

auri research brief

No. 47

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Fire Safety in Medical Welfare Facilities for the Elderly and Methods for Improvement

There has been serious recognition of fire safety issues in medical welfare facilities for the elderly due to recent large-scale fire damages. Older patients are particularly vulnerable since they lack the physical and cognitive abilities to sufficiently respond to fire disasters, increasing the risk for casualties. In this respect, tougher fire safety planning for elderly facilities as well as sufficient maintenance and management systems are required. Both components must be present as application of stringent fire safety regulations will only be effective if the management in place is capable and ongoing. In many cases, fire damage was found to be exacerbated due to sprinklers, fire alarms, and guidance lights not functioning properly.

Therefore, this study aims to propose improvement measures for the fire safety systems in elderly medical welfare facilities by comprehensively examining the current conditions of fire safety facility planning (physical environment) as well as their maintenance and management system (software). To do this, the study first analyzed large-scale fire damage cases in elderly medical welfare facilities as well as domestic and foreign fire safety legislations to order to identify areas for change. Next, the study investigated the current conditions for fire safety in medical welfare facilities for the elderly and identified whether the safety criteria were sufficient. The study also identified

vulnerable facility types in which current standards have been applied and maintained. Lastly, based on the findings above, the study suggested measures to improve the current state of elderly medical welfare facilities.

The investigation into the current fire safety conditions of elderly medical welfare facilities was divided into two parts. The first was aimed at understanding the suitability of the current fire safety criteria. The second part focused on analyzing current fire safety planning together with their maintenance and management system.

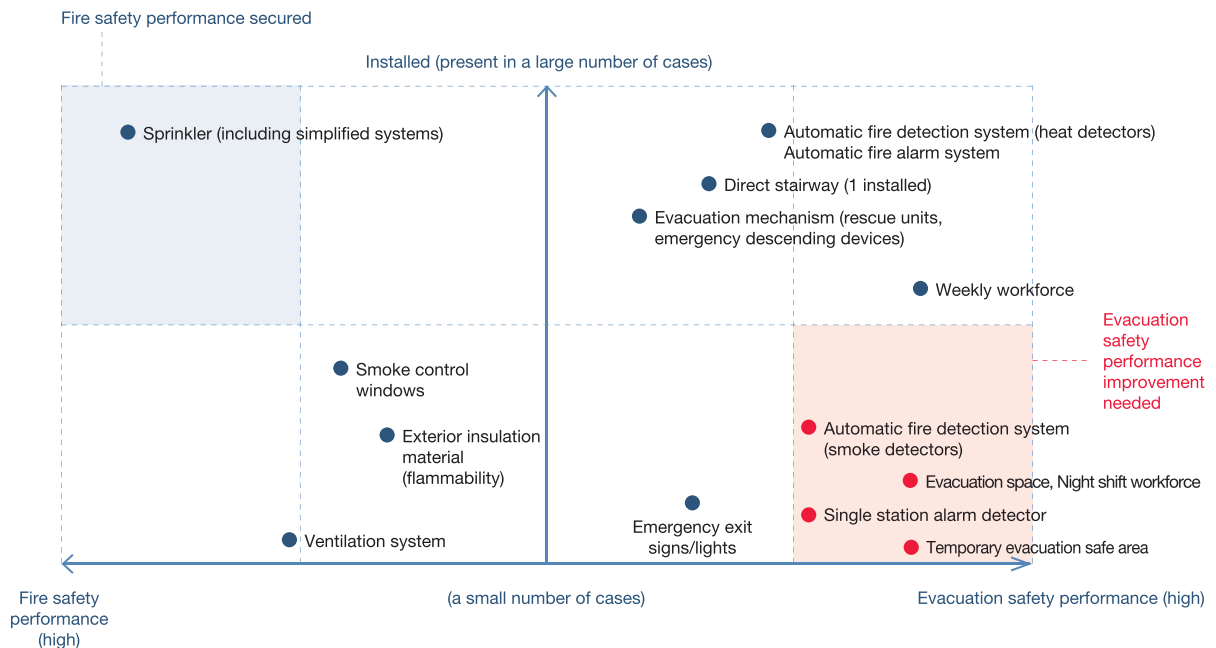
First, the study conducted a systematic literature review to understand the suitability of the current fire safety standards in elderly medical welfare facilities. This was followed by a Focus Group Interview of professionals, government officials, and facility personnel, in addition to an analysis of fire safety facility planning¹). The study identified key components in planning, maintenance and management required to ensure the fire safety of these facilities and made a comparison with domestic standards.

Next, in order to understand the current fire safety conditions, the study conducted a quantitative survey (fire safety checklist of 240 facilities), a qualitative survey (expert and user-group interview (FGI), and a literature review (analysis of special fire inspection)¹. Based on their results, the study identified the current fire safety status of elderly medical welfare facilities and derived vulnerable facility types.

The fire safety surveys were instrumental in helping to identify areas for improvements in the maintenance system and in facility standards. In most cases, fire extinguishing equipment had been installed; however, evacuation plans were lacking. There were also many facilities where safety management was poor. Facilities taller than three stories, mixed-use buildings, facilities located in commercial areas, and facilities with no fire protection zones were identified as vulnerable types of facilities.

1) Applicability of fire safety facility planning was analyzed by Professor Lee Young-joo (Department of Fire Safety at University of Seoul).

[Figure 1] Analysis of the Fire Safety Checklist (source: authors)



Based on the survey results, three objectives were derived to improve the fire safety system for elderly medical welfare facilities along with the following improvement measures.

