

Modeling Successful Aging and Resilience in the Community - Examining Successful Aging After Disasters -

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Abstract

The concept of vulnerability is an interdisciplinary topic. All people exposed to disaster risks and potential losses are vulnerable.

All people exposed to disaster risks and potential losses are vulnerable. Disaster research has been dominated by natural science disciplines, with few social science approaches. All industrialized countries are acutely aware of the need for research on the increased risk of disasters, which can lead to greater losses and increased mortality among the aged due to an increasingly aging population. Most research in this area believes that vulnerability is largely socially constructed. We examine this concept, guided by the empirical findings of Successful Aging Theory, and propose a need for the theoretical development of disaster gerontology. Successful aging theory has never been based on unexpected disasters or other crisis events. Although Japan has 0.25% of the world's land area, it has 18.5% of the world's M6+ earthquakes and 7.1% of the world's active volcanoes. It also accounts for 1.5% of the world's disaster deaths and 17.5% of the world's disaster damages. Japan is vulnerable to natural disasters in all regions of the country and has an aging population of 30.1% (estimated for 2024, Cabinet Office). Thus, Japan's older adults are the most vulnerable to natural disasters and live in the most vulnerable regions of the world. The purpose of this research is to examine the concept of successful aging in the field of gerontology as a risk management strategy to address the challenges of older adults, including chronic disease, physical limitations, and social isolation. Traditional gerontology until the 1980s focused primarily on promoting health and well-being, but frequent and severe natural disasters due to climate change and the impact of global pandemics have necessitated a broader approach. This research explores how incorporating these elements into the theory of successful aging can enhance the independence and quality of life of older adults. Recent trends indicate that research on health, lifestyle perspectives, and aging-related issues has become more mainstream and that Successful Aging Theory has received less attention. As life expectancy rises, Successful Aging Theory is extremely important as a resilient aging strategy that takes into account unforeseen natural disasters and lifestyles in old age. In today's complex social and environmental context, a comprehensive framework for implementing Successful Aging is needed.

Key words: Successful Aging, Community Resilience, Aged Society, Disaster Risk

Management

I. Introduction

Recently, Natural disasters are becoming more frequent and large-scale due to changes in the global environment associated with climate change and global warming. The older adults are the most frequent victims and sufferers of natural disasters.

Without ignoring this phenomenon, we have conducted disaster research based on disaster gerontology. In disaster gerontology, we have focused on the fact that disasters have a significant impact on successful aging. In the past, Successful Aging only discussed how to live in old age in peacetime.

Until the 1980s, Successful Aging theory in the field of gerontology was primarily concerned with promoting the health and well-being of the elderly, but recent research has recommended that Successful Aging theory include risk management. This means that Successful Aging should include managing the risks associated with aging, such as chronic disease, physical limitations, and social isolation. However, it does not mean managing risks related to threats such as natural disasters, but should include risks related to changes in physical and mental functioning as aging during

normal times.

By integrating risk management into the theory of successful aging, older adults can enhance their ability to maintain their independence and enjoy an optimal and fulfilling quality of life. The concept of risk management into successful aging is important model of integrating "adaptive risk management". (Laura Castensen,1980) This suggests that older adults should be encouraged to engage in behaviors and make choices that involve calculated risks which have the potential to benefit their well-being, while also managing risks to avoid negative consequences. Another approach is that the concept of "preventing health loss" which involves identifying and managing risks the threaten functional well-being and independence in older adults. (John W. Rowe, Linda Fried 1980)

The successful aging research allows for a more comprehensive approach to promote successful aging and aging well.

The discussion of successful aging seems to have declined in recent years for several reasons, including the emergence of new health and lifestyle trends, a shift in focus to other aging-related issues, and the Covid-19 pandemic. Climate change, global warming, and the destruction of the natural environment have led to more frequent and massive natural disasters that now affect the lives of all people.

Since successful aging is concerned only with peacetime, this trend is likely to be a temporary phenomenon, but the building of a true successful aging theory must assume hazardous situations, present and beyond. This has significant implications for Successful Aging Theory research in the future.

In addition, life expectancy is increasing every year, and we are approaching a turning point in our traditional concept of successful aging, which emphasizes the role of a healthy aging perspective for individuals and society as a whole. Of course, there is no doubt that encouraging older people to lead physically and mentally active lives contributes not only to their well-being, but also to their ability to do so.

However, we argue that the following Successful Aging approach is needed, especially it is necessary to have a concept of successful aging, or successful aging riskmanagement, which includes how to deal with unexpected natural disasters.

