How Persons with Special Needs at times of Disaster (PSND) were Responded to during 2007 March Noto Peninsula Earthquake

Feb. 14th, 2008

Department of Sociology
Doshisha University
Shigeo TATSUKI
(www.tatsuki.org/)
Assessment Workshops on Responses to Noto Peninsula EQ Disaster for PSND’s

<table>
<thead>
<tr>
<th>Event Description</th>
<th>Participants</th>
<th>Date</th>
</tr>
</thead>
<tbody>
<tr>
<td>PHN’s &amp; City Dpt. Care Managers</td>
<td>(7 Personels, Monzen Branch, May 15, 2007)</td>
<td>2007/May</td>
</tr>
<tr>
<td>Presidents of Neighborhood Assoc., District Welfare Commissioner, Community Center Personnel, Volunteer Fire Fighter Chiefs (Moro-Oka Area)</td>
<td>(4 participants, Moro-Oka, May 15, 2007)</td>
<td>2007/May</td>
</tr>
<tr>
<td>Presidents of Neighborhood Assoc., District Welfare Commissioner</td>
<td>(8 participants, Kawarada, May 20th)</td>
<td>2007/</td>
</tr>
<tr>
<td>District Welfare Commissioner, DWC assistant volunteers(Monzen, &amp; Kuroshima District)</td>
<td>(10 participants at Monzen Public Health Center, May 21st)</td>
<td>Aug</td>
</tr>
<tr>
<td>Long-term Care Service Care Manager Meeting</td>
<td>(20 Participants, Wajima City Local Health Center, May 21st)</td>
<td>75</td>
</tr>
<tr>
<td>Community Center Personnel</td>
<td>(6 Participants, Monzen Branch Office, June 6th)</td>
<td>Participants</td>
</tr>
<tr>
<td>City Office Department Personnels (EOC, Monzen Branch, Wajima Headquaters)</td>
<td>(19 participants, at Monzen Public Health Center, August 8)</td>
<td></td>
</tr>
<tr>
<td>Individual Interviews to PSND’s &amp; Their Families</td>
<td>(10 participants at Monzen, To-ge &amp; Moro-Oka Tem. Housing Projects, August 9th)</td>
<td></td>
</tr>
</tbody>
</table>
Community (Morooka, Kuroshima, Monzen) Response during the March 25 2007 Noto Peninsula Earthquake
Community Residents (Morooka, Kuroshima, Monzen)

Response (N=281)

Placards that were used during the October 2006 disaster drill were kept around the evacuation area, using it made checking attendance of community residents possible. (Morooka)

“I don’t want to be to move to the shelter because I cannot use the toilet there,” said the elderly with weak legs who was urged to move to the shelter.

Making the welfare maps enabled the minseiin to memorize the maps, therefore making it easier to confirm if the vulnerable persons were sheltered.

Elderly persons were afraid to use the portable toilets.

The shelter established its system of self-governance.

Gargle, hand wash, thorough ventilation, separate eating and sleeping quarters, quarantine infected patients, persons in charge of toilets are not allowed inside the kitchen.

Smooth reception of aid because of the self-governance in the shelters were well-established.

Continue safety watch over vulnerable individuals who stayed at home, tarp sheets, garbage, responding to requests, pick-up service.

The community members independently started managing the shelters.

The safety watch over unevacuated disaster victims started the next day.

Local residents conducted safety and sanitation measures.

The shelter headquarter was organized and contact with outside groups standardized.

Systematization of sanitation measures at shelters started.

Continue home visit, consultation and assistance for those who did not evacuate.

Helped with the management within the community of garbages incurred due to the earthquake.

After the shelters were closed, was able to finish tidying own house and cleaning the shelter.

Garel, hand wash, thorough ventilation, separate eating and sleeping quarters, quarantine infected patients, persons in charge of toilets are not allowed inside the kitchen.

