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TOHOKU MEDICAL MEGABANK ORGANIZATION

February 27, 2014
Tohoku University
Tohoku Medical Megabank Organization

The First Round of Aggregate Findings from the Community Resident Cohort Study in the First Year

– 27% of Study Participants Showed Depressive Tendencies, 5% Showed Signs of PTSD–

The Tohoku Medical Megabank Project, a project designed to support the reconstruction from the Great East Japan Earthquake, is conducting a genome cohort study that will follow about 150,000 people. The project is being implemented in Miyagi Prefecture by Tohoku University and in Iwate Prefecture by Iwate Medical University. As of February 2014, the project had the participation of more than 20,000 community residents.

In order to execute the Tohoku Medical Megabank Project, Tohoku University founded the Tohoku Medical Megabank Organization (Executive Director: Masayuki Yamamoto; hereinafter, “ToMMo”) in February 2012. The community resident cohort study^{*1} commenced in May 2013. As of February 2014, this study had the participation of more than 9,000 Miyagi Prefecture residents. By the end of 2013, the study findings were aggregated for approximately 40% of the participants, or 3,744 people.

The aggregate findings showed 27% of the 3,744 study participants had depressive tendencies. Possible causes include the effects of the experience of the disaster and the deaths of close relatives. The findings of a questionnaire study furthermore showed 5% had signs of PTSD. These residents are being provided with supports by clinical psychologists, including telephone counseling.

Approximately 10% of the study participants had kidney failure as well as elevated markers for heart failure. However, this was not a significant increase from the findings of past studies. Allergy tests showed that cedar pollen-related allergies accounted for the largest percentage of the 33 allergens tested (approximately 40%), and that this percentage decreased with age.

ToMMo will continue to analyze the findings of the cohort study, shed light on the physical, psychological, and social factors affecting the physical and mental well-being of residents in the wake of the disaster, and contribute to enhancing the support and reconstruction measures.

Background

The Tohoku Medical Megabank Project, a project designed to support the reconstruction from the Great East Japan Earthquake, is conducting a genome cohort study that will follow about 150,000 people. The project is being implemented in Miyagi Prefecture by Tohoku University and in Iwate Prefecture by Iwate Medical University. As of February 2014, the project had the participation of more than 20,000 community residents.

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Iwate Medical University is also conducting a cohort study by establishing the Iwate Tohoku Medical Megabank Organization.

Main Findings

■Community Resident Cohort Study

Tohoku University ToMMo commenced the community resident cohort study on May 20, 2013 at the venue where Shichigahama Town was giving its “specific health checkup”. This study solicits the cooperation of community residents through two methods: (1) Tohoku University staff go to the venues of the “specific health checkups” implemented by municipalities; and (2) Community residents visit one of the seven community support centers in Miyagi Prefecture. As of the date of this press release, Tohoku University staff have visited the venues of the “specific health checkups” of ten cities and towns in Miyagi Prefecture: Shichigahama Town; Higashi-Matsushima City; Tagajo City; Ishinomaki City; Kesenuma City; Minami-Sanriku Town; Wakuya Town; Osaki City; Marumori Town; and Yamamoto Town. The seven community support centers began accepting reservations by telephone and implementing health studies of community residents sequentially at the centers from late October.

As of February 19, 2014, a total of 9,315 people were registered as community resident cohorts. A total of 7,165 study participants registered at the venues of “specific health checkups,” and a total of 2,150 study participants registered at the community support centers.

Iwate Medical University solicits study participants at the venues of the “specific health checkups” implemented by municipalities like Miyagi Prefecture. In addition, the university conducts the study using the same methodology as Tohoku University, which is establishing so-called “satellite” facilities in various areas of Iwate Prefecture.

■Blood and urine test results and findings from the survey aggregated for 3,744 people

In the community resident cohort study, the survey is distributed to participants at the venues of “specific health checkups,” and the participants are asked to return the survey by postal mail within two weeks. ToMMo aggregated the study findings for 3,744 people whose survey responses were received by the end of 2013, whose responses have all been inputted electronically, and whose blood and urine analysis results are available. This first round of aggregate findings thus do not include findings from areas where the study was conducted in late December 2013 (For the most part, the first round of aggregate findings include the findings of the study participants in Shichigahama Town, Higashi-Matsushima City, Tagajo City, Ishinomaki City, Kesenuma City, and Minami-Sanriku Town. However, this does not apply to findings from surveys which were returned late, and therefore, the first round of aggregate findings do not necessarily include the findings of all study participants in the above areas.).

The first round of aggregate findings is presented by organizing the findings into: lifestyle and physiological test findings; and mental health-related findings from the survey.

■Aggregate Findings from Lifestyle and Physiological Tests

The main study findings were as follows:

- (1) A given number of study participants was observed to have kidney failure as well as elevated markers for heart failure, conditions which are said to be increasing in the disaster-affected areas;
- (2) Blood serum allergy indicator (IgE) levels were higher the younger the cohort;
- (3) Estimated averages of salt intake levels were high regardless of age at 12 g/day for males and 10 g/day for females; and
- (4) Approximately 7% of the middle-aged men were heavy drinkers who drink at least 540 ml of alcohol per day.

This study utilized NT-proBNP^{*2} as an indicator of heart failure, and a combination of estimated glomerular filtration rate (eGFR) and urine albumin-to-creatinine ratio as indicators of kidney function. Estimated salt intake levels and alcohol consumption levels are calculated from the analysis of the responses obtained in the survey.