1.Research aims and objectives

Successful aging" is one of the major research topics in the field of gerontology. It is said that successful aging first came to attention in 1961, when the Gerontological Society of America published an article entitled "Successful Aging" (Havighurst) in the first journal of The Gerontologist in 1961. This was followed in 1986 by the Gerontological Society of America's conference which main topic was successful aging and, in 1987 by the publication of "Human Aging: Normal and Successful"(Rowe and Kahn) in journal of Science.

Today, successful aging is generally understood as "an ideal way to live and age. Research on successful aging can be described as the pursuit of how to age ideally and happily, especially in old age. In the early 1960s, the first theory proposed was called (1) Disengagement Theory (Cumming and Henry, 1961, etc.). This theory believed that "the ideal way to age is to live a quiet life in the countryside as an older adult. The next theory proposed was (2) Activity theory (Havighurst et al., 1968, etc.). This theory rejected the retreat theory and held that "the ideal way to age is to remain active regardless of age. Finally, (3) the Continuity Theory (Atchley, 1987, etc.) appeared. This theory believed that "the ideal way to age is to be able to continue the lifestyle and other activities that one has established up to middle age. Thus, the concept of successful aging has changed over time.

These theories of disengagement and continuity were both developed by Western researchers in the second half of the 20th century, and more than 60 years have passed since then. The economy and society have changed, people's lifestyles have changed, and the natural environment has changed drastically. In addition, average life expectancy has increased dramatically to the point where people now live to be 100 years old.

It is necessary to reexamine whether the theory of "successful aging" can be applied as it is. We need to be ahead of the rest of the world in thinking about and promoting a new ideal of successful aging that is appropriate to the changing natural environment, social environment, and economic situation, in other words, a new way of living and aging that is appropriate to the environment and the length of life.

As older age (65+, WHO) has become longer than 30 years and accounts for one-third of life, Successful Aging reviews its foundational philosophy, Social Disengagement Theory and Social Activity Theory, and considers the factors of chronic illness, physical limitations, and social isolation in older adults that contribute to social disengagement. We must consider the factors that contribute to social disengagement, such as chronic illness, physical limitations, and social isolation, as well as the hopeful factor of extending social activity as far into later life as possible, not only in times of peace but also in times of crisis. Our concept is a challenge to redefine successful aging by integrating crisis management strategies into the theory of successful aging, as the risk of natural disasters has increased due to the changing natural environment.

The concept of successful aging by integrating risk management strategies for natural disasters into the theory of Successful Aging to help older adults cope with the challenges they face in normal times or hazardous time, and to live a lifetime of well-being.

2. Research design and Research Methodology

2.1 Research design

Since the 1960s, theories of successful aging, whether social disengagement or social activism, have assumed peacetime. However, while interest in the theory has increased or stagnated over the past 60 years, its conception is still based on the assumption of peacetime. The natural and social environment could change drastically. Not only peacetime, but also disasters, wars, terrorism, and other major events that individuals cannot prevent must be considered as a factor in how we live.

The current concept of successful aging is to consider successful aging by integrating peacetime and crisis times, and disaster gerontology is a challenge with a view to a major disaster that would be the greatest disaster if it occurs, Challenging Disaster Gerontology.

2.2 Research Methodology

This paper is one of the challenges of our theoretical research, the first phase of which is to build a new theory of successful aging by introducing a factor of crisis management into the theory of successful aging that hasn't been done before. The methodology is papers review and analysis of existing published data.

The review of Successful Aging and publicly available data (demographics and lifeexpectancy, physical and mental health of the older adults, and data on disaster exposure and affected) will be analyzed to find justification for our theory of Successful Aging from the paper review and to build a new theory of Successful Aging.

3. The Review of Papers

3.1 Successful Aging Theory

The term was first introduced and brought to attention in the United States in 1961, when the Gerontological Society of America published an article entitled "Successful Aging" in the first issue of "The Gerontologist. The Gerontological Society of America published a paper entitled "Successful Aging" (Havighurst) in the first issue of The Gerontologist in 1961. This was followed by the 1986 conference theme of the Gerontological Society of America and the 1987 publication of the article "Human Aging: Usual and Successful" (Rowe and Kahn) in the scientific journal "Science". The term became known not only to gerontologists but also to many other researchers.

