

Title	災害時に高齢者が避難困難となる構造のシステム思考的分析
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Abstract

This study applies a systems thinking approach to examine the evacuation difficulties faced by older adults in natural disasters in Japan and the structural mechanisms underlying these difficulties. Rather than viewing evacuation difficulties as temporary or individual-level behavioral problems, this study positions them as a systemic issue formed through the interaction of multiple factors—physical, psychological, social, institutional, and environmental—within the structural context of ongoing population aging and declining birthrates. The continued advancement of this demographic trend not only increases the number of older adults but also weakens the availability of community-based support personnel and mutual aid networks. At the same time, it is often accompanied by economic hardship and social isolation, which tend to overlap and compound one another, increasing overall vulnerability among older adults and influencing their evacuation judgment and behavior during disasters.

As opportunities for social participation decline and neighborhood ties weaken, older adults face increasing limitations in accessing information and support, making trust relationships more difficult to establish. This, in turn, heightens uncertainty in evacuation decision-making under conditions of isolation. Declines in physical functioning and health-related anxiety further intensify this uncertainty, leading some older adults to hesitate over whether they can evacuate safely, thereby undermining evacuation beliefs and reducing evacuation willingness. In addition, strong reliance on past life experiences or disaster education may foster a form of spiritualistic or experience-based thinking among some older adults, resulting in delayed or hesitant evacuation behavior.

Public assistance provided by government authorities encompasses not only rescue and support during disasters but also the maintenance of evacuation facilities, environmental preparedness, and support systems in non-disaster periods. However, limitations in human and financial resources inevitably lead to regional disparities in the number of evacuation shelters, facility conditions, and staffing arrangements. Welfare evacuation shelters, in particular, are often operated based on agreements with private facilities, and their acceptance capacity is constrained in practice. These evacuation environment conditions affect not only evacuation behavior and health outcomes among older adults but are also closely related to their evacuation beliefs and levels of trust in governmental support. While policies emphasizing self-help and awareness-raising are important, such measures do not necessarily translate into effective evacuation actions for older adults facing physical limitations, social isolation, or poverty, and may instead increase anxiety and hesitation.

By organizing and visualizing the physical, psychological, social, institutional, and environmental factors described above and their interrelationships through a systems thinking approach, this study demonstrates that evacuation difficulties among older adults do not arise in

isolation but persist as structural outcomes shaped by the interaction of multiple conditions. Such visualization helps clarify how factors across different levels are interconnected and provides insight into the structural links between evacuation difficulties at the individual level and broader societal burdens and economic activity.

Based on this analysis, this study argues that alleviating evacuation difficulties among older adults requires a comprehensive and integrated perspective. Stabilizing evacuation beliefs, addressing poverty and social isolation, maintaining neighborhood trust and trust in public institutions, improving evacuation facility environments, and optimizing policy implementation should be considered as interrelated components of a unified approach. Disaster preparedness strategies for aging societies should therefore adopt a systems perspective that recognizes the structural formation of older adults' vulnerability, rather than relying on single factors or isolated measures.