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**• Article •**

## **Research on Aging Problem in China and Japan from the Perspective of the Aging Economy**

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**Abstract:** This paper explores the research and development of aging economies in emerging economies, with a focus on China and Japan, from an aging economic perspective. Statistical analysis of relevant data from the SSCI database reveals a decline in publication volume on aging problem following the pandemic. The research hot topics in China and Japan align with global trends, primarily focusing on mental health and risk management, yet exhibit distinct differences: Japan is notably advanced in social policy research, while China demonstrates a strong emphasis on family studies. The paper analyzes the causes behind these phenomena and offers recommendations for future research, including attention to emerging technology applications, leveraging the potential of older adults, examining urban-rural aging disparities, exploring elderly care service models, addressing the mental and cultural needs of the elderly, studying the role of the family, and conducting international comparative studies.

**Keywords:** Aging Problem; Literature Analysis; Aging Economy

### **1. Introduction**

As population aging intensifies, the study of aging economies has become increasingly crucial for advancing green finance systems and economic growth. Aging economies focus on meeting the needs of the elderly, enhancing their quality of life, and promoting sustainable economic development. While developed economies have substantial research and practice in this area, the evolution of aging economies in emerging economies remains underexplored. In emerging economies such as China compare to developed countries such as Japan, the development of aging economies is closely related to aging problem. An in-depth study of aging economies in these countries is essential for addressing the challenges of population aging and achieving sustainable economic development.

## **2. Literature Review**

Globally, population aging has become an unavoidable trend. Advances in medical care and improvements in quality of life have led to increased life expectancy and a growing proportion of elderly people. This phenomenon has substantial impacts on social structures, labor markets, social security systems, and economic development. Research on aging economies is crucial for addressing the challenges of aging and achieving sustainable economic development. On one hand, understanding the consumption needs, savings behavior, and labor participation intentions of the elderly can help optimize resource allocation, drive industrial structural adjustments, and create new economic growth points. For example, industries such as elderly care, health care, and senior tourism have broad development prospects in an aging society. On the other hand, studying aging economies can inform the development of effective pension policies, social security systems, and fiscal policies to ensure the quality of life for the elderly, alleviate social burdens, and promote social equity and stability.

### **2.1 Research Status of Aging problem in China and Japan**

As one of the most populous countries in the world, China faces increasingly prominent aging problem. Key research areas for Chinese scholars include the impact of aging on the labor market, the improvement of pension systems, and the health and medical care of the elderly. Major findings include a series of policy recommendations to address aging, such as gradually delaying the retirement age, strengthening community elderly care services, and promoting integrated medical and elderly care. However, there are notable gaps, such as relatively weak research on rural aging problem and insufficient attention to the mental and cultural needs of the elderly.

Japan, being one of the most aged countries globally, has accumulated extensive experience in aging issue research. The focus is primarily on long-term care insurance systems, employment and reemployment of the elderly, and the prevention and treatment of dementia. Key achievements include the establishment of a relatively comprehensive long-term care insurance system that provides high-quality care services for the elderly. However, challenges remain, such as the financial sustainability of pension systems and unresolved issues related to elderly loneliness and social isolation.

### **2.2 Hot topics in Aging Problem Research**

In aging problem research, key topics include the escalating mental health issues among the elderly, necessitating improved psychological interventions and preventive strategies; the development of comprehensive risk management systems to address health, economic, and social risks; the optimization and sustainability of social policies such as pension, medical, and long-term care systems; and the evolution of family caregiving models and intergenerational relationships, with a focus on shared responsibilities between families and society for a supportive elderly care environment. Future research trends will likely concentrate on enhancing these areas to better serve and protect the aging population.

### **2.3.1 Mental Health**

As the degree of aging deepens, mental health issues among the elderly are receiving increasing attention. Current research indicates a rising incidence of mental disorders such as depression and dementia among the elderly. Future trends may involve the development of more effective psychological interventions and treatment methods, as well as enhanced early screening and prevention of mental health issues in the elderly.