So, what does Successful Aging mean in academic terms? I believe it means a person's "ideal way of living and aging. Research on Successful Aging is the pursuit of how one should ideally age and be happy in the last phase of life, old age. Successful aging research is an attempt to objectively clarify this extremely profound research. Philosophical elements are often involved in the ideal way of life and happiness. In research on gerontology, a representative theory first proposed in the 1960s was "(1) Disengagement theory (Cumming and Henry, 1961, etc.).

This theory believed that "the ideal lifestyle for older adults is to retire from social activities (i.e., work) when they reach old age, to escape the hustle and bustle of the city, and to live a quiet life in the suburbs. The next theory to be proposed was "(2) Activity theory (Havighurst et al., 1968, etc.). This theory rejected the withdrawal theory and stated that "the ideal way to live in old age is to remain active in society regardless of age. Finally, (3) Continuity theory (Atchley, 1987, etc.) appeared. This theory focused on the qualitative aspect of social activity theory, and stated that "the ideal way of living in old age is to be able to perform the lifestyle that one has built up until middle age. Thus, the concept of Successful Aging has changed over time.

3.2 Successful Aging and Disasters Literature review

We tried to select articles on successful aging theory 【1001】 , successful aging models 【1,000】 , models for embodying successful aging and risk management from Google Scholar and Japanese CINII articles. As a result, we did not find any articles that were consistent with our research on risk management for embodying successful aging models, which we are trying to theorize.

Here are some of the leading papers on successful aging and disasters preparedness, disaster reduction and emergencies from 1995 to the present. It is due to the adoption of the Hyogo Framework for Action (2005-2015) in

2005 at the UN World Conference on Disaster Reduction (HFA) and the Sendai Framework for Disaster Reduction (2015-2030) in 2015.

*Amjad et.al. Successful Aging in the context of the CoVID-19 pandemic, Journal of the American Geriatrics Society,2020

*Norris et.al, Successful aging in the face of disasters. Journal of Aging research, 2009

*Ishii et.al. Successful aging amid COVID-19 pandemic in Japan-For strategies reducing the risk of infection,2021

*Marquws et.al, Older Adults, Resilience and successful aging during the COVID-19 pandemic, The Gerontologist,2020

* Lee et.al, Disaster and gerontology-Systematic review of research evidence in the past decade, Geriatrics & Gerontology International, 2017

*Acierno et. Al. Aging and Natural disasters, Journal of Trauma Practice,2003

*Aldrich, Successful aging in disaster contexts and the future of Emergency management, Journal of Emergency Management, Journal of Emergency Management,2012

*Kim & Kim, Disaster preparedness and communication accessibility of aging and disability populations-A systematic literature review.

*Couch & Prihoda, Aging in the context of disaster, The Gerontologist,2020

*Sato & Saito, Aging in the context of disaster and evacuation from attached and detached house= a comparative study in Japan. Ten randomly selected papers address the questions of how to achieve Successful Aging and the threat to life that a COVID-19 pandemic would pose to everyone. These papers point out that Successful Aging theory, which focuses on healthy and socially active lifestyles, was not designed for crises such as sudden disasters or infectious diseases.

It should be recognized that Successful Aging theory, which was a breakthrough idea in gerontology only in peacetime, is no longer viable on its own. Successful aging theory must include crises that cannot occur in normal times, such as frequent natural disasters due to climate change and pandemics of infectious diseases.

4. Disaster vulnerability assessment and Geron-Technology

Geron-technology, which introduces AI and robotics into the fields of disaster prevention, response, and recovery, is attracting attention as a new way to transform the vulnerability of the older adults to disasters and contribute to their own resilience and the resilience of communities with an increasing aging population.

What is Geron-technology? Geron-technology is a combination of the words gerontology and technology. Frankly speaking, it can be described as life independence-supporting technology for older adults. (Toru Ifukube, 2017) Up to now, mechanical technology has developed crises that have convenience in various aspects of life. Just as assistive devices have oriented the lives of people with disabilities, Geron-Technology (GT) is a concept that accurately captures the characteristics of the elderly and seeks to

support the lives of older adults with mechanical technology. The development of technologies that support the decline in physical strength and the effort required to perform household chores, as well as technologies that facilitate care and recovery even when the person is in good health, is accelerating.

Since the areas supported by GT are those that support the physical functions and lifestyles of older adults, medical treatment and rehabilitation can make it difficult for older adults to live independently for a period of time or for the rest of their lives due to declining physical functions or illnesses. In the area of medical treatment and rehabilitation, technology has been developed as a therapeutic technology (life sustainability) and as an assistive technology for daily living functions that does not conflict with medical technology. In the field of assisting living technology. There are technologies for housing suitable for the functions of older adults, which can be used to create livable cities, and new infrastructure elements such as ICT and IRT that support the functions of older adults and their physical and mental functions.