Continue safety watch over vulnerable individuals who stayed at home, tarp sheets, garbage, responding to requests, pick-up service.

Systematization of sanitation measures at shelters started.

Continue home visit, consultation and assistance for those who did not evacuate.

Helped with the management within the community of garbages incurred due to the earthquake.

After the shelters were closed, was able to finish tidying own house and cleaning the shelter.

Garel, hand wash, thorough ventilation, separate eating and sleeping quarters, quarantine infected patients, persons in charge of toilets are not allowed inside the kitchen.
Government’s (Departments in charge of Vulnerable Individuals) Response during the March 25 2007 Noto Peninsula Earthquake
Response from Departments in charge of Vulnerable Individuals (N=86)

- Planning based on the map made
- Various official adjustment emerged
- Manage shelters
- Utilize the guideline for shelter assistance for vulnerable individuals during a disaster (4/5 ~)
- No such measures during the Hanshin-Awaji EQ

Consolidating the map intersecting departments to assist the vulnerable population took until the evening to finish.

Outside assistance started/welfare map was utilized

Thorough implementation of measures against infectious disease (hand washing, sterilization, separate sleeping and eating areas, private room quarantine)
Long-Term Care Service (LTCS) Care Managers’ Response during the March 25 2007 Noto Peninsula Earthquake
Response of Care Managers (N=235)

Checking the safety and whereabouts of clients via telephone and home visit started the same day.

After 3 days, the service adjustments became a routine like their regular daily official work.

The emergency service adjustment became an extension of the routine official work.
Who did What?

0 to 10 hr, 10 hr to 100 hr, 100 to 1000 hr
Disaster Phase Analysis
## DRC Framework to Analyze Organizational Response to Disaster

<table>
<thead>
<tr>
<th>Organization Structure</th>
<th>Routine Tasks</th>
<th>Nonroutine Tasks</th>
</tr>
</thead>
<tbody>
<tr>
<td>Same as Predisaster</td>
<td>Type I: Established</td>
<td>Type III: Extending</td>
</tr>
<tr>
<td>New</td>
<td>Type II: Expanding</td>
<td>Type IV: Emergent</td>
</tr>
</tbody>
</table>

Organizational Response to Disaster
Community Response: 0~10hr

<table>
<thead>
<tr>
<th>Structure</th>
<th>Routine</th>
<th>Nonroutine</th>
</tr>
</thead>
<tbody>
<tr>
<td>Same as Predisaster</td>
<td>Type I (Established)</td>
<td>Type III (Extending)</td>
</tr>
<tr>
<td>New</td>
<td>Type II (Expanding)</td>
<td>Type IV (Emergent)</td>
</tr>
<tr>
<td>Mobilizing Residents</td>
<td>Evacuation Assist.</td>
<td>Checking Safety/Whereabouts</td>
</tr>
</tbody>
</table>

Organizational Response to Disaster
Care Mngr & City Dpt. Response: 10~100hr

<table>
<thead>
<tr>
<th>Org. Structure</th>
<th>Routine</th>
<th>Nonroutine</th>
</tr>
</thead>
<tbody>
<tr>
<td>Same as Predisaster</td>
<td>Type I (Established)</td>
<td>Type III (Pref. PHN)</td>
</tr>
<tr>
<td></td>
<td>Work Overtime</td>
<td></td>
</tr>
<tr>
<td>New</td>
<td>Type II (Expanding)</td>
<td>Type IV (Emergent)</td>
</tr>
<tr>
<td></td>
<td>Checking Safety/Whereabouts</td>
<td>Shelter Management</td>
</tr>
<tr>
<td></td>
<td>Work Overtime</td>
<td>New Prsnl</td>
</tr>
<tr>
<td></td>
<td>Service Adjustment</td>
<td></td>
</tr>
</tbody>
</table>

