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| RESEARCH ARTICLE

Healthcare System Sustainability for an Aging Population in the United States: Economic Challenges and Policy Pathways

Mobasher Hasan
Department of Business, San Francisco Bay University, Fremont, CA 94539, USA
Corresponding Author: Mobasher Hasan, **E-mail**: mobasherhasan000@gmail.com

| ABSTRACT

Population aging is one of the major long-term economic challenges facing the U.S. healthcare system. As life expectancy increases and the older-adult population expands, demand is rising for chronic disease management, hospital care, prescription medication, rehabilitation, home care, long-term services and supports, and caregiver assistance. Existing studies have examined aging-related healthcare costs, long-term care financing, medical expenditure burden, workforce shortages, and family caregiving, but these issues are often analyzed separately rather than as one integrated economic sustainability problem. This paper examines the economic sustainability of U.S. healthcare systems serving an aging population by focusing on three major pressures: increasing healthcare demand, long-term care financing strain, and healthcare delivery-capacity constraints. Drawing on peer-reviewed studies, government reports, and policy analyses published before 2025, the paper identifies a gap in the literature: limited integration of Medicare and Medicaid financing, workforce capacity, chronic disease burden, care fragmentation, unpaid caregiving, preventive care, and home- and community-based services into a single sustainability framework. The paper proposes a conceptual framework that links cost control, access, workforce development, technology-enabled care coordination, long-term care reform and caregiver support. The findings suggest that economic sustainability cannot be achieved through increased healthcare spending alone. Instead, the U.S. healthcare system must shift from a reactive, hospital-centered model toward a preventive, coordinated, technology-supported, home and community-based model that improves affordability, access, quality, and aging-care outcomes.

| KEYWORDS

Aging population, Healthcare sustainability, Medicare, Medicaid, Long-term care, Economic burden, United States, Elderly care

| ARTICLE INFORMATION

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1. Introduction

The United States is undergoing a major demographic transition as life expectancy increases and the baby boomer generation reaches older adulthood [8]–[10]. This transition creates both healthcare and economic sustainability challenges. Older adults typically require more frequent medical services, prescription medications, chronic disease management, rehabilitation, home care and long-term services and supports than younger populations [1], [3], [20]–[22]. As a result, population aging places growing pressure on the U.S. healthcare system from both the demand side and the financing side [4]–[7].

The aging population presents a complex challenge because healthcare needs do not increase in a simple or linear manner. Many older adults experience multiple chronic conditions, functional limitations, cognitive impairment, disability, or frailty [1], [20]–[22]. These conditions often require coordination among physicians, hospitals, pharmacies, rehabilitation facilities, nursing homes, home health agencies, community-based organizations, and family caregivers [1], [15], [16]. However, the U.S. healthcare system remains costly, fragmented and difficult to navigate. This fragmentation can increase expenditures, reduce care quality, delay treatment and create additional burden for older adults and their families [1], [15].

Recent research suggests that population aging contributes to healthcare spending growth, but aging alone does not fully explain the economic burden [2], [4]–[7]. Healthcare costs are also shaped by chronic disease prevalence, service utilization patterns, workforce shortages, insurance design, long-term care financing, care fragmentation, prescription drug use and household out-of-pocket burden [2], [3], [11], [18]–[22]. Therefore, the sustainability challenge is not only demographic; it is also financial, organizational, and structural.

This paper examines the economic sustainability of healthcare systems serving older adults in the United States. It addresses three main questions: First, what economic pressures does population aging place on the U.S. healthcare system? Second, what research and policy gaps remain in the current literature? Third, what framework can help improve the sustainability of healthcare delivery and financing for older adults? The paper argues that the United States needs an integrated sustainability approach that combines prevention, long-term care reform, workforce development, technology-enabled coordination, home and community-based care and caregiver support.