- (CASE 1) Fire safety performance improvement

This study proposes a revision of Article 20 in the Enforcement Regulations of the Welfare of Older Persons Act as a measure to reinforce fire safety performance. Although higher fire safety standards are being applied to new constructions and extensions of elderly medical welfare facilities, there is insufficient legislation regarding existing buildings being remodeled into welfare facilities. Therefore, Article 20 of the Enforcement Regulations of the Welfare of Older Persons Act needs to be amended to ensure the same fire safety standards in all elderly medical welfare facilities.

The study proposes a plan for a performance improvement project through liaison with a "Regional Building Safety Center." Despite increased efforts to improve fire safety at various levels of governmental bodies, improvements are still dependent on the will of the respective governmental organization rather than the assessed conditions of the facilities. Hence, a "Regional Building Safety Center" can establish a general fire safety reinforcement plan with respect to the actual status of elderly medical welfare facilities and operate projects to improve performances.

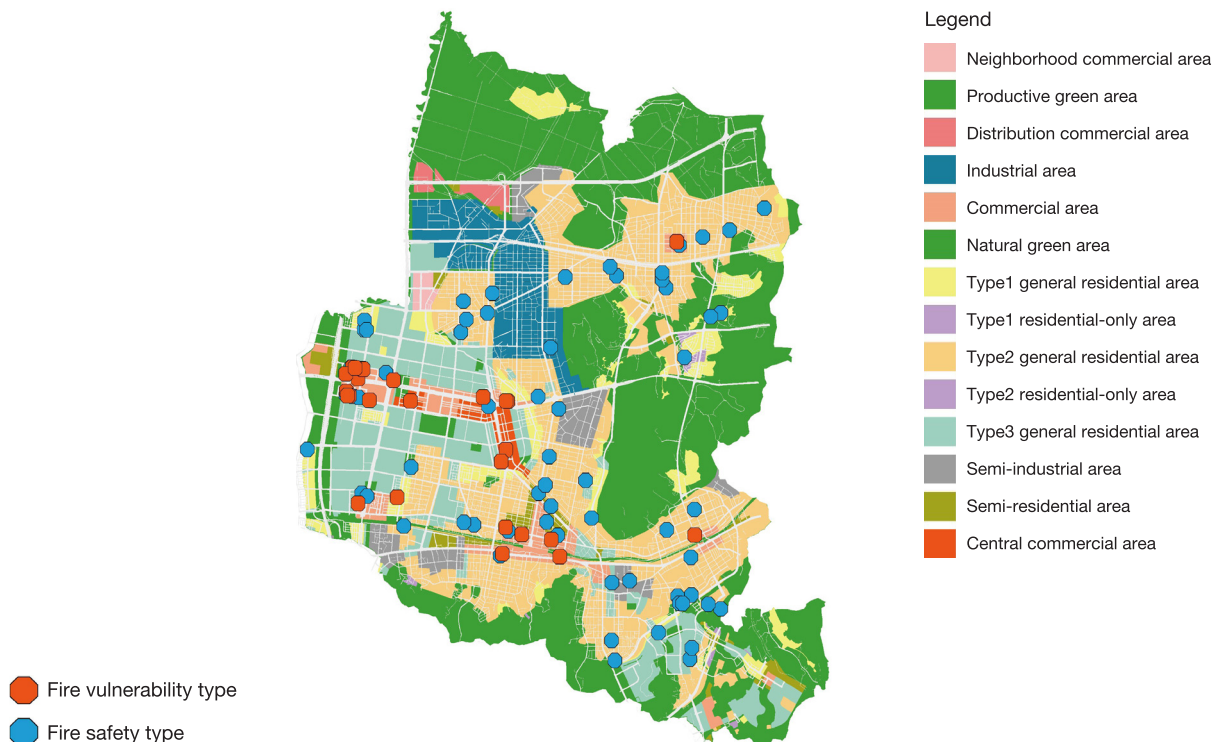
- (CASE 2) Improvement in fire safety management

In order to strengthen fire safety management, the study proposes a criterion titled "Special Fire Safety Inspection." A more efficient program may be run via a focused sampling of vulnerable facility types as opposed to random sampling methods.

The study also proposes an amendment to Article 5 (An order to take measures according to the result of special fire safety inspection) of the Act on Fire Prevention and Installation, Maintenance, and Safety Control of Fire-Fighting Systems. Fire safety management can be strengthened if the bill allows for suspension of businesses or cancellation of facility permits for those that have not followed through on orders to take action under the "Special Fire Safety Inspection".

[Figure 2] Distribution of Elderly Care Facilities that are 3 Stories or Higher, Mixed-Use, Located in Commercial Areas, and without Fire Safety Zones (Local government E)

(source: based on a checklist distributed to local governments regarding fire safety of elderly care facilities by authors, Gyeonggi data, "Elderly medical care facility current condition," Gyeonggi data webpage, <https://data.gg.go.kr/portal/data/service/selectServicePage.do?page=1&rows=10&sortColumn=&sortDirection=&infId=1XY6ZLU77I868FAT4R3C27415674&infSeq=1&order=&loc=>, (search date: 2018.11.1)



[Figure 3] Vulnerable Types of Facilities (source: authors)

Fire safety type	Fire vulnerability type
Under 3 stories	3 stories or higher
Single-use	Mixed-use
Non-commercial areas	Located in commercial areas
Safety zones	Without safety zones
Degree of risk (Low)	Degree of risk (High)

- (CASE 3) Introducing tougher fire safety standards

In order to strengthen the standards in fire safety for these facilities, the study proposes an amendment to Article 46 (installation, etc. of fireproof partitions) under the Enforcement Decree of the Building Act. More detailed regulations regarding the minimum area for fire safety zones and its locations need to be introduced through this amendment.

The recommendations proposed in this study can be expected to greatly improve the safety of these medical welfare buildings and their elderly residents.

Keywords : Fire safety of medical welfare facilities for the elderly, Fire safety planning and management system

