

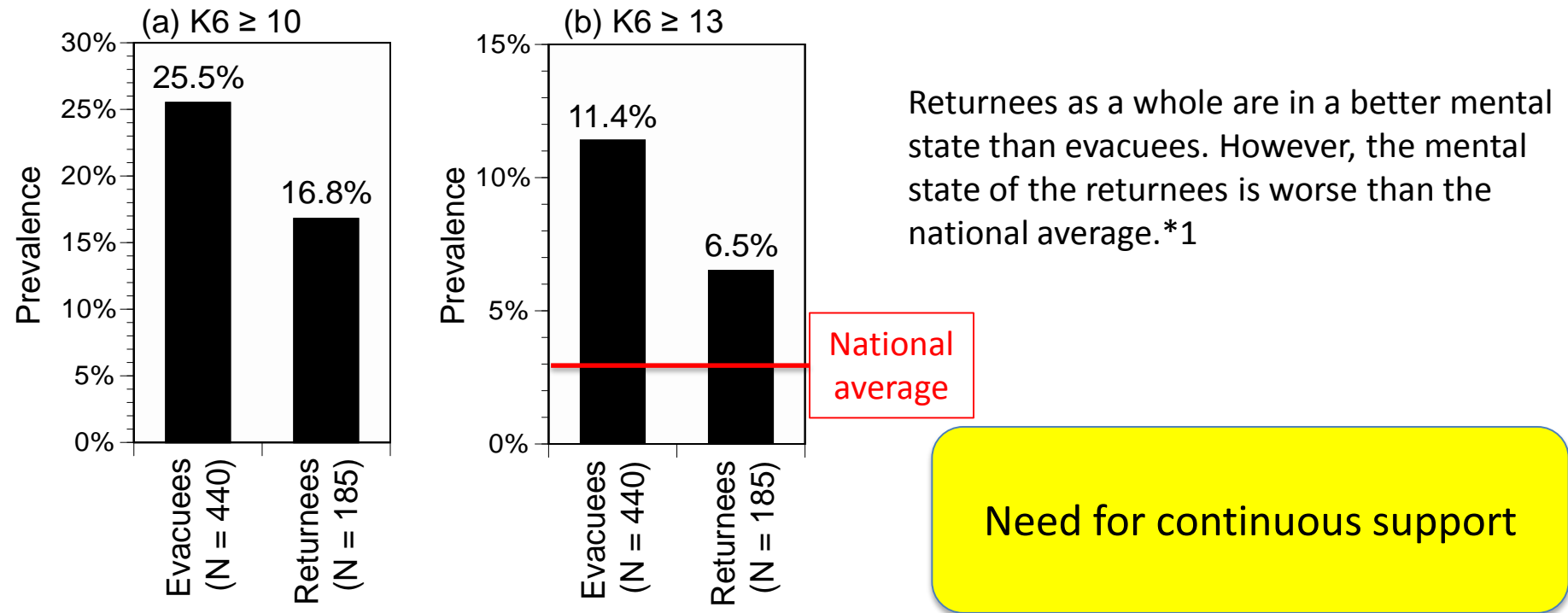
Health and wellbeing of Fukushima returnees: what does the future hold?

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A wide range of health risks necessary to give considerations among people in radioactively contaminated area

- Radiation exposure
 - Risk of Evacuation
 - Psychological and Mental health
 - lifestyle diseases
 - Family separation
 - Changes in the local/home environment
 - Aging-population/depopulation/social isolation
 - Changes in clinical services, nursing care supply and the accessibility of the hospitals
 - Changes in the healthcare supply and demand
 - Health disturbance among new residents from outside (decontamination/restoration workers)
 - Social concerns and media (prejudice based on radiation exposure)
1. Individual
 2. Family
 3. Infrastructure
 4. Society

Psychological distress among returnees were lower than evacuees.
But still higher compared to the national average.