It can also work in accordance with the concepts of accessibility and universal design. In addition to IRT, which can be utilized for the continuation of employment as a form of social participation for older adults, improving quality of life and reducing the burden of caregiving are familiar ideas, but they can also be implemented for issues specific to older adults in the event of a disaster. These technologies must be able to be used in times of peace as well as in times of disaster. IRT as a work and caregiver burden reduction and relief aid can also be a caregiver burden reduction (soft actuator) for mobility of older adults during disasters. When mobility assistive IRTs are actively used during disasters, they can provide free and safe movement within the community. This will also help make the community more resilient to disasters.

Assistive devices that help older adults live independently despite physical disabilities caused by aging, and that reduce the burden on caregivers when care is needed, will be a great asset in times of disaster.

5. Older Adult's Vulnerability and Community Resilience

People such as older adults, person with disability, pregnant women and small children are well known to suffer in different ways during disasters. Especially, older adults have physical, economic and social vulnerabilities that result in particular challenges and greatharm, loss and difficulty in recovery from affected disasters.

Assessing the vulnerability of older adults is a primary necessity because it directly affects the development of disaster preparedness plans and their implementation in the event of a disaster.

Disaster risk assessment is the identification of hazards; a review of the technical characteristics of hazards such as their location, intensity, frequency and probability; the analysis of exposure and vulnerability, including the physical, social, health, environmental and economic dimensions; and the evaluation of the effectiveness of prevailing and alternative coping capacities with respect to likely risk scenarios.

Thus, the quantitative approach to determining the nature and extent of disaster risk is to analyze potential hazards and assess existing conditions of exposure and vulnerability that together could harm people, property, services, livelihoods, and the environment on which they depend.

For older adults, we are studying how to build resilience to withstand and respond to disasters.

Definition of Resilience is that the GAR 2023 calls for resilience to be the foundation of efforts to achieve the Sustainable Development Goals by addressing 'resilience deficits' across all goals, ensuring a balance between people (social resilience), planet (environmental resilience), and prosperity (economic resilience) (UNDRR,2023)

Hyung-Joo Park defined that resilience is a concept of applied to individuals' ability to internally manage a disaster and restore their healthy state Reference Vulnerability¹⁹ for disaster management. Thus, resilience refers to the ability to recover from stress and resist risk factors during a crisis. (Klein, Nicholls and Thomalla)

Japan, a country prone to earthquakes, typhoons, and other natural disasters, has developed remarkable resilience over the years. Community resilience is highlighted as in post-disaster recovery and rebuilding the community.

Especially, Resilient Infrastructure and Communities that Japan has accumulated knowledge and technologies for disaster prevention, which are now incorporated into highly resilient rail and other infrastructure systems. These technologies support safe and comfortable living for peoples.

Japan's history of coping with typhoons, earthquakes, and tsunamis has instilled resilience as a virtue. The Japanese people come together for common purposes, demonstrating their ability to recover rapidly from disasters. While Japan ranks among the world's top 20% of countries in terms of disaster resilience, it also faces challenges related to community support (Kyo-jo: Mutual Aid.). Strengthening community bonds remains crucial for enhancing overall resilience.

Japan continuously develops new technologies to mitigate the impact of disasters. Japan's commitment to disaster proofing and community resilience serves as an inspiration for other nations facing similar challenges.

In South Korea, community resilience is particularly emphasized, especially in response to large-scale disasters in regional and group units. What is community resilience and the quality of life of disaster-affected people, we need to evaluate and identify the moderating effects of the perception of government relief services. (Hyung-Joo Park, Yerim Shin, Yerim Shin, and Soo-Bi Lee,2023)

In Korea, there have been continuous large-scale disasters resulting in loss of life and property, including the Ferry Disaster (April 16, 2014), earthquakes in Gyeongju-is (September 12, 2016) and Pohang-is (November 15, 2017), large forest fires in Uljin-si and Samcheok-si (March 4, 2022), and Itaewon Halloween disaster (October 29, 2022). In the past decade, the property damage caused by natural disasters in South Korea averaged 350 billion KRW per year, with a recovery cost of 820 billion KRW. For social disasters Footnote a, occurrences have increased approximately 8.3-fold compared to 10 years ago. (Hyung-Joo Park, Yerim Shin, Yerim Shin, and Soo-Bi Lee,2023)

By sharing knowledge and working together, we can build safer and more resilient societies worldwide

6. Discussion

Successful Aging and Disaster Prevention and Response as a concrete example of how new ideas about successful aging can be developed by learning about FEMA's new trend in emergency preparedness for older adults and people with disabilities in disasters. We learn the New trend of ACL(Administration for Community Living) · FEMA for Older adults and person with disabilities Emergency Preparedness.