### **2.3.2 Risk Management**

In an aging society, the elderly face various risks, including health, economic, and social risks. Current research mainly focuses on risk assessment and the formulation of management strategies. Future research may place greater emphasis on building comprehensive risk management systems to improve the elderly's capacity to cope with risks.

### **2.3.3 Social Policy**

Social policies play a crucial role in safeguarding the rights of the elderly and improving their quality of life. Current research focuses on how to improve pension systems, medical insurance systems, and long-term care insurance systems. Future policy research may increasingly concentrate on the fairness and sustainability of these systems.

### **2.3.4 Family Studies**

The family plays a vital role in the lives of the elderly. Research hot topics include changes in family caregiving models, shifts in intergenerational relationships, and the support role of families for the elderly. Future research may further explore how to promote shared responsibilities between families and society in elderly care, aiming to build a harmonious elderly care environment.

## **3. Research Design**

The primary objective of this scholarly endeavor is to substantiate two pivotal hypotheses concerning the aging population. Throughout the design and development of this research, a rigorous refinement of methodologies was undertaken to ensure optimal data analysis and interpretation. Initially, we employed the VOSviewer software for data processing, given its reputation in bibliometric analysis. However, its limitations in providing comprehensive visual analytics led us to seek alternative solutions for a more robust analysis.

Subsequently, an attempt was made to harness the statistical prowess of the R programming language for data manipulation. Yet, the constraints encountered in uploading large datasets hindered our ability to fully leverage R's capabilities. Consequently, we pivoted to using the highly regarded CiteSpace software, a choice that proved instrumental in our quest for clarity and precision.

CiteSpace, renowned for its ability to uncover hidden patterns and trends in large bibliometric datasets, offered the necessary analytical depth for our investigation. Its visualization features enabled us to generate clear and accurate data conclusions, which were not only interpretable but also

significantly enhanced the credibility of our findings. The following sections delineate the specific details of our research design, highlighting the methodological rigor and the analytical prowess that underpinned our study.

### 3.1 Hypotheses

**Hypothesis 1:** The volume of research on aging problem increased following the pandemic.

The outbreak of the pandemic heightened awareness of aging problem due to the increased vulnerability of the elderly to infection, severe illness, and death. This situation underscored the seriousness of aging problems. Additionally, during the pandemic, there was an increased focus on vulnerable groups, including the elderly, leading to greater attention to their quality of life, medical care, and mental health. This heightened awareness might have encouraged more researchers to engage in studies on aging problem.

**Hypothesis 2:** Research directions on aging problem differ between China and Japan, despite both being Asian countries.

Although both China and Japan are in Asia, their social and cultural backgrounds differ significantly. The extent and pace of aging also vary between the two countries. Japan has a higher level of aging, a larger elderly population, and a faster aging rate. In contrast, China's aging process began more recently but has accelerated in recent years. These differences in aging stages and rates may lead to variations in research focus. Moreover, differences in economic development and social security systems contribute to this divergence. Japan's well-established pension, healthcare, and social welfare systems may lead to a focus on research and refinement of existing policies. Conversely, China, still developing and improving in these areas, may emphasize constructing a social security system and elderly care models suited to its national conditions.

### 3.2 Data Sources

Data was extracted from the SSCI database on the Web of Science platform. The SSCI core journal database was chosen due to its comprehensive coverage and high reliability and validity.

### 3.3 Research Subjects

The study selected all research articles and review papers related to "aging problem" from the SSCI database published by China and Japan over the past five years. Editorials, conference papers, conference abstracts, and book reviews were excluded from the dataset. The selected time frame for data collection was from 2010 to 2024 to explore the latest research directions on aging problem post-pandemic.

