Poster Number: P-054

The 15th Asian Pacific Conference on Disaster Medicine (APCDM 2024) Date November 25(Mon.) - 26(Tue.), 2024 Venue The-K Hotel, Seoul, Korea

Medical Perspective on the Systemic Challenges Involving Indirect Disaster-Related Deaths in Japan

Motohiro Tsuboi¹⁾²⁾*; Hiroyuki Sasaki¹⁾; Hyejeong Park¹⁾³⁾; Masaharu Tsubokura⁴⁾; Nahoko Harada⁵⁾; et al.; and Shinichi Egawa¹⁾.

- 1. International Cooperation for Disaster Medicine Lab., International Research Institute of Disaster Science (IRIDeS), Tohoku University
- 2. Advanced Emergency and Critical Care Center, Japanese Red Cross Saitama Hospital
 3. Disaster Medical Informatics Lab., IRIDeS, Tohoku University
 4. Department of Radiation Health Management, Fukushima Medical University
 5. Graduate School of Interdisciplinary Science and Engineering in Health Systems, Okayama University

Conclusion

Only 10% of the death certificates recorded the disaster relevance in 755 certified Indirect Disaster-Related Deaths in Miyagi Prefecture, Japan. Establishing a system for reporting the relevance is essential.

Background

Classification of Disaster-Related Deaths

Direct Disaster-Related Deaths

Deaths that are directly caused by the forces of the disaster or direct consequences of these

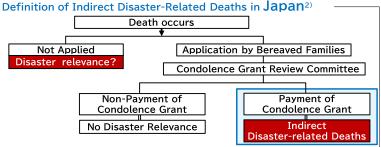
.g., Earthquakes, tsunamis, typhoons, heavy rain, radiation exposure, etc.

Indirect Disaster-Related Deaths

Deaths that occur due to unsafe or unhealthy conditions or a loss or disruption of usual services that contributed to the death.

g., Evacuation, relocation, evacuation environment, medical service provision systems, psychosocial effects, etc.

1) CDC. National Center for Health Statistics, 2017.



Deaths because of aggravation of injuries caused by the disaster or illnesses caused by the physical burden of living in evacuation shelters, etc., which are recognized as being caused by the disaster based on the Act on Provision of Disaster Condolence Grant (1973 Law No. 82) 2) Japan Cabinet Office. 2019

Recording of Disaster-Related Deaths on Death Certificates: Not Mandatory

Process of Disaster Death Diagnosis and

Condolence Grant Application in the United States¹⁾

Did the death occur during or after any of the following events?



- Hail ghtning valanche, landslide, r other earth movem arthquake or tsunan r other earth movement arthquake or tsunami olcanic eruption Ash, lava flow, or gases

Direct

rees Flooding or other high Wildfires or structural Transportation incident Downed power lines
Power outage
Carbon monoxide
exposure. Bombing Radiation emergency

Death occurs

If Yes If No Indirect disaster-related deaths

disaster-related deaths (Regardless of time period) Evacuation, relocation, evacuation Earthquakes, tsunamis, typhoons, environment, medical service heavy rain, radiation exposure, etc. provision, psychosocial effects, etc.

If No Stop Step3. Record disaster type AND event name Recording on (e.g., Hurricane Sandy) on death certificate **Death Certificates**

Step1.

Step2.

Condolence Grant Application by Bereaved Families → Apply to FEMA

Condolence Grant Review

Human-induced event

Industrial explosion

or chemical release

contamination of environment

•Chemical or biological

Recording of Disaster-Related Deaths on Death Certificates: Mandatory

To clarify how many death certificates recorded disaster relevance among patients recognized as Indirect Disaster-Related Deaths.

Ethical Approval

Tohoku University Medical School Ethics Committee (No: 2023-1-489)

Study Design and Setting

A retrospective cross-sectional study of 755 indirect disaster-related deaths in Miyagi Prefecture, Japan.

Data Collection and Categorization

·Group A: Death certificates indicating disaster relevance.

Group B: Official medical documentation (e.g., diagnostic reports) mentioning disaster relevance.

Group C: Non-medical self-reports from bereaved families asserting disaster relevance.

Statistical Analysis

Statistical tests: Steel-Dwass, ANOVA.

Miyagi Prefecture

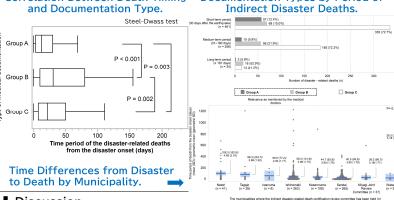


Result

Baseline Characteristics	
Overall, n (%)	755 (100)
Age-year, mean (SD)	79.7 (± 13.2)
Sex-Female, n (%)	346 (46.7)
Median days [IQR]	21 [7-52]
Classification of Evidence-Medical Documentation used, n (%)	
Group A	74 (9.8)
Group B	145 (19.2)
Group C	536 (71.0)
Direct etiology of death (ICD-10), n (%)	
A00-B99 (Infectious and parasitic diseases)	21 (2.8)
C00-D48 (Neoplasms)	66 (8.7)
D50-D89 (Blood diseases and immune disorders)	4 (0.5)
E00-E90 (Endocrine, nutritional, and metabolic disorders)	6 (0.8)
F00-F99 (Mental and behavioral disorders)	2 (0.3)
G00-G99 (Diseases of the nervous system)	5 (0.7)
IOO-I99 (Diseases of the circulatory system)	247 (32.7)
J00-J99 (Diseases of the respiratory system)	209 (27.7)
K00-K93 (Diseases of the digestive system)	13 (1.7)
L00-L99 (Diseases of the skin and subcutaneous tissue)	1 (0.1)
M00-M99 (Diseases of the musculoskeletal system and connective tissue)	2 (0.3)
N00-N99 (Diseases of the urogenital system)	27 (3.6)
R00-R99 (Unclassified symptoms and abnormal findings)	71 (9.4)
S00-T98 (Injury, poisoning, and other effects of external causes)	39 (5.2)
V01-Y98 (External causes of injury, illness, and death)	11 (1.5)

Correlation Between Death Timing and Documentation Type.

Documentation Types by Period of Indirect Disaster Deaths.



Discussion

Insufficient Documentation of Disaster Relevance

- Only 10% of death certificates note disaster relevance, mostly neglecting long-term disaster-related deaths.
- Inconsistent certification and application processes across municipalities show a lack of standardized procedures.

 Comparison with the United States
- The CDC and National Association of Medical Examiners in the U.S. recommend noting disaster relevance on death certificates for accurate statistics; Japan should consider similar practices.

Future Directions

- Establishing a reporting system in Japan to document disaster relevance on death certificates.
- Educating healthcare professionals on the importance of recording disaster relevance.
 • Establishing a fair and socially accredited certification system for condolence