The figures for (1) kidney failure and elevated markers for heart failure were not higher than those of preceding studies, and no sharp exacerbations of these conditions was observed. Some of the study participants were deemed to be at higher risk, and their indicator levels will be closely monitored. The parameter of this study is residents in the relevant areas who received the “specific health checkups” offered by municipalities as healthy subjects and who volunteered to cooperate with the study conducted by ToMMo. It is not necessarily appropriate to make comparisons of percentages between this study and other studies.

Allergy tests showed the blood serum allergy indicator (IgE) levels were higher the younger the cohort. In particular, the positive rate for cedar was high, and these findings were consistent with national trends.

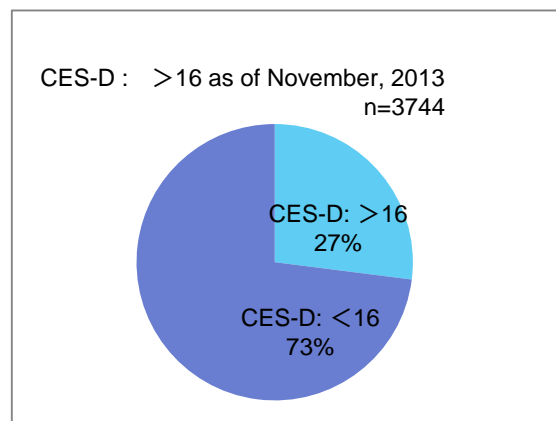
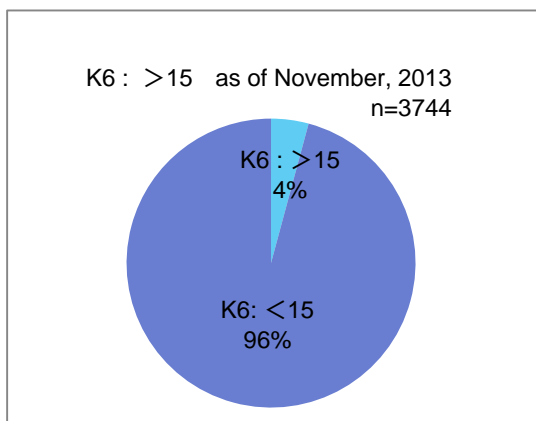
Salt intake levels were originally high in this whole region, irrespective of the earthquake and tsunami disaster or any other factor, and this was reflected in the findings from the study. With regard to alcohol consumption levels, the percentage of study participants who drink at least 360 ml of alcohol per day was 27% for those in their 40s

and 32% for those in their 50s. These levels appeared to be high compared to the findings from the 2012 National Health and Nutrition Survey in Japan, in which the percentage of those who drink at least 360 ml of alcohol per day (defined as 40 g/day of pure alcohol) was 19% for those in their 40s and 22% for those in their 50s. Over 7% of the study participants in their 40s and 50s were heavy drinkers who drink at least 540 ml of alcohol per day. It is believed this should be taken into consideration in designing future measures. In particular, the sample in ToMMo's study consisted of relatively health conscious individuals who received "specific health checkups" and who offered to cooperate with our study. This suggests there may be other potential heavy drinkers in this region.

■Aggregate Study Findings regarding Mental Health

Mental health was studied on the basis of the survey, which utilized internationally accepted indicators, such as CES-D (depressive tendencies). The survey asked participants about their experiences with the earthquake and tsunami disaster and about their losses of relatives. The results found that 27% of the 3,744 residents had depressive tendencies (CES-D: score of at least 16). Possible causes include the effects of the experience of the disaster and the deaths of close relatives.

The depression frequency itself was similar to findings from studies conducted in Japan in recent years. However, depressive tendencies were higher in this study compared with national averages among males in their 20s-30s and females in their 40s-50s. According to K6 that assesses psychological health status, including depression and anxiety, the frequency of distressed people in this study was about double the national average, demonstrating that the disaster has had wide-ranging effects on people's psychological well-being. In a study which was conducted prior to this study, 30% of those whose homes were damaged due to the Great East Japan Earthquake experienced unrest as a result of recovering their memories of the disaster, and a high degree of Post Traumatic Stress Reaction (PTSR) was detected, including physical reactions such as palpitations. ToMMo's study showed PTSR was disrupting the lives of 5% of the study participants, and by extension, the importance of addressing PTSR.



Way Forward

Study

ToMMo will aggregate the findings of the remaining 60% of the study participants who have already completed the study, and carry out analyses of the trends, among other activities.

Measures

ToMMo makes efforts to conduct outreach to each and every resident. For example, we send the findings of the study to individual study participants. We also hold informational sessions in each region regarding the findings and encourage participation. In the case that any individual study participant had particularly abnormal test values, we recommend them to receive care at a local medical institution. If the values suggested any critical problems, we contacted the individual directly without waiting to aggregate the findings and strongly recommended him or her to receive prompt care.

We will share the statistical data findings from each area with the respective municipality, and in such ways, we hope our findings will be useful for its measures.

For those people who were found to be particularly distressed, we provided telephone and face-to-face counseling by ToMMo's clinical psychologists as requested. We expect that further analyses will shed light on the physical, psychological, and social factors affecting the mental health of residents in the wake of the disaster.

Furthermore, regarding the characteristics of those people suffering from major problems, we plan to examine what kinds of people face what kinds of problems and promptly disseminate information that is useful not only to the study participants but also to the entire community.

Explanation of the Terms

*1 Cohort study: A study in which a group of select people are followed for a given period of time to ascertain correlations between diseases and risk factors, including environmental factors, such as lifestyle, and genetic factors.

*2 NT-proBNP: N-terminal pro-brain natriuretic peptide.

Substance that is generated and secreted from the heart. As it rises in response to myocardial stress, it is used to screen for heart failure.

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