### 3.4 Data Collection and Analysis

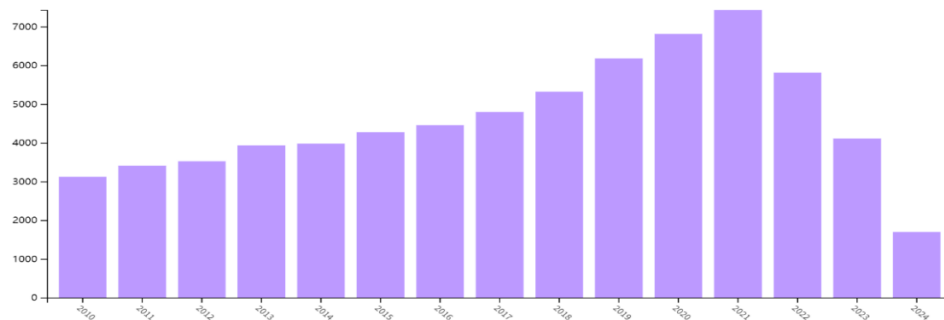
The study analyzed the global publication volume on aging problem over the past decade, assessing trends and significant time points. It also collected data on the most frequently occurring subtopics

within aging research in China and Japan. The Cite Space software was employed to generate keyword co-occurrence maps, which served as visual aids for data interpretation.

#### 4. Data Conclusions

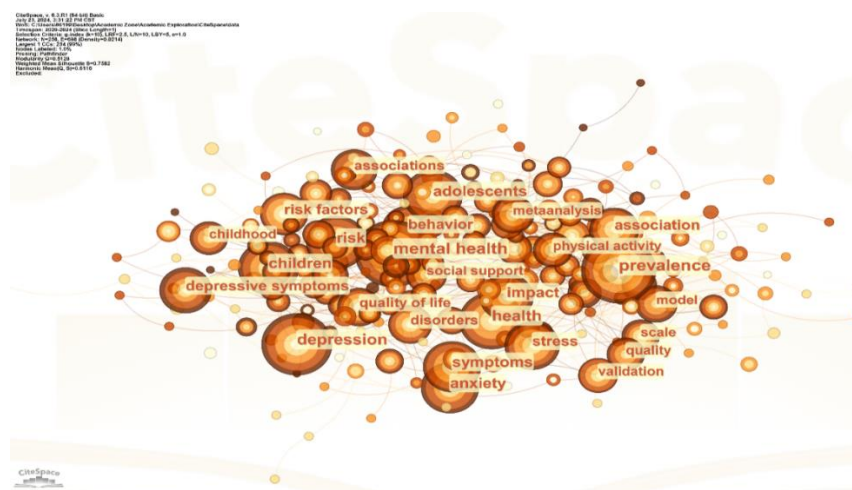
As illustrated in **Figure 1**, the global publication volume on aging problem over the past decade shows a decrease in research output following the pandemic, which contradicts **Hypothesis 1**.

