<td>Invisible, unclear</td>
</tr>
<tr>
<td>Physical loss</td>
<td>Apparent</td>
<td>Ambiguous</td>
</tr>
<tr>
<td>Psychological acceptance</td>
<td>Relatively easy</td>
<td>Very difficult</td>
</tr>
<tr>
<td>Compensation</td>
<td>Simple, limited</td>
<td>Complicated, unsettled</td>
</tr>
<tr>
<td>Groundless rumors</td>
<td>Rare</td>
<td>Common</td>
</tr>
<tr>
<td>Stigma and self-stigma</td>
<td>Rare</td>
<td>Common</td>
</tr>
<tr>
<td>Voluntary evacuation</td>
<td>Few</td>
<td>Numerous</td>
</tr>
<tr>
<td>Evacuation</td>
<td>Near, relatively short-term</td>
<td>Remote, long-term</td>
</tr>
<tr>
<td>Cohesiveness of community</td>
<td>High</td>
<td>Low</td>
</tr>
<tr>
<td>Psychological recovery</td>
<td>Dependent on physical relief</td>
<td>Independent of physical relief</td>
</tr>
</tbody>
</table>

Maeda et al, J Natl Inst Public Health: 2018
Number of evacuees

Evacuees in Fukushima: 7,915
Evacuees out of Fukushima: 30,740

(As of Mar, 2020, Fukushima prefecture)
Evacuees inside and outside Fukushima Prefecture

(Unit: people)

Initial phase (~6 months)

- Adequate risk communication was required, but extremely difficult in this phase. To request affected people to keep calm often provoked negative reactions among them. It was regarded as underestimation or concealment of the impacts.

- Acute stress reactions often appeared with intense aggression, which could traumatize different rescue and relief workers including medical and welfare staff.

- Preexisting care system was weakened due to evacuation of local health care workers.

- Alternatively, new mental health care system that could provide long-term psychological care in disaster area was required.
Fukushima Center for Disaster Mental Health (FCDMH)

◆ Established in 2012
◆ About 40 staff (clinical psychologists, social workers, nurses, occupational therapists, etc.)
◆ 5 branches in Fukushima
◆ Activities
  ✓ Visit service (outreach)
  ✓ Group activities for evacuees
  ✓ Educative programs for other parties concerned (e.g. community nurses, administrative officers)
  ✓ Making relationship with other mental health facilities
Recovery phase (6 months ~)

- This phase is much longer than that of natural disasters.
- While risk communication was implemented, concerns among affected people extended to not only radiation health effects but also other broad matters (e.g., financial issues, future plans, medical and welfare service, etc.)
- Evacuation-related health issues (non-radiological health problems) including suicide was growing up.
- Stigmatization related to pregnancy and/or compensation emerged among the public and affected people.
- Dispersal of evacuees weakened community ties.
“Direct death” vs “Indirect death”

Direct death: death can be directly ascribed to disaster (earthquake or tsunami)
Indirect death (disaster-related death): death occurred as a consequence of environmental problems in evacuation life

(Reconstruction Agency, 2019)
Disaster-related suicide in prefectures affected by the Great East Japan Earthquake

(Unit: people)

Mental Health and Life style survey
Fukushima Medical University

Purposes

• To clarify current mental health problems and lifestyle-related issues among people who lived in the evacuation zone at the time of the disaster by using several questionnaires

• To provide brief intervention including psychoeducation and advises by telephone or mail mainly for people at risk of PTSD, depression and other behavioral problems.

• To share information with available resources in Fukushima such as the Fukushima Care Center for Disaster Mental Health or psychiatric clinics as needed
Target population

• **211,615** residents had once lived in 13 municipalities which were ordered by the Japanese government for evacuation.

