



Psychological distress amongst refugees following a nuclear leak:

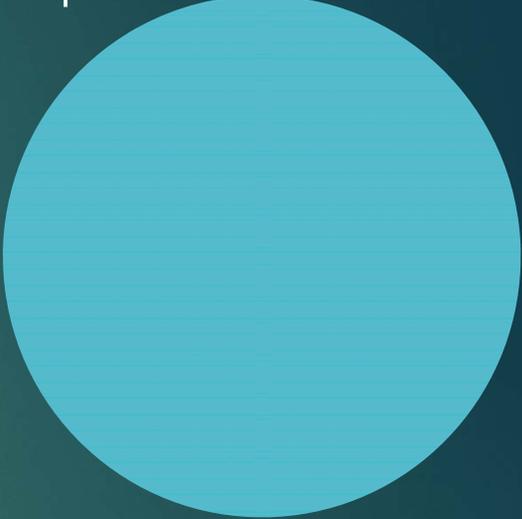
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The Great East Japan Earthquake

- ▶ March 2011. Most powerful earthquake in Japan's history and one of most powerful since 1900 records began. 18,000+ died
- ▶ Associated tsunami and nuclear incident in Fukushima. Tsunami damaged all six reactors and leading to meltdowns in three
- ▶ Nuclear accident subsequently rated 'Level 7' by Japanese Ministry of Economy, Trade and Industry,
- ▶ Fukushima incident of comparable severity to the 1986 Chernobyl incident.

Our approach



- ▶ Individual, group and cultural factors influence responses to mass trauma
- ▶ Individual factors include -
 - ▶ Previous experiences
 - ▶ Values and beliefs
 - ▶ Sense of control and trust in authority figures
- ▶ Social factors include-
 - ▶ Support available from others
 - ▶ Group perception of risk (often shared via social media)
- ▶ Cultural factors include-
 - ▶ Cultural experiences e.g. of earthquakes, nuclear threat
 - ▶ Cultural beliefs (e.g. *shouganai*)

Initial research

- ▶ Data from 3 regions: 1) Miyagi 2) Tokyo + Chiba 3) Nagasaki + Yamaguchi (total N = 814). Data collected May 2011, 3 months after earthquake.
- ▶ Individual values, family assessments of risk, sense of control over risk and trust in official notices
- ▶ Respondents students in 7 major Universities.

Initial research (2)

- ▶ Analyses using AMOS (SEM)
- ▶ Fear of future earthquake: predicted by 'traditional', security values + family/ friend fears.
- ▶ Fear ~ preparing earthquake kit + modifying house.
- ▶ Greater risk perception in Tokyo > Miyagi > West Japan
- ▶ Fear of future nuclear incident: predicted by conservation values, family/friend fears, trust in government advice, sense of personal health control.
- ▶ Risk ~ avoiding going out, wearing masks, considering leaving Japan

Notably.....

1. Nuclear risk, not continuing earthquake threat, led to stocking up of food and drink, reflecting uncertainty about food and safety following Fukushima .
2. Nuclear risk too, not earthquake hazards, predicted a willingness to consider leaving Japan.
3. Trust in the government in relation to the nuclear risk significant predictor of anxiety about nuclear risk
4. Those using anonymous internet bulletin boards less trusting of government advice

Data from Japanese refugees

- ▶ Around 335 000 refugees from the tsunami and nuclear incident.
- ▶ We analysed data from refugees from Miyagi (most affected area) + Iwate and Fukushima
- ▶ Relationship between psychological distress +
 - ▶ sociodemographics (age, gender, city at time of tsunami, family finances, significant loss (family fatalities, housing loss))
 - ▶ Social support and household visitors
 - ▶ disease-related vulnerabilities
 - ▶ opportunities for physical activity

Data set

- ▶ Miyagi Prefectural Health: Miyagi Health Department 10–12 months after disasters
- ▶ Questionnaires to all 12 828 refugee families in Prefectural rented accommodation
- ▶ 9413 families (21 981 individual participants) 18 +, returned questionnaire (10 312 (47%) male, mean age 51.7 years, s.d.=18.53, response rate 73%)
- ▶ Survey questions from those used by local government after Kobe and Niigata earthquakes

Questions and analyses



DV

- ▶ Japanese Kessler Psychological Distress Scale (K6) ($\alpha=0.91$)
- ▶ 4 behaviours: sleeplessness, no appetite, alcohol in morning, lethargy