2. Literature Review

Recent literature identifies several economic, demographic and service-delivery challenges associated with aging-population healthcare sustainability. Jones and Dolsten [1] argue that the U.S. healthcare system faces growing pressure from workforce shortages, capacity constraints, care fragmentation and high costs as population aging increases demand for services. Their work emphasizes that the healthcare needs of older adults are often complex and multidimensional, requiring more coordinated and efficient care delivery than the current system consistently provides.

Chen et al. [2] examine the medical expense burden among older adults and identify several contributing factors, including insurance design, chronic disease, family structure, personal income and health service delivery. According to their review, there is an effect of aging on healthcare costs, but this relationship between aging and cost growth is affected by numerous other factors. They also note that there are some limitations in current studies, many of which look at individual medical costs rather than at the total medical expenditure at a macro level.

Johnson and Dey's 2022 HHS ASPE report [3] focuses on long-term services and supports for older adults. It indicates that there is a lack of awareness among many Americans of the probability that they will have a need for long-term care and of the cost of that care. More than half of all Americans over the age of 65 are projected to experience a disability that will require long-term services and supports. It also illustrates how families bear a significant burden of these costs themselves, with unpaid family caregivers also contributing economic value often not accounted for in health care financing.

Taken together, these studies indicate that population aging affects the U.S. healthcare system through several connected pathways, including chronic disease burden, hospitalization, prescription medication use, long-term services and supports, Medicare and Medicaid spending pressure, household out-of-pocket burden, workforce shortages, and unpaid family caregiving [1]–[3], [11]–[14], [18]–[22]. However, these issues are often examined separately rather than as parts of one integrated economic sustainability challenge. As a result, the relationship among healthcare financing, care delivery, workforce capacity, and family-directed care remains insufficiently synthesized in the current literature.

Recent literature shows that aging-related healthcare sustainability is both a demographic and a financing, delivery, and workforce challenge. National health expenditure projections and long-term budget analyses indicate that healthcare spending will continue to rise, with population aging and healthcare cost growth contributing to pressure on Medicare, Medicaid and federal spending [4]–[7]. Demographic reports also show that the U.S. older-adult population is growing rapidly, particularly among adults aged 85 and older [8]–[10]. At the household level, older adults and Medicare households face substantial out-of-pocket healthcare burdens compared with younger households [11]. Long-term services and supports remain a major financing gap because Medicare generally does not cover most ongoing custodial care, while Medicaid often becomes the primary payer only after individuals have depleted personal resources [3], [17]. In addition, unpaid caregivers provide substantial economic value, but their contribution is often excluded from formal healthcare sustainability models [12]–[14]. These findings demonstrate the need for an integrated framework that connects public financing, household burden, care delivery, workforce capacity, long-term care financing and caregiver support.

3. Methodology

The research methodology adopted in this study is a narrative literature review and conceptual synthesis to examine the economic sustainability of healthcare systems serving the older population in the United States. The review was based on peer-reviewed journal articles, government reports and policy briefs published before 2025. Sources were identified that included

health economics, public health, health services research, gerontology, Medicare and Medicaid policy, workforce planning, chronic disease burden, home and community-based care and family caregiving literature.

The inclusion criteria included articles that were published before 2025, that were directly relevant to population aging and healthcare sustainability, that were about the United States or relevant findings to the U.S. healthcare financing and delivery system, that focused on the healthcare costs and/or Medicare or Medicaid expenditures, on financing for long-term care, on the capacity of the healthcare workforce, on chronic disease burden as a result of aging, on unpaid caregiving, on care fragmentation, and on models of preventive and home-based care. Studies and reports that were limited to non-healthcare aspects of retirement economics, were not relevant to older adults, or did not consider implications for the economic system were excluded.