• We divided all the participants into 5 groups according to age.
  ① Age 0-3 : 4,625  
  ② Age 4-6 : 5,047  
  ③ Primary School (age 7-12) : 11,413  
  ④ Middle School (age 13-15) : 6,023  
  ⑤ Adult (age >15) : 184,507

This survey has been performed since January 2012, about one year after the disaster.
Comparison of prevalence of evacuees at risk of psychiatric disorders between in and out of Fukushima in 2019 (based on K6)

Results of Mental health and Lifestyle Survey 2019

Inside Fukushima: 5.3%
Outside Fukushima: 8.1%

Control: 3.0%
Comparison of prevalence of Children at risk of behavioral problems between in and out of Fukushima in 2019 (Based on SDQ)

Results of Mental health and Lifestyle Survey 2019

Fukushima Medical University, School of Medicine
Radiation risk perception towards genetic effects among evacuees

<table>
<thead>
<tr>
<th>Year</th>
<th>Very unlikely</th>
<th>Unlikely</th>
<th>Likely</th>
<th>Very likely</th>
</tr>
</thead>
<tbody>
<tr>
<td>2012</td>
<td>15.2</td>
<td>24.6</td>
<td>25.3</td>
<td>34.9</td>
</tr>
<tr>
<td>2013</td>
<td>23.9</td>
<td>28.0</td>
<td>23.2</td>
<td>24.9</td>
</tr>
<tr>
<td>2014</td>
<td>21.4</td>
<td>30.5</td>
<td>25.9</td>
<td>22.2</td>
</tr>
<tr>
<td>2015</td>
<td>29.2</td>
<td>32.7</td>
<td>22.1</td>
<td>15.9</td>
</tr>
<tr>
<td>2016</td>
<td>29.0</td>
<td>33.3</td>
<td>22.0</td>
<td>15.6</td>
</tr>
<tr>
<td>2017</td>
<td>31.0</td>
<td>32.9</td>
<td>20.9</td>
<td>15.2</td>
</tr>
<tr>
<td>2018</td>
<td>18.9</td>
<td>43.9</td>
<td>28.9</td>
<td>8.3</td>
</tr>
</tbody>
</table>
### Multivariate logistic regression analysis of the severe distress group

<table>
<thead>
<tr>
<th>Predictor</th>
<th>Model 2 Model 1 + disaster-related variables</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>OR (95%CI)</td>
</tr>
<tr>
<td>Gender (female)</td>
<td>1.51 (1.21-1.89)**</td>
</tr>
<tr>
<td>Age (65y or more) at the disaster</td>
<td>1.82 (1.46-2.26)**</td>
</tr>
<tr>
<td>Problem drinking (CAGE 2 or more) in 2013</td>
<td>1.77 (1.26-2.49)**</td>
</tr>
<tr>
<td>Sleep disturbance in 2013</td>
<td>3.86 (3.07-4.86)**</td>
</tr>
<tr>
<td>Poor perceived social support (LSNS-6 12 or less) in 2013</td>
<td>2.39 (1.90-2.99)**</td>
</tr>
<tr>
<td>Perception of radiation risk (genetic effects: very likely) in 2013</td>
<td>3.91 (3.17-4.83)**</td>
</tr>
<tr>
<td>House damage at the disaster</td>
<td>0.90 (0.68-1.20)</td>
</tr>
<tr>
<td>Bereavement at the disaster</td>
<td>1.16 (0.91-1.47)</td>
</tr>
<tr>
<td>5 times or more relocations after the disaster (in 2012)</td>
<td>1.26 (1.02-1.55)*</td>
</tr>
</tbody>
</table>

*Oe, Maeda et al. 2016*
Brief intervention by Telephone

- Our team has about 17 staff including clinical psychologists, social workers and nurses.

- The telephone supports were provided for the respondents who show high score on SDQ, K6 or PCL.

**Strength and Difficulties Questionnaire (SDQ)**
Parents of children aged 4 through 15 years were asked to evaluate their children’s behavior.

**Kessler 6-item questionnaire (K6)**
To estimate general mental health, especially depression.

**PTSD Checklist (PCL)**
To estimate PTSD symptoms.
Long-term recovery phase

Mental health care system needs to function for very long time after nuclear accidents.

Social countermeasures for public stigma (e.g. antistigma campaign) may contribute to empowerment of affected people.

Relief workers might be extremely overworked and easily exposed to negative feelings (anger and complaints) of affected people. Supporting such workers should be key to success of the restoration after nuclear disasters.
Exhaustion of relief workers in Fukushima

Results of diagnostic interview for public employees working in the disaster area (n=168, in 2013-2014)

• Depression 17.9%
• Suicide risk 8.9%
• Sleep difficulties 72.6%

97% of the participants were exposed to frequent anger or complaints from evacuees

Maeda et al. PCN 2016

Fukushima Medical University, School of Medicine
THANK YOU FOR YOUR ATTENTION