The Research on Osteoarthritis/osteoporosis Against Disability (ROAD) Study

Noriko Yoshimura[1], Toshiko Iidaka[1], Sakae Tanaka[2]
1: Department of Preventive Medicine for Locomotive Organ Disorders, 22nd Century Medical and Research Center, The University of Tokyo Hospital, Tokyo, Japan
2: Department of Orthopaedic Surgery, Faculty of Medicine, The University of Tokyo, Tokyo, Japan

Although locomotive organ disorders are major causes of disability and require support, little information is available regarding their epidemiology. The Research on Osteoarthritis/Osteoporosis Against Disability (ROAD) study, which started in 2005-7, is a prospective cohort study that aims to elucidate the environmental and genetic background for bone and joint diseases. It was designed to examine the extent to which risk factors for these diseases are related to clinical features, laboratory and radiographic findings, bone mass and geometry, lifestyle, nutritional factors, anthropometric and neuromuscular measures, and fall propensity. In addition, the study's aim was also to determine how these diseases affect activities of daily living and quality of life in Japanese men and women.

We have completed the baseline study in 2005-2007, then, 2nd, 3rd and 4th follow-ups were completed in 2008-2010, 2012-2013, and 2015-2016, respectively. A flowchart of the subjects' recruitment and 10-year follow-up, with reasons for drop-outs, is shown in Fig. 1.

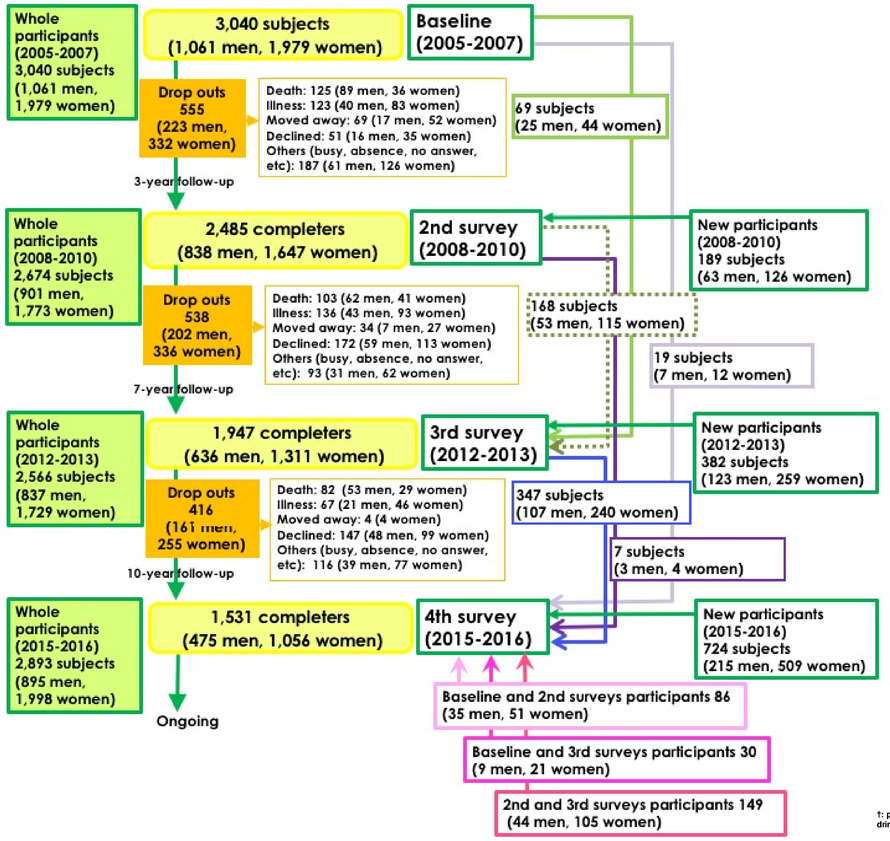


Fig.1. Flowchart of subjects' recruitment and follow-ups, with reasons for drop outs.

Using the dataset of the ROAD study, we have clarified the epidemiological indices, such as, prevalence and incidence, of locomotive organ disorders, including osteoarthritis, osteoporosis, sarcopenia, and frailty.

The prevalences of knee osteoarthritis, lumbar spondylosis, hip osteoarthritis, osteoporosis, sarcopenia, and frailty are shown in Figs 2,3,4,5, and 6, respectively.

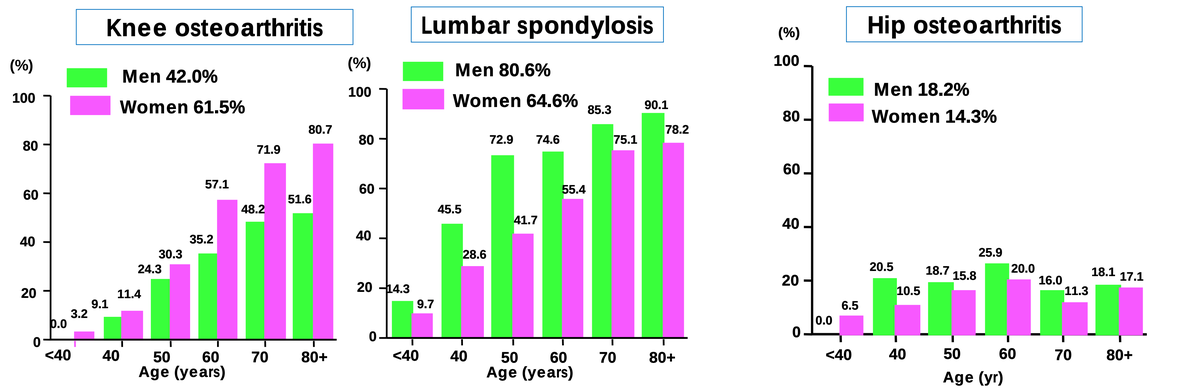


Fig.2. Prevalence of knee osteoarthritis and lumbar spondylosis.