The literature that was selected was examined thematically. First, key cost drivers were identified, such as chronic disease, hospital use, prescription drug use, long-term services and supports and end-of-life care. Second, pressures on finances were explored via Medicare, Medicaid, out-of-pocket payments, private insurance, and family caregiving costs. Third, capacity constraints were examined, such as lack of workforce, care fragmentation, and access restrictions. Lastly, sustainability pathways were developed and combined, which include preventative care, technology-based care coordination, home/community-based services, workforce development and caregiver support. The paper builds on this synthesis to propose a conceptual model that connects the demand for health care with the funding strain, the capacity to provide health care services, and the interventions needed to make the system sustainable.

4. Research Gap

The primary research gap is the lack of an integrated economic sustainability framework for healthcare systems serving an aging population in the United States. Important components of the problem have already been examined in the literature, but they are often treated separately. Research on aging and care needs highlights the growing burden of chronic disease, hospitalization, prescription medication use, functional decline, and complex care among older adults [1], [20]–[22]. Medicare and Medicaid policy research focuses on public expenditure growth, coverage structures, and long-term fiscal pressure [4]–[7]. Literature on long-term services and supports identifies the high likelihood of future care needs, limited Medicare coverage for ongoing custodial care, reliance on Medicaid and high out-of-pocket exposure for households [3], [17]. Workforce studies highlight shortages of physicians, nurses, geriatric specialists, direct care workers, and home health aides [1], [18], [19]. Caregiving research shows that unpaid family caregivers contribute substantial economic value but often receive inadequate financial, workplace, and clinical support [12]–[14].

A major gap in the current literature is the limited integration of these domains into one system-level sustainability model. A narrow focus on healthcare spending alone does not fully address fragmented care delivery, insufficient prevention, workforce capacity constraints, long-term care financing gaps and unpaid family caregiving [1], [3], [12]–[17]. Similarly, a narrow focus on long-term care financing can overlook the upstream role of chronic disease prevention, medication management, primary care access, technology-assisted monitoring, and home- and community-based care [15]–[22]. Thus, there is a need for a literature-based framework that links demand growth, financing burden, delivery capacity and sustainability interventions in a single model.

This paper addresses that gap by proposing a conceptual framework that considers four interacting dimensions of economic sustainability: healthcare demand, long-term care financing, workforce and delivery capacity, and family-caregiver burden. The framework argues that sustainability cannot be achieved through increased healthcare spending alone. Instead, the system must transition from a reactive, hospital-centered model toward a preventive, coordinated, technology-enabled, home and community-based model. This approach connects financing reform, care coordination, workforce development, chronic disease prevention, and caregiver support as parts of a single sustainability strategy.

5. Proposed Conceptual Framework

This study proposes an integrated conceptual framework for evaluating the economic sustainability of aging-population healthcare systems in the United States. The framework links population aging to three major system-level pressures: increasing healthcare demand, long-term care financing pressure, and workforce and delivery-capacity constraints. These pressures interact with care fragmentation and contribute to higher healthcare expenditures, delayed access, duplicated services, preventable hospital utilization and increased financial burden on public programs, households and unpaid caregivers [1], [3], [6], [7], [11].

The framework identifies three major sustainability pathways. First, preventive care and early intervention can reduce avoidable complications related to chronic disease, medication mismanagement, falls, disability progression and preventable hospitalization [20]–[22]. Second, home and community-based care supported by technology can improve access, care coordination and continuity while reducing unnecessary institutional care [16], [17]. Third, caregiver support and long-term services and supports reform can reduce the hidden economic burden placed on families and improve the sustainability of long-term care financing [3], [12]–[14].