IV

- ▶ Previous serious illness and currently receiving treatment for disease
- ▶ Change in physical activity since earthquake.
- ▶ Loss of family members, unemployed, loss of housing
- ▶ Shoulder to cry on and visitors
 - ▶ Shoulder: spouse, father, mother, grandparent, child, grandchild, sibling, friend
 - ▶ Visitors to household and nature of visitor: child, sibling, daughter-in-law

Regression and Multi level analysis (individual, family and city at time of disasters)

Findings: DISTRESS

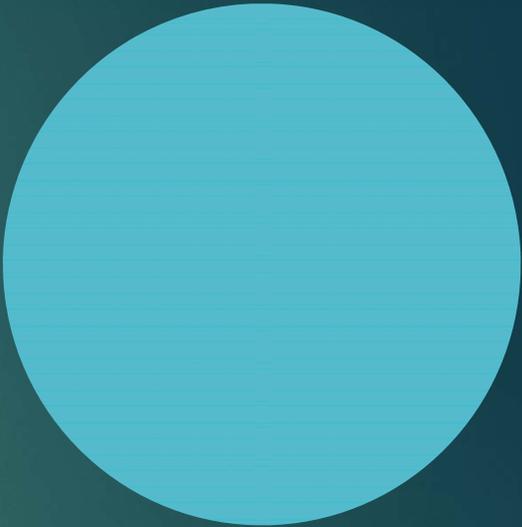
- ▶ Greater in
 - ▶ Fukushima > southern Miyagi > northern Miyagi
 - ▶ Older
 - ▶ Women
 - ▶ Unemployed
 - ▶ Family death
 - ▶ Previous serious disease + under treatment
 - ▶ Decreased physical activities
 - ▶ No household visitors and less support from spouse, parent or friend
 - ▶ Support from a child
- ▶ Impact of Age, gender and social support from child varied across families



DYSFUNCTIONAL BEHAVIOUR



Positively related to:

- ▶ Older respondents
 - ▶ Women
 - ▶ no job
 - ▶ no house visitor
 - ▶ reduced physical activity
 - ▶ no support from spouse, parent or friend
 - ▶ Support from child (sleeplessness)
 - ▶ Home visits from daughter in law (sleeplessness, alcohol use)
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Findings from Miyagi

- ▶ Severe mental illness risk: 9%. Similar to Californian general sample, but higher than usual Japanese scores. *Shouganai?*
- ▶ **Fukushima effect.** Loss of housing **unrelated** to distress.
- ▶ Previous illness risk factor, as is lack of activity post disaster
- ▶ Social support generally helps – but not always! ('daughter-in-law penalty')
- ▶ Support from child varies across families
- ▶ We now have longitudinal data (up to 4 waves) from this sample + other datasets from public sector housing and fabricated housing.
- ▶ Initial indications: friend support a year after event predicts well-being a year later.

Implications

- ▶ Following a nuclear event..
 - ▶ Need to account for cultural factors, influence of friends/family, as individual values in understanding responses.
 - ▶ Physical damage to property may be less important than uncertainty ('dread' risk).
 - ▶ Despite potential experiences of hardships, elderly particularly vulnerable
 - ▶ Must ensure adequate social support for those displaced. But some better supporters than others, although family variation... Has implications for resettlement arrangements (e.g. co-location).
 - ▶ Encourage return to physical activities and employment as soon as possible, alongside continuation of medical treatments.

Thanks and further information

- ▶ Japanese co-authors and Miyagi Prefecture
- ▶ Collaborators in China and Israel (Shaojing Sun, Menachem Ben-Ezra)
- ▶ More information:
 - ▶ Goodwin, R., Takahashi, M., Sun, S., & Ben-Ezra, M. (2015). Psychological distress amongst tsunami refugees from the Great East Japan Earthquake. *British Journal of Psychiatry (Open)*, 1, 92–97.
 - ▶ Ben-Ezra M., Shigemura J., Palgi Y., Hamama-Raz Y., Lavenda O., Suzuki M, Goodwin R (2015). From Hiroshima to Fukushima: PTSD symptoms and radiation stigma across regions in Japan. *Journal of Psychiatric Research*.
 - ▶ Sun, S., Zagefka, H., & Goodwin, R. (2013). Predictors of Intergroup Concern for Disaster Victims of the Japan Earthquake. *Asian Journal of Social Psychology*, 16, 152-7.
 - ▶ Goodwin, R., Takahashi, M., Sun, S., & Gaines, S. (2012). Modelling Psychological Responses to the Great East Japan Earthquake and Nuclear Incident. *PLoS One* 7(5): e37690