Fig.3. Prevalence of hip osteoarthritis.

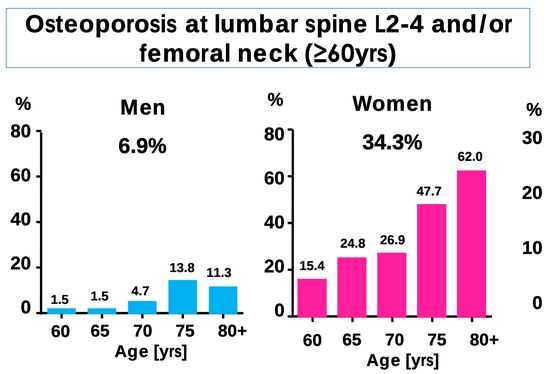


Fig.4. Prevalence of osteoporosis.

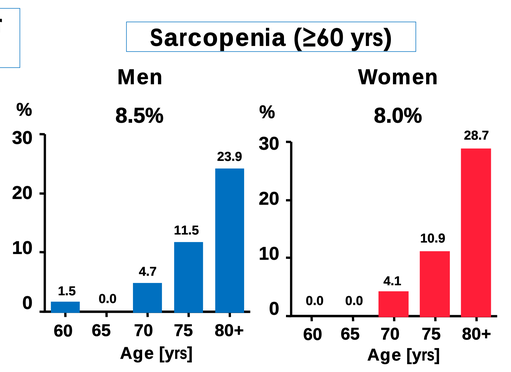


Fig.5. Prevalence of sarcopenia.

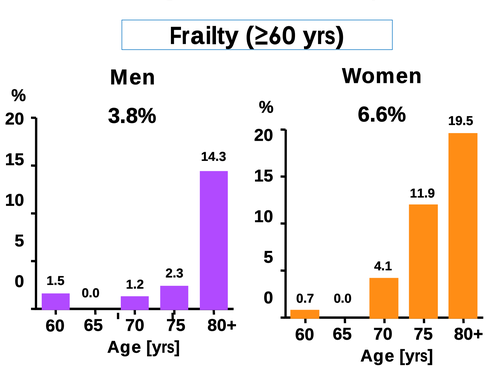
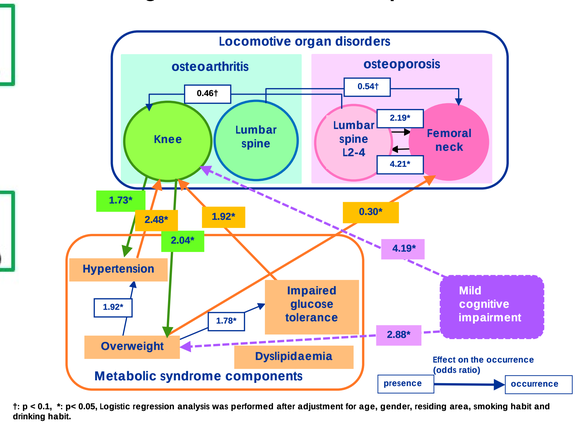
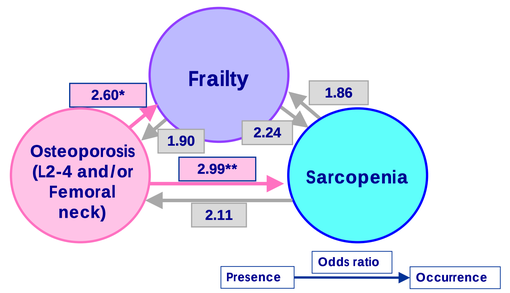


Fig.6. Prevalence of frailty.



†: p < 0.1, *: p< 0.05, Logistic regression analysis was performed after adjustment for age, gender, residing area, smoking habit and drinking habit.

Fig.7.
Mutual association among metabolic syndrome components, mild cognitive impairment, and locomotive organ disorders.



*:p < 0.05, * *: p < 0.01
Logistic regression analysis was performed uafter adjustment for age, gender, residing area, emaciation, smoking and alcohol drinking.

Fig.8.
Mutual association among osteoporosis, sarcopenia, and frailty.

Fig.7 reveals the mutual associations among metabolic syndrome components, mild cognitive impairment, and locomotive organ disorders. Presence of hypertension, impaired glucose tolerance, and mild cognitive impairment increased the risk of occurrence of knee osteoarthritis.

Moreover, the presence of osteoporosis raised the risk of occurrence of sarcopenia, and frailty, significantly. (Fig.8)