Disaster preparedness of mothers raising preschool children: lessons from The Great East Japan Earthquake

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Abstract
Objective: The purpose of this study was to determine the disaster preparedness of mothers of preschool children living in disaster-prone areas and to examine factors related to preparedness.

Methods: A quantitative cross-sectional analytical design was used. Data were collected using a self-administered questionnaire completed by 272 mothers whose children attended one of three institutions (certified public nursery schools and childcare institutions) in one city.

Results: More than 90% of the subjects were prepared for disasters: they stockedpile flashlight, candles, drinking water, spare batteries, and emergency food. Fewer mothers had discussions with family members about what to do at the time of a disaster, decided how to contact their family members and childcare institutions in the case of an emergency, and informed their children about an emergency phone number.

In terms of the details of preparedness, mothers who were more prepared for disasters were more likely than other subjects to believe they should be prepared (p < 0.01).

Conclusions: The results of this study suggest the need to promote and maintain preparedness, including knowing how to contact others in case of emergency. Therefore, it is important to provide education and training about disaster prevention to families and to staff members of nursery schools and other childcare institutions in Japan.

Introduction
The Great East Japan Earthquake occurred on March 11, 2011, killing more than 15,886 people. Among the most powerful earthquakes in history, it caused vast destruction, including a tsunami and a nuclear accident. The reduction of disaster-related risk is a crucial issue facing countries all over the world. Specifically, families with children need to prepare for disasters if they live in disaster-prone areas.

The purpose of this study was to determine the disaster preparedness of mothers of preschool children living in disaster areas and to examine factors related to such preparedness.

Methods and Materials
A quantitative cross-sectional analytical design was used. Data were collected using a self-administered questionnaire completed by 272 mothers whose children attended one of three institutions (certified public nursery schools and childcare institutions) in one city.

Respondents were asked about their efforts to prevent and mitigate the effects of disasters on their home, about their knowledge and ideas regarding such preparedness, and about disaster-related influences.

The study was conducted between January and February 2013.

We performed a general analysis and then divided the families into two groups of service users and cases.

SAS ver.8.1 was used for the analysis (SAS Institute, Cary, NC, USA).

A p-value <0.05 was considered significant.

Results
A total of 166 parents returned questionnaires, a 61.0% response rate.

The average age of those mothers who had experienced The Great East Japan Earthquake was 35.6 ± 5.2 years.

In terms of the degree of disaster-related damage experienced by participants, 56.4% reported damage to their furniture and household goods, and 39.3% believed that they were forced to find alternative shelter.

As a result, more than 90% of the subjects were prepared for disasters: they stockedpile flashlight, candles, drinking water, spare batteries, and emergency food (Fig. 2).

In contrast, fewer mothers discussed with family members what to do at the time of a disaster, decided how to contact their family members and institutions (nursery schools or other childcare facilities) in case of an emergency, and informed their children about an emergency phone number (Fig. 2).

In terms of the details of preparedness, mothers who were more prepared for disasters were more likely than other subjects to believe that they should be prepared (p = 0.01) (Table 1).

The disaster preparedness of mothers of preschool children was not significantly related to their knowledge about disasters or their sense of crisis regarding disasters.

Discussion
These results suggest that more than 90% of mothers of preschool children had prepared for a disaster; however, the degree of their disaster preparedness was insufficient.

The data indicate that it is difficult to discuss with family members what to do at the time of a disaster and to decide how to contact family members and childcare staff. However, mothers who leave their children at nursery schools or other institutions during the week need to include these facilities in their planning for family emergencies.

Conclusions
The results of this study suggest the need to promote and maintain preparedness, including knowledge of how to contact others in case of emergency.

Therefore, it is important to provide education and training about disaster prevention to families and to the staff of nursery schools and other childcare institutions in Japan.

Table 1. Associated factors with disaster preparedness of mothers raising preschool children

<table>
<thead>
<tr>
<th>Variables</th>
<th>All (n = 166)</th>
<th>Mothers of more prepared for disasters (n = 93)</th>
<th>Others (n = 73)</th>
<th>2-value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Degree of disaster damage</td>
<td>55.0%</td>
<td>57.0%</td>
<td>53.4%</td>
<td>0.10</td>
</tr>
<tr>
<td>Change in family after the disaster</td>
<td>Yes</td>
<td>52.2%</td>
<td>57.0%</td>
<td>42.8%</td>
</tr>
<tr>
<td>Emotional and temperamental change</td>
<td>Yes</td>
<td>51.9%</td>
<td>54.2%</td>
<td>49.1%</td>
</tr>
<tr>
<td>Knowledge of the disaster</td>
<td>Yes</td>
<td>50.8%</td>
<td>52.4%</td>
<td>49.1%</td>
</tr>
<tr>
<td>Recuperation of a disaster</td>
<td>Yes</td>
<td>51.8%</td>
<td>52.8%</td>
<td>49.1%</td>
</tr>
<tr>
<td>Sense of crisis regarding the disaster</td>
<td>Yes</td>
<td>51.8%</td>
<td>52.8%</td>
<td>49.1%</td>
</tr>
</tbody>
</table>

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