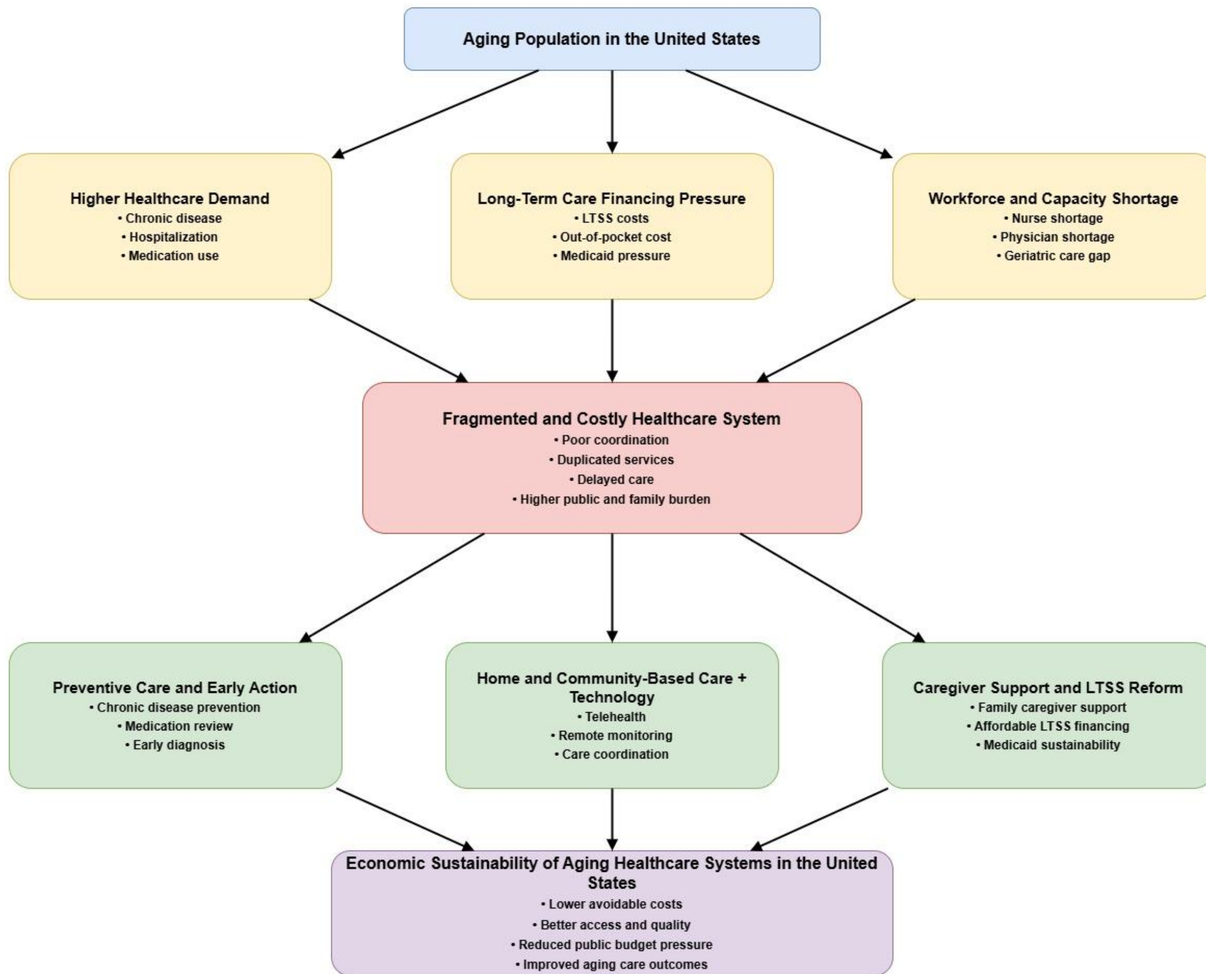

Figure 1. Proposed conceptual framework for economic sustainability of aging-population healthcare systems in the United States.

As shown in Figure 1, population aging increases the demand for chronic disease management, hospital services, prescription medication, rehabilitation, home care, and long-term support. At the same time, aging increases financial pressure on Medicare, Medicaid, households and unpaid caregivers [3], [6], [7], [11]. Workforce shortages and care fragmentation intensify these pressures by increasing delays, duplication of services, avoidable hospitalizations, and inefficient coordination across providers [1], [15], [18], [19]. Therefore, economic sustainability cannot be achieved only through additional healthcare spending. It also requires a shift toward preventive, coordinated, technology-enabled, home and community-based care, supported by workforce development and caregiver-centered policy reform.