**Figure 1:** Publication Volume of Aging problem Worldwide in the Past Ten Years



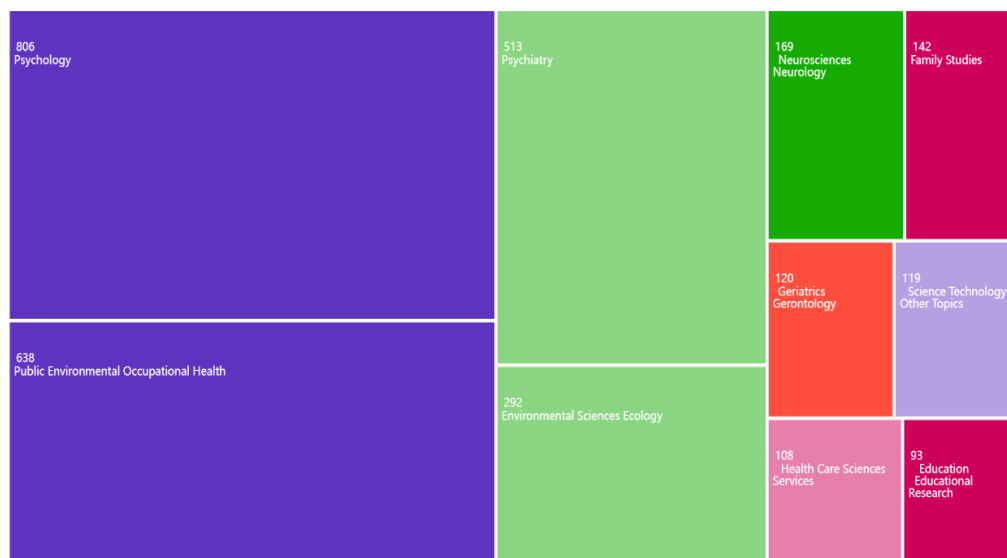
Keyword co-occurrence is a widely used method in text analysis and information retrieval that helps researchers understand the relationships between different themes, such as intersections and integrations among various research directions within a field. Frequently co-occurring keywords often represent current research hot topics and provide a foundation for constructing the knowledge structure and relationship maps of a discipline or field. For this study, a total of 2,810 documents from China and 594 documents from Japan were selected and stored in text (txt) format, then uploaded to Cite Space for data visualization. The resulting keyword co-occurrence visual maps are illustrated in **Figure 2** for China and **Figure 3** for Japan. These visual maps indicate that the research hot topics for aging problem in both selected countries align with global trends, focusing primarily on mental health and risk management.

**Figure 2:** Visualization Map of Keyword Co-occurrence in China



**Figure 3:** Visualization Map of Co-occurrence Keywords in Japan

At the same time, the statistics of hot topics studied by China and Japan in recent five years are found on the official website of web of science, in which the statistics of China are shown in **Figure 4** and those of Japan are shown in **Figure 5**.

**Figure 4:** Popular Research Topics in China in the Past Five Years

**Figure 5:** Popular Research Topics in Japan in the Past Five Years

## 5. Conclusion

Research on aging issues from the perspective of the elderly economy has significantly evolved, particularly in China and Japan. In Japan, extensive studies have focused on the effectiveness of long-term care insurance and employment policies for older adults. Japanese scholars have examined how these policies address labor shortages and support an aging population, highlighting the development of intermediate care facilities and other innovations in elderly care. These approaches underscore Japan's proactive stance in managing the socio-economic impacts of a rapidly aging society and the need for comprehensive risk management strategies.

Conversely, Chinese research has predominantly concentrated on the role of the family in elderly care, reflecting traditional cultural values that emphasize familial responsibility. Studies in China have explored how shifts in family structures, such as the rise of nuclear and empty-nest families, impact the provision of care for older adults. This focus highlights the importance of family-based care models and government policies designed to encourage family involvement in elderly support. The comparative analysis of these approaches reveals distinct strategies tailored to each country's socio-cultural and economic context, offering valuable insights into effective elderly care and support systems.

### 5.1 Publication Volume

Our analysis indicates a reduction in the volume of research publications on aging problem following the pandemic. This decline can be attributed to the diversion of research resources and attention towards pandemic-related fields such as public health and healthcare. The heightened societal focus on pandemic-related issues likely influenced academic journals and research institutions to prioritize pandemic-centric topics, leading to a decrease in the volume of research on aging. As a matter of fact, a significant portion of the post-pandemic research on aging problem that have been counted is intertwined with pandemic-related concerns.

## 5.2 Research Hot Topics

Research on aging problem in China and Japan reflects global trends, with a focus on mental health and risk management. As populations age, mental health challenges among the elderly, such as loneliness, depression, and cognitive decline, are increasingly prominent. These issues not only affect the quality of life of older adults but also contribute to other health problems. Consequently, mental health has become a key research area.

Moreover, elderly individuals are particularly vulnerable to various risks, including health problems, accidental injuries, and economic risks. Effective risk management strategies are crucial for improving their safety and stability. Increased societal awareness of the importance of mental health and risk management for the well-being of older adults and for sustainable societal development has driven researchers to concentrate on these areas.

