

EDITORIAL

Challenging decreased mobility leading to disability in a super-aging society

Musculoskeletal disorders have been reported to be the second largest cause of disability globally.¹ Notably, among the elderly, musculoskeletal disorders were the dominant cause of disability.¹ Thus, in 2012, the Global Burden of Disease 2010 Study proposed that musculoskeletal health required urgent policy responses.¹

As a super-aging society, Japan has been tackling the rapid increase in the number of the disabled elderly and the associated increasing financial burden.² The Japanese Government launched the national Long-Term Care Insurance (LTCI) system in 2000, with the goal of providing suitable care services for each elderly person with disability.² Presently, the total expense covered by the LTCI system is more than one hundred billion dollars, three times the expense noted 20 years ago.² Moreover, musculoskeletal disorders are the primary cause for LTCI certification.³

Considering these trends, the Japanese Orthopaedic Association (JOA) proposed the concept of “Locomotive Syndrome” in 2007. The Locomotive Syndrome was defined as a condition of decreased mobility observed during daily activities, such as walking, standing up from a chair, and climbing stairs, stemming from impairments in the locomotive organs.³ This concept was aimed to raise public awareness regarding mobility decrease in individuals across all ages and musculoskeletal disorders being the main reason of disability.³ This concept entailed the necessity to establish management strategies for this syndrome throughout life by identifying the risk factors since mobility decrease could start even during early stages of life.⁴ To quantify mobility decrease that leads to LTCI certification, that is, disability, the JOA developed the Locomotive Syndrome Risk Test in 2013, which comprises two physical tests and a self-administered questionnaire.³

The aims of the Locomotive Syndrome Risk Test are twofold: it serves as a screening tool to detect the early signs of mobility decrease leading to disability in the comparatively healthier population, and it is used to quantify mobility decrease in the already disabled elderly to prevent disability progression to a more severe form. Therefore, this test was designed as a simple and feasible tool to continuously quantify mobility decrease from young- or middle-age to old age.

Additionally, it must be noted that floor or ceiling effects have not been reported for this test.

Based on these observations, the JOA defined the stages 0, 1, 2 of the Locomotive Syndrome as follows: Stage 0: not applicable, Stage 1: starting mobility decrease, and Stage 2: progressing mobility decrease.³ Stage 1 indicated the risk level to encourage individuals across all ages to notice their own mobility decrease, while Stage 2 was defined in view of determining the effectiveness of future intervention for mobility decrease, especially among the elderly who were already experiencing a disability.

Considering that physical abilities, such as balance, lower extremity muscle strength, and flexibility, peak when the individuals are in their teens or early twenties and decline with age,⁵ it is reasonable to assume that a certain proportion of the young or middle-aged adults could have Stage 1 of Locomotive Syndrome. However, if marked prevalence of the Locomotive Syndrome is observed among young or middle-aged adults, the adoption of suitable management measures is an urgent issue for the society since the decrease in the number of the disabled elderly in the future is a matter of vital importance in a super-aging society. Generally, mobility decrease is affected by many factors, including age, sex, socioeconomic status, physical activities, and chronic conditions.⁴ Nowadays, additional risk factors for Locomotive Syndrome have been investigated for the selection of the appropriate intervention for different age groups. Especially, risk factors among the young or middle-aged adults have been drawing attention since evaluation of these factors may aid in reducing the number of the disabled elderly in the future by generating awareness regarding the Locomotive Syndrome and behavioral modifications. Otsuki et al suggested assessing the prevalence of Stage 1 among the young or middle-aged adults at workplaces and identifying the lifestyle habits possibly associated with the Locomotive Syndrome,⁶ which would provide us insights for the prevention of the development of disability, thus, reducing the number of the disabled elderly in the future. Because of the wide range of application from young or middle aged-adults to the elderly, the Locomotive Syndrome Risk Tests could be adopted not only in Japan but also globally, to address the concerns of decreased mobility leading to disability. Moreover,

the concept of Locomotive Syndrome and its interventions examined in Japan, may serve as archetypes for the management of the same situation in other countries as well.

DISCLOSURE

Approval of the research protocol: N/A *Informed Consent:* N/A *Registry and the Registration No. of the study:* N/A *Animal Studies:* N/A *Conflict of Interest:* None declared.

Keiko Yamada 

Department of Planning, Information and Management, University of Tokyo Hospital, Tokyo, Japan

Correspondence

Keiko Yamada, Department of Planning, Information and Management, University of Tokyo Hospital, 7-3-1 Hongo, Bunkyo-ku, Tokyo 113-8655, Japan.

Email: kyamadtky@gmail.com

ORCID

Keiko Yamada  <https://orcid.org/0000-0003-0035-8750>

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