

## Transdisciplinary Study on External and Internal Diseases due to Earthquakes (1) Gropping for the Expanse by Reference Retrieval

# Yutaka Ohta[1]

[1] Tono Res Inst Earthq Sci

<http://www.tries.jp/>

### 1. Introduction

We have been conducting a series of studies on earthquake casualties by means of field data collection, analysis and modeling. During such research processes we have recognized that the impacts on human being are wider and more compound than the surgical diseases as immediate casualties and that the necessity of introducing a new discipline of Human-specific Earthquake Protection, which involves both of external and internal diseases. The present paper attempts to grope the expanse of regarded academic field by means of reference retrieval and text mining.

### 2. Reference-seeking and simple statistics

Using well-known databases of Pub Med (USA) and Japan Medical Abstracts Journal (JMAS) and giving 2 major search words of earthquake and human being together with a condition of abstract-adjoined, the reference retrieval was made. The total numbers of papers retrieved from Pub Med are 600 and 110 from JMAS. Using these papers we made a simple statistic analysis.

1) Annual line-up of number of papers by Pub Med makes clear that the full-scale study seemed to have started in 1988, stimulated by the Armenian earthquake, and to have gradually been increasing.

2) There seem to be a limited number of major regions in which a certain number of papers has been published. Those are Japan, USA, Turkey and Taiwan.

3) In Japan the first year of all-round study on such human-specific point is certain at the 1995 Hyogo-ken Nanbu earthquake and it has been developing at succeeding major earthquakes.

### 3. Multi-dimensional analysis

Using the retrieved 110 papers from the JMAS an attempt was made to grope for the expanse of the regarded academic field. The process with 3 steps is as follows. First, in use of the key words adjoined in every paper the 15 major key words were selected and fixed. Then, a matrix table by [yes (1)-no (0)] as Boolean expression was made while checking whether or not a paper under question has the context related to any of the major key words. Finally, an analysis employing the Quantification Theory III was conducted to visualize the distance relation among the 110 papers on the Cartesian coordinate plane of the 2 principal axes. Then we are able to see that the 110 papers are classified into 3 major groups as Medical treatment and care, Medical resources and Preparedness, and Man-power and Search and Rescue activities. As for the papers in the core group of the medical treatment and care, a more deep analysis was conducted and was made clear that the treatment and care for the endogenous diseases, either recurred or activated by seismic shaking and by ceaseless mental stresses, are serious as well as those for the exogenous diseases as immediate casualties.

### 4. Concluding remarks

A new series of studies started in the aim of exploring a transdisciplinary field of human-specific earthquake protection against accompanying overall diseases. As the first step, a reference-seeking was attempted using the well-documented DB in Japan and an easy-to-understand analysis to scope the regarded academic field was conducted as well. We are in belief that the similar analysis will be applicable for the paper set retrieved from the worldwide Pub Med DB, by which a minute and full-length figure on the expanse of the human-specific diseases due to earthquakes will be more cleared.