## 5.3 Differences in Research Focus between China and Japan

Our literature review and analysis reveal that while research hot topics in China and Japan align with global trends, there are notable differences in research directions.

Japan, one of the most aging countries globally, faces challenges such as labor shortages and unsustainable social security systems. The Japanese government has implemented various measures, including policies to encourage elderly employment. For instance, a 2022 labor survey by Japan's Ministry of Internal Affairs and Communications reported employment rates of 50.8% for individuals aged 65-69 and 33.5% for those aged 70-74. Japan views maintaining the health and extending the working life of older adults as crucial for sustaining its social security system.

In response to overmedicalization issues arising from the 1973 Elderly Welfare Law, Japan established the Elderly Health Law in 1982 to separate medical and health services. This new system covered individuals over 70 and those over 65 who were bedridden, while the health system served citizens over 40. The establishment of intermediate institutions between hospitals and nursing homes provided medical supervision, physical training, and daily care for bedridden elderly individuals.

Furthermore, Japan has introduced policies to reduce childcare costs and expand benefits for families with multiple children. These policies include waiving university tuition fees for families with three or more children and increasing child allowances for single-parent families. Beginning in 2024, Japan will also extend non-repayable scholarships and tuition reductions to families with multiple children and middle-income groups in science, technology, and agriculture.

In contrast, China's research on aging problem highlights the role of family, reflecting traditional cultural values that emphasize familial support. Family plays a critical role in the care and support of the elderly, particularly in the context of increasing nuclear and empty-nest families. These demographic changes significantly impact elderly care and retirement models, prompting Chinese research to focus more on family dynamics.

China's government policies also emphasize family responsibilities for elderly care, encouraging family involvement in the care and support of older adults. Research often centers on family policies



and support systems, considering the implications of socio-economic changes such as urbanization and population mobility on family structures. This focus results in a distinctive emphasis on family-related research in China.

In summary, our findings validate **Hypothesis 2**, showing that Japan's research prominently features social policy, while China's research is distinctly focused on family dynamics.

#### **5.4 Aging Problem and Elderly Economy**

The study also identifies gaps in addressing pandemic-related challenges within the elderly economy, such as economic security for the elderly during the pandemic and the sustainability of elderly care services. The pandemic has exacerbated economic hardships for many older adults, affecting their ability to work or invest, and leading to shortages and quality declines in care services. Addressing these issues requires increased research and policy attention to ensure economic stability and sustainable care services for the elderly.

Mental health significantly impacts the quality of life and consumption patterns of older adults, influencing the market demand and development of the elderly economy. Enhancing mental health can spur the development of related services and products, such as psychological counseling and recreational activities. These services not only meet the needs of older adults but also create job opportunities and drive diverse economic development. Furthermore, good mental health can encourage greater participation in activities like travel and cultural events, further stimulating the elderly economy.

Risk management is crucial in the elderly economy to address risks such as illness, accidents, and economic instability. Comprehensive risk management measures, including pension insurance, healthcare coverage, and long-term care insurance, are essential for ensuring financial security and stability for the elderly. Improved insurance systems can reduce economic risks, promote the healthy development of the elderly economy, and enhance safety education to prevent accidents.

Japan's advanced social policies play a significant role in the development of the elderly economy, providing robust welfare and support systems that foster a thriving elderly economy. Japan's focus on enhancing elderly care facilities, providing diverse services, and encouraging elderly employment contributes to improved quality of life and economic growth.

In contrast, China's distinctive focus on family roles in the elderly economy aligns with traditional values, emphasizing family-based care and support. Research on family roles can inform policies and models that enhance elderly care and reduce societal burdens. Exploring innovative family care models, such as home-based and community-based care, and improving service quality can support sustainable elderly care and attract social investment, fostering the prosperity of the elderly economy.