Organizational Response to Disaster

Care Mngr. Response: 100hr~1000hr

<table>
<thead>
<tr>
<th>Org. Structure</th>
<th>Routine</th>
<th>Nonroutine</th>
</tr>
</thead>
<tbody>
<tr>
<td>Same as Predisaster</td>
<td>Type I (Established)</td>
<td>Type III (Extending)</td>
</tr>
<tr>
<td>New</td>
<td>Type II (Expanding)</td>
<td>Type IV (Emergent)</td>
</tr>
</tbody>
</table>

- Responding to Regular Clientele
- Service Adjustment
- Work Overtime

### Organizational Response to Disaster

**City Dpt. Response**: 100~1000hr

<table>
<thead>
<tr>
<th>Org. Structure</th>
<th>Routine</th>
<th>Nonroutine</th>
</tr>
</thead>
<tbody>
<tr>
<td>Same as Predisaster</td>
<td>Type I (Established)</td>
<td>Type III (Extending)</td>
</tr>
<tr>
<td>New</td>
<td>Type II (Expanding)</td>
<td>Type IV (Emergent)</td>
</tr>
</tbody>
</table>

- **Type I (Established)**: Administrative jobs associated with ending & starting fiscal years
- **Type II (Expanding)**: Medical Team, Stress Care Team, Elderly Care Team
- **Type III (Extending)**: Inter-Dptmnt Coordination, Consultation, Welfare Shelter, Staff Support
- **Type IV (Emergent)**: Sheltering, Temp. Housing Visit, New Prsnl

**Tasks**
- Work Overtime
- Pref. PHN
- Receiving Planning
- Planning
- Staff Support

Vulnerability as a function of Hazards, Person, & Environment

Vulnerability is NOT intrinsic to a Person, but is a Social Construction
Hazard Maps are Made Available from Municipality, Prefecture, & National Government Web Sites
Hazard Maps are Used as a Tool to Warn Disaster Susceptibility
The Degree of Special Needs at times of Disaster can be Measured Using Hazard Maps, & Person-Situation Profiles
Person with Special Needs at times of Disaster

\[ f(\text{Hazard}), f(\text{Person}), f(\text{Environment}) \]

Overall Vulnerability

Person-Situation Profiles

1. Reliance on Community Care Services due to Age, Disability, etc.
2. Ability to Evacuate by Oneself
3. Ability to Survive at Shelter without Special Assistance

Help Available for Evacuation at times of Disaster?
GIS Mapping of Persons with Special Needs at times of Disaster (PSND)

Kobe City Project
Levels of Care Needs

About a half (47%) of the Respondents had difficulty to evacuate by themselves.

N=123
Social Isolation Scale Items & Weights

Item options weights were obtained by means of Optimal Scaling that assigned weights to maximize the internal consistency reliability (Cronbach’s alpha).

Female, over 85 yrs of age, Using home-help as opposed to day-care or short-term stay services, Living alone, Not Living with key person.
## Housing Structure & Location of Bedroom Index

<table>
<thead>
<tr>
<th></th>
<th>Frequency</th>
<th>Weight</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Bedroom Floor</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>1st Floor</td>
<td>49</td>
<td>-1.078</td>
</tr>
<tr>
<td>2nd Floor or above</td>
<td>74</td>
<td>0.712</td>
</tr>
<tr>
<td><strong>When the House was built</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Before 1981</td>
<td>48</td>
<td>-0.408</td>
</tr>
<tr>
<td>After 1981</td>
<td>75</td>
<td>0.259</td>
</tr>
<tr>
<td><strong>House Structure</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Woden</td>
<td>31</td>
<td>-1.550</td>
</tr>
<tr>
<td>RC-Reinforced</td>
<td>90</td>
<td>0.537</td>
</tr>
<tr>
<td>N.A.</td>
<td>2</td>
<td></td>
</tr>
</tbody>
</table>
### Estimating Relative Importance of the Three Factors: A Paired Comparison Experiment

