

Report on “Radiation Disaster Recovery Studies”

Course Radioactivity Social Recovery Course

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○Regarding “Radiation Disaster Recovery Studies”

(Describe your thoughts, the process you engage in and your research progress regarding Recovery from Radiation Disaster)

Since enrolling in the Phoenix Leader Education Program at Hiroshima University, I have accumulated a variety of knowledge through classes, lectures, symposia, and fieldwork. Initially, I learned the basics of radiation such as what it is and its effect on human health. Afterwards, I studied how the radiation disaster caused by the Fukushima Daiichi Nuclear Power plant accident impacted affected areas and survivors.

The Fukushima Daiichi Nuclear Power Plant accident raised issues pertaining to the direct and indirect impacts of radiation on human health. A previous study reported that although the internal and external exposure levels of local residents after the Fukushima accident were too low to cause concern regarding a direct effect on health, deteriorating chronic conditions (e.g., increased prevalence of diabetes) persisted after the disaster. Although various potential causes could explain deteriorating health, there is no consensus on the cause.

Meanwhile, authors found that evacuated people in temporary housing were likely to lead sedentary lifestyles in their living environment. As previous studies suggested, physical inactivity may be a risk factor for non-communicable diseases and frailty in older people. If the physical activity of older evacuees in temporary housing decreases, then this is a serious health-related problem to be solved. Therefore, the author was eager to conduct a study focusing on the level of physical activity of older survivors aged 65 years or older, as detailed below. Based on the results of this study, the authors identified a low level of physical activity in observed evacuees residing in temporary housing in the City of Minamisoma as a factor of deteriorated physical performance.

Consequently, the author recognized the importance of initiating countermeasures to promote health among fragile individuals against a low level of physical activity in unfamiliar and challenging circumstances. Currently, I am continuing with a support activity for older evacuees living in temporary housing that aims to encourage them to engage in more habitual physical activity to lead healthy lives in the future.

In conclusion, learning about “Radiation Disaster Recovery Studies” motivated me to conduct a continuous study and local activities on the spot. At present, the author has found a job opportunity in which I can conduct the abovementioned activity in cooperation with colleagues with various academic backgrounds.

○Title of Doctoral Thesis

Effect of residence in temporary housing after the Great East Japan Earthquake on the physical activity and quality of life among older survivors

○Summary of Doctoral Thesis

(Describe so as to be easily understood, by relating it to “Radiation Disaster Recovery Studies”)

Introduction

In the present study, we aimed to clarify the impact of residence in temporary housing on physical activity and health-related quality of life (HRQOL), as well as physical performance as a result of lower physical activity among older evacuees residing in temporary housing after the Great East Japan Earthquake (GEJE).

Methods

The authors collected data from residents who had been evacuated to temporary housing after the GEJE (temporary housing group) and residents who had continued to live in their own houses (control group). Data were measured from December 2, 2014 to January 22, 2015 in Kashima ward, Minamisoma City. In this study, physical activity was assessed by the number of walking steps determined using a triaxial accelerometer, mobility function through the Timed Up-and-Go test, muscle strength by the grasping power test, and HRQOL by the Medical Outcome Study Short-form 36 v2™ (SF-36v2™).

Results

In total, 64 subjects (19 men and 45 women) were included in the temporary housing group and 64 subjects (33 men and 31 women) in the control group. The number of steps walked daily was significantly lower in the temporary housing group than in the control group for both men ($p < 0.05$) and women ($p < 0.01$). The TUG test duration was significantly longer in the temporary housing group than in the control group for both men and women ($p < 0.01$). Grip strength was significantly lower in the temporary housing group than in the control group for men ($p < 0.01$), although no significant difference in this value was observed for women in both groups. The TUG test duration showed a significant negative correlation with the number of steps walked daily for men ($r = -0.702$, $p < 0.01$), but not women ($r = -0.261$, $p = 0.083$) in the temporary housing

group. Grip strength was correlated with the number of steps walked daily for both men ($r = 0.569$, $p < 0.01$) and women ($r = 0.315$, $p < 0.05$) in the temporary housing group. Regarding HRQOL, the bodily pain score was higher for women (but not men) in the temporary housing group compared to that for the control group ($p < 0.01$). However, no other scores significantly differed for men and women between the groups.

Discussion

The number of steps walked daily in the temporary housing subjects was 33% lower than that in the control group for both men and women. Loss of connection with their local communities and the physical environment of the surrounding area may be major factors influencing this low level of physical activity. Regarding mobility function and muscle strength in the temporary housing group, except for mobility function in women, a significant correlation was observed between steps walked daily and these variables. On the other hand, HRQOL did not differ significantly between the groups, although the bodily pain score differed among women. Possible reasons include less frequent exposure to events that could cause pain than those in the control group, and the effect of relief measures on pain. Based on our findings, we suggest that residents in temporary housing be encouraged to improve their level of physical activity so that they can prevent deterioration of mobility function and muscle strength and the subsequent onset of diseases related to inactivity.

Conclusions

We found that residents in temporary housing were less physically active and had lower mobility function and muscle strength than older people residing in their own houses. Although HRQOL did not decrease in the temporary housing group, support for older evacuees should focus on maintaining their level of physical activity.

○Other theses published in academic research journals

- Title of thesis: Physical activity of elderly persons living in temporary housing in an affected area of the Great East Japan Earthquake

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