#### **6. Discussion**

This study contributes to the understanding of aging issues from an elderly economic perspective by providing a comparative analysis of Japan and China, two prominent aging societies with distinct socio-economic and cultural contexts. The research highlights how Japan's focus on long-term care

insurance and employment policies contrasts with China's emphasis on family-based care models, thereby filling a significant gap in comparative studies of aging policies across different cultural contexts. It underscores the need for nuanced approaches that account for cultural and institutional differences in addressing the challenges of an aging population.

Future research could expand on this foundation by exploring the impact of emerging technologies, such as artificial intelligence and big data, on elderly care and the elderly economy. Investigating how these technologies can improve care quality and efficiency, and enhance older adults' quality of life, is essential for developing sustainable aging solutions. Additionally, a deeper analysis of the rural-urban disparities in aging, particularly in the context of China, could provide insights into tailored policy interventions. Comparative studies between other aging societies, coupled with a focus on innovative care models and family support systems, would further advance the field and contribute to more comprehensive and effective aging strategies globally.

## **6.1 Limitations**

This study primarily uses the SSCI database, which standardizes and organizes data, facilitating comparisons across countries and regions. However, this choice also presents limitations. The exclusion of local databases may reduce the comprehensiveness of the data, as different databases may cover varying ranges and focuses of research literature. Important local studies might be omitted, affecting the understanding of aging research in China and Japan.

Language differences also introduce potential biases. The SSCI database primarily includes English-language publications, potentially missing significant research published in local languages in China and Japan. This limitation may impact the completeness and representativeness of the data.

Additionally, the study relies on literature analysis, which may not fully capture the complexities of real-world aging problem. Factors such as social, economic, and cultural influences may not be adequately reflected through literature alone.

Finally, the time frame and sample selection may limit the study's coverage of relevant research areas and perspectives, potentially overlooking emerging or niche research topics.

## **6.2 Recommendations and Future Directions**

Future research should explore the application of emerging technologies in aging, such as artificial intelligence, big data, and the Internet of Things, to improve elderly quality of life, enhance care services, and strengthen health management. Investigating how to maximize the potential of older adults, promote their reemployment and social participation, and improve their self-worth and happiness should be prioritized.

Further studies should address the spiritual and cultural needs of the elderly, exploring ways to enrich their mental and cultural lives and offer more cultural and recreational activities. This can drive the development of the elderly cultural and entertainment industry and invigorate the elderly economy.

Research on family roles in aging should continue, focusing on strengthening family support systems and addressing the impacts of changing family structures. Comparative studies with other countries can provide insights and guide policy development tailored to specific national contexts.

In China, international comparisons and analysis of urban-rural aging disparities should be expanded, including the development of suitable elderly care models and improving service quality and efficiency. Leveraging emerging technologies, fostering elderly potential, and addressing mental health needs are essential for driving the growth of the elderly economy and enhancing social investment.

By addressing these areas, research can contribute to the sustainable development of the elderly economy, attract social capital, and promote the prosperity of the elderly care industry.

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None.

### **Author Contributions**

Sitong Zhang: Responsible for multiple crucial tasks. In terms of writing, this participant crafted the original draft with great care and precision, ensuring that the language was clear and engaging. Also played a central role in conceptualization, formulating the overarching ideas and framework of the project. Additionally, this participant discovered the appropriate methodology, carefully devising the research approach and procedures. Moreover, he took charge of data curation, meticulously organizing and managing the data. Finally, he created visualizations that effectively presented the findings in an intuitive and accessible way.

Junfeng Lu: This participant also made significant contributions. Junfeng Lu was involved in conceptualization, providing valuable insights and guidance in shaping the project's direction. He took on the important task of review and editing, ensuring the quality and coherence of the work. As a supervisor, Lu offered expert advice and oversight throughout the project. Furthermore, he was instrumental in funding acquisition, securing the necessary financial resources to support the research.

### **Availability of Data and Materials**

All data and materials used in this study are publicly available and can be accessed from web of science.

### **Conflicts of Interest**

The authors declare that they have no conflicts of interest to report regarding the present study.

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