ACL Promotes Independence and Inclusion for Older Adults and Person with Disabilities the Office of Community Living Assisting was founded on the fundamental principle that older adults and person with disabilities of all ages should be able to live where they choose, with whom they choose, and participate fully in their communities' helps make this principle a reality for millions of Americans by funding services and supports provided primarily by a network of community-based organizations and by investing in research, education, and innovation. (ACL, 2024).

The Administration for Community Living (ACL) and the Federal Emergency Management Agency (FEMA) Office of Disability Integration and Coordination (ODIC) are partnering on to support people with disabilities – and the organizations that serve them – before, during, and after disasters.

Thus, ACL is Advancing independence and inclusion of older adults and person with disabilities. (ACL ,2024) The ACL was created around the fundamental principle that older adults and people of all ages with disabilities should be able to live where they choose, with the people they choose, and with the ability to participate fully in their communities. By funding services and supports provided primarily by networks of community-based organizations, and with investments in research, education, and innovation, ACL helps make this principle a reality for millions of Americans.

This philosophy and principle can be described as assisting people to continue to perform Successful Aging throughout their lives, even in the event of unexpected disasters and other events.

7.Conclusion

Successful Aging Theory in the Era of Longevity (100-year life expectancy era) In the "100-year life expectancy" era, Successful Aging Theory began to be researched as a way of life in old age in the 20th century, 62 years ago. The traditional Successful Aging Theory is no longer applicable to the modern society of Linda Gladden Andrew Scott's (Life Shift, 2016) theory of how to live in the age of 100 years of life. For example, in societies such as Japan and South Korea, where total fertility rates have declined dramatically, life expectancy is increasing, and the population of the society is super-aged, we must consider the social risks associated with a declining population.

A new theory of successful aging must be developed that takes into account changes in the natural and social environment in which people live for 100 years. So far, the theory of successful aging has described a healthy and happy old age. However, there is a risk of long-term care due to the large gap between average life expectancy and healthy life expectancy. The perspective of crisis management, including social risks such as natural disasters and frequent environmental disasters such as war and terrorism, needs to be added to the Successful Aging Theory. It is the use of geron-technology that offers hope for the methodology of Successful Aging in a society with a declining population. The value of its use is great for caregiving risks and also for disaster prevention, rescue and recovery. It is believed that geron-tech can make a significant contribution to the sustainability of life in old age. The new theory of successful aging should focus not only on how-to live-in times of peace, but also on how to live and die in preparation for emergencies.

We agree that 100 years of life can be divided into three stages of aging from the perspective of "successful aging". Advanced age is the 35 years from the age of 65. During the 35 more years of term of older age, their health status tends to decline and their relationship with family and society may change. Along with this, the ability to respond to crisis will be decreased. Changing life issues and needs indicate a shift from self-reliance to the need for support and technical assistance.

Let's study gerontology of healthy longevity, in basic question is How can health status change as we age?" (2020.10.7), the declining trend is clear. In the section "Patterns of Change in Independence with Age", (1) About 70% of men and 90% of women maintain a high level of independence from age 65 to 75, the same as in middle age, from age 75 to 85, the level of independence gradually declines with age and after age 85, the average age of longevity, they receive full medical and long-term care services. (2) As of September 15, 2023, there were 36.23 million older adults (29.0% of the population), of whom approximately 4.25 million (11.7%) were receiving care at home and 970,000 (2.7%) were using institutions, for a total of 5.22 million [14.4%] of the population receiving nursing care. Less than 3% of the older adults is nursing home during any given time. Approximately 85% of older adults live independently, and independent living is an important component of successful aging. However, they are at risk of becoming dependent on long-term nursing care at home or long term care facility, and there is a significant risk who will not be able to evacuate independently or maintain their health at and after a disaster.

Thus, we believe that the new theory of successful aging must be built on the premise of triple jeopardy: socioeconomic risk, care receiving & caregiving risk, and catastrophic risk, when it comes to a healthy, happy, and stable life.

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