<table>
<thead>
<tr>
<th>Factor</th>
<th>Relative Importance</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Level of Care Needs</td>
<td>2.6</td>
</tr>
<tr>
<td>2. Social Isolation</td>
<td>3.3</td>
</tr>
<tr>
<td>3. Housing Structure &amp; Location of Bedroom</td>
<td>1.0</td>
</tr>
</tbody>
</table>

The above parameters were estimated from a paired comparison experiment conducted to 18 care-managers who responded to PSND’s during 2006 July Flooding & Landslide Disaster in Shimo-Suwa Township in Nagano Prefecture.
Kernel Density Mapping of 123 Respondents Who Reside within Tonankai-Nankai EQ High Tsunami Risk Zone (Population 1210 people)

- Self-Evacuation Ability
- Degree of Social Support
- Housing Structure & Location of Bedroom
Weighted Kernel Density Mapping of Persons with Special Needs or PSN’s
Weighted Kernel Density Mapping of Persons with Special Needs at times of Disaster or PSND’s
Strategies for Creating Individualized Evacuation & Sheltering Plans
Build Evacuation & Sheltering Support System by means of Collaboration among Different Stakeholders: The Key to Obtain & to Share Information is the Consent from PSND’s PSND’s Who Gave Consent to Share Their Personal Info.

- Neighborhood Assoc. A
- District Welfare Commissioner B
- LCSP C
- Disaster Preparedness Committee of Neighborhood Assoc. D
- District Welfare Commissioner E
- District Welfare Commissioner F
Build Evacuation & Sheltering Support System by means of Collaboration among Different Stakeholders: The Key to Obtain & to Share Information is the **Consent from PSND’s**

PSND’s Who Gave Consent to Share Their Personal Info.

- Neighborhood Assoc. A
- District Welfare Commissioner B
- LCSP C
- Disaster Preparedness Committee of Neighborhood Assoc. D
- District Welfare Commissioner F
- LTC Service Recipient PSN Db
- Designated Diseases Pt. Alien Registration

---

*Note: The diagram illustrates the flow of information and collaboration among different stakeholders.*
Build Evacuation & Sheltering Support System by means of Collaboration among Different Stakeholders: The Key to Obtain & to Share Information is the Consent from PSND’s

PSND’s Who Gave Consent to Share Their Personal Info.

- Neighborhood Assoc. A
- District Welfare Commissioner B
- LCSP C
- Disaster Preparedness Committee of Neighborhood Assoc. D
- District Welfare Commissioner E

- Inter-Departmental Sharing of PSND Info.
- Population List Creation
- Utilize Inter-Departmental Info. Sharing Initiatives
Build Evacuation & Sheltering Support System by means of Collaboration among Different Stakeholders: The Key to Obtain & to Share Information is the Consent from PSND’s

PSND’s Who Gave Consent to Share Their Personal Info.

- Neighborhood Assoc. A
- District Welfare Commissioner B
- LCSP C
- Disaster Preparedness Committee of Neighborhood Assoc. D
- District Welfare Commissioner E
- District Welfare Commissioner F

Check Missing or Duplications

- Inter-Departmental Sharing of PSND Info.
- Population List Creation
- Utilize Inter-Departmental Info. Sharing Initiatives
Build Evacuation & Sheltering Support System by means of Collaboration among Different Stakeholders: The Key to Obtain & to Share Information is the Consent from PSND’s

Individualized Evacuation & Sheltering Plan

Neighborhood Assoc. A

District Welfare Commissioner B

LCSP C

Disaster Preparedness Committee of Neighborhood Assoc. D

District Welfare Commissioner F

Check Missing or Duplications

- Inter-Departmental Sharing of PSND Info.
- Population List Creation
- Utilize Inter-Departmental Info. Sharing Initiatives

Designated Alien Rec.
A Team Starting From Riverside Plaza
A Team Starting from Hama-Park
A Team Starting from Hama-Park