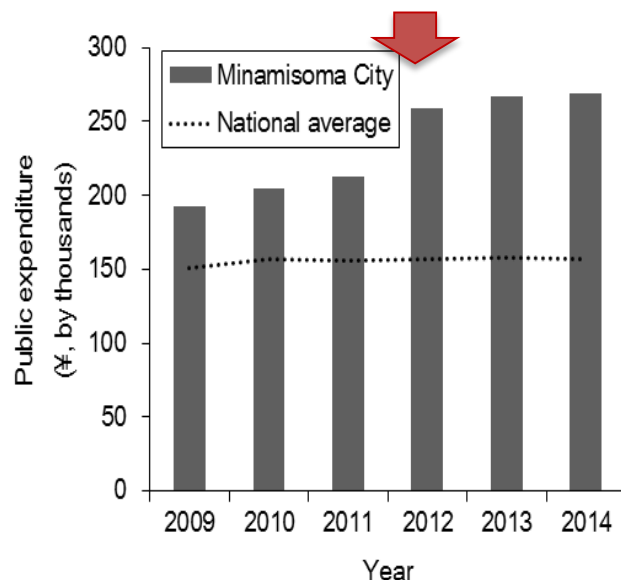
• Although returning and restoring the original life is effective in reducing the mental burden, the low mental load of the person who returned may be the cause, not the result of the return.

• Mental state suddenly deteriorates after the evacuation order was lifted in some cases.*2

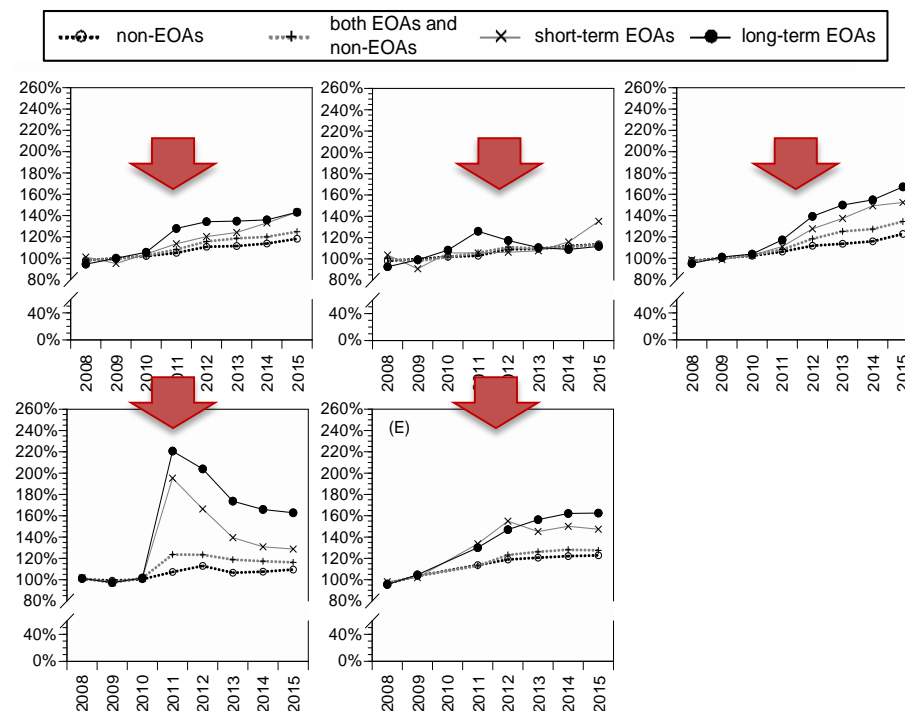
• Lower subjective well-being among people who moved to the restoration public housing.*3

• A 2nd spike in the number of suicides has been observed in the former-evacuation zone.*4

Increases in expenditure on healthcare per capita compared to before the Fukushima incident



The average public expenditure on nursing care per older person increased by 30%. (\$2,210 vs \$1,693)*1



Possible causes of increased costs

- Aging society and nuclear families due to evacuation of the young people
→ Decrease of “informal care”*3
- Deterioration of physical function and increase of diseases requiring care *4
- Inducing demand associated with free medical and nursing care costs *5

1. Morita, Tsubokura et al. JECH 2016 Jul;70(7):738.
2. Hasegawa, Tsubokura et al. Tohoku J Exp Med. 2019 Jun;248(2):115-123
3. Sawano, Tsubokura et al. Medicine 2019 Jul;98(27):e16162

4. Ishii, Tsubokura et al. Prev Med Rep. 2015 Oct 30;2:916-9.
5. Morita et al. PlosOne 2019 Sep 25;14(9):e0218835.

Changes in the family environment

- In Minamisoma city, the risk of delay in breast cancer diagnosis was significantly higher for those of who are living without their children. *1
- Without adequate family and social support, it is difficult to live and to receive adequate treatment in former evacuation zone for end-stage cancer patients*2, psychiatric patients*3 and handicapped*4.

