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Age-dependent Mortality in the 2011 East Japan Giant Earthquake (5) Additional Revision of the Current Equation

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1. Preface

This paper reports an additional revision for the current age-band specific mortality equation, though known as the traditional one, via critical examinations conducted in a series of previous studies. The current equation defined so as to describe Age-band specific mortality is effective enough to describe the deaths of elderlies, but lesser effective at evaluation of the deaths for infants and children, which suggests strongly the necessity of revision of the current equation.

What we attempted was to introduce two independent equations; one was made via slight revision of the Ozaki method commonly known in Medical Science and the other was made by developing a new equation based on an opinion by Sen in economics as earlier deaths such as either by starvation or poverty is nothing but the deprivation of all of capability. Those new equations brought better outcomes for the cases in the 2011 East Japan Earthquake. But, the first one revised starting from the Ozaki method was still insufficient for the direct comparison with the current mortality, since the first one produces a better figure for the absolute number of deaths but was not enough to produce mortality itself.

2. Additional Revision of the Ozaki method

In the revised equation of the Ozaki method, therefore, the values in the vertical axis were as just the number of deaths until the previous study and therefore no direct comparison with the currently known equation was incapable. In this paper we attempted additional revision by which the age-dependent mortality can directly be expressed and therefore a parallel comparison with current and traditional age-specific mortality equation is to be made. Our proposal at present is to introduce our newly revised mortality equation, having an equation composed under the proposal by Sen as a supporting equation.

3. Singularities in Mortality Curves among Prefectures and Municipalities

In comparison of such additionally revised equation and regarded curves with those smoothed ones, we are easy to recognize significant gaps between observed and smoothed ones, which suggest additional reasons over the main reason of the age-dependency due to the degeneration of behavioral performance of residents.

Here, we can point out a few singular cases; the most peculiar gap is seen at age-intervals of 0 up to 14, as has been known in a word called such as a Miracle in Kamaishi city in the curve of Iwate pref. Another remarkable gaps can be seen at 20-30 and 60-70 years old; for these unusual phenomena we have still been conducting the insight studies.

4. Concluding Remarks

We arrived at a conclusion that the age-dependent characteristics should be described in a manner different from the traditional and called current equation. And, in this way of thinking, we developed new equation sets which are more logical and effective at elucidating the mortality which may suffer in natural disasters as earthquakes and/or tsunamis. It is needless to say that the similar investigation is expected to be made for the other pattern than ones described

in the English J character types.

References

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