1. Ozaki, Tsubokura et al. BMC Cancer. 2017 Jun 19;17(1):423.
2. Ozaki, Tsubokura et al. Medicine (Baltimore). 2017 Nov;96(46):e8721.
3. Sonoda, Tsubokura et al. Case Rep Psychiatry. 2019 Apr 7;2019:3284153.
4. Sawano, Tsubokura et al. Medicine (Baltimore). 2019 Jul;98(27):e16162.

Changes in the accessibility of hospitals

- The access to hemodialysis in rural areas is vulnerable to external factors in the long-term after a nuclear incident. *5
- In Futaba region, total patient transport time increased by 22 minutes due to a massive number of hospital closures after the incident.*6
- In Soma region, total patient transport time increased but returned to the normal level within 3 months after the incident. *7

5. Nishikawa, Tsubokura et al. Oxf Med Case Reports. 2018 Jul 19;2018(7):omy040.
6. Nishikawa, Tsubokura et al. BMJ Open. 2019 Feb 9;9(2):e023836.
7. Morita, Tsubokura et al. BMJ Open. 2016 Sep 28;6(9):e013205.

Health disturbance among new residents from outside

- Many decontamination workers are in poor health, possibly associated with lower social capital.*1
- Legionellosis*2 and bee stings*3 among decontamination workers handling soil in unpopulated places.
- Tetanus caused by injuries during reconstruction work.*4

1. Sawano, Tsubokura et al. BMJ Open. 2016 Dec 14;6(12):e013885.
2. Sawano, Tsubokura et al. J Occup Health. 2018 May 25;60(3):271-274.
3. Ozaki, Tsubokura et al. Disaster Med Public Health Prep. 2017 Oct;11(5):545-551.
4. Morita, Tsubokura et al. Disaster Med Public Health Prep. 2014 Dec;8(6):467-8.

Stigmatization, prejudice and media coverage

- School bullying of affected children and adolescents *5
- Dissemination of “fake” health information by stakeholders *6
- Monopoly of information within SNS media by a small number of influencers *7

5. Sawano, Tsubokura et al. J Radiat Res. 2018 May 1;59(3):381-384.
6. Sawano, Tsubokura et al. QJM. 2019 Jul 1;112(7):479-481.
7. Tsubokura et al. PLoS One. 2018 Sep 7;13(9):e0203594.

Health issues for returnees in the former evacuation zone

- Most returnees are elderly.
- Changes during the evacuation period
 - Health condition worsened (e.g. hypertension, impaired glucose tolerance, obesity, and other lifestyle-related diseases),
 - Medical access improved, free medical expenses
 - Medical needs increased (or induced)
 - Medical expenses and nursing care insurance burdens soared
- Village issues before the accident
 - Public transportation service was not enough
 - Capacity of elderly facilities is limited
 - Caregiver shortage
 - Expected to increase nursing facility residents in the future



Lectures, dialogues, and activities...



Countermeasures for the isolation of the elderly after the Fukushima disaster in Soma City

- Japan's public health interventions have historically been holistic, community-driven enterprises, involving multidisciplinary doctors, local governments, industry and funders, cohesively working to meet the needs as identified by local communities.



Community housing project called *Idobata-Nagaya*

- Communal living space where there is a shared laundry facility, a common room for meals, and residents can check on each other's health and wellbeing.
- Consists of 5 buildings with 58 personal rooms.



Park named *Honebuto* (meaning 'bone-strength')

- Built in the center of public restoration housing for easy access.
- Consists of 3 pieces of exercise equipment for measuring body flexibility and 5 pieces of equipment for exercise.
- Specialised non-barrier disabled-access systems for elderly with a wheelchair or walking stick.

What is a goal for health management?

Out of various keywords (**problems**) given, Which one do we consider as “task”?

- Aging population, depopulation, a declining birth rate
- Isolation/ decrease in social network
- Declines of local communities
- Loss of life motivation/ life value/ place in society
- Conflicts between family members/ generations
etc....

Distinguish between “problems”, “challenges”
and “achievable tasks.”

Key considerations in finding achievable tasks
are manpowers and logics.

Thank you!