Preventive care is a central component of the proposed framework. Older adults are more likely to experience multiple chronic conditions, functional limitations and complex medication needs, which increase service utilization and healthcare spending [20]–[22]. Early diagnosis, chronic disease management, vaccination, fall prevention, medication review, nutritional support, and regular primary care follow-up can reduce avoidable complications and delay the need for costly acute or institutional care.

Financing reform is also necessary because Medicare, Medicaid, private insurance and out-of-pocket payments do not fully align with the long-term needs of older adults. A major financing gap exists in long-term services and supports because Medicare generally does not cover most ongoing custodial care, while Medicaid often becomes the primary payer only after individuals have depleted personal resources [3], [17]. This creates financial vulnerability for households and increases pressure on public programs.

Care coordination represents another important sustainability pathway. Older adults frequently move among hospitals, primary care practices, specialists, pharmacies, rehabilitation facilities, nursing homes, home health agencies and family care settings. Poor coordination across these settings can result in repeated testing, medication errors, delayed treatment, avoidable emergency department use and preventable hospitalization [15]. Integrated health information systems, care navigation, interoperable records and coordinated primary care can reduce fragmentation and improve efficiency.

Finally, workforce and caregiver support are essential for sustainability. The growing older-adult population increases the need for physicians, nurses, geriatric specialists, direct care workers, home health aides, pharmacists, and care coordinators [1], [18], [19]. At the same time, unpaid family caregivers provide substantial economic value, but they often receive limited training, financial support, workplace flexibility or formal recognition within the healthcare system [12]–[14]. A sustainable aging-healthcare system must therefore treat caregiving capacity as part of the broader healthcare infrastructure.

6. Thematic Findings from the Literature

The reviewed literature indicates that the economic sustainability of healthcare systems for an aging population depends on multiple interacting factors rather than age alone. The major themes include increasing demand for complex care, rising public and household healthcare expenditures, long-term care financing gaps, workforce shortages, fragmented care delivery, unpaid caregiving burden and the potential role of preventive, coordinated and home-based care models [1]–[23].

6.1 Finding A: Population aging increases healthcare demand and complexity

Population aging increases both the volume and complexity of healthcare demand. Older adults are more likely to require chronic disease management, prescription medication, hospital care, rehabilitation, home health services, and long-term support [1], [20]–[22]. The growth of the older-adult population, especially adults aged 85 and older, creates increasing pressure on healthcare delivery systems, Medicare, Medicaid, and long-term care infrastructure [8]–[10]. Jones and Dolsten [1] argue that the U.S. healthcare system faces simultaneous pressure from rising demand, workforce shortages, capacity constraints, and fragmented care delivery. Federal budget projections also indicate that population aging and healthcare cost growth will continue to place pressure on Medicare, Medicaid and overall federal spending [6], [7].

6.2 Finding B: Medical expense burden is influenced by multiple factors, not aging alone

Although aging contributes to higher healthcare use, the medical expense burden among older adults is shaped by multiple factors, including chronic disease burden, insurance design, income, family structure, health service access, medication costs, and care delivery arrangements [2], [11], [20]–[22]. Chen et al. [2] emphasize that the relationship between aging and healthcare expenditure is not explained by age alone. Instead, medical spending among older adults reflects the interaction of health status, socioeconomic conditions, insurance coverage, and service delivery. This means that policy responses focused only on increasing healthcare spending are insufficient. Sustainability requires strategies that address chronic disease prevention, payment design, medication management, care coordination and affordability.

6.3 Finding C: Long-term services and supports create a major financing gap

Long-term services and supports represent one of the most important financing gaps in the U.S. aging-healthcare system. Johnson and Dey [3] report that about 56% of Americans who reach age 65 are projected to experience a disability serious enough to require long-term services and supports. They also estimate that the average expected LTSS cost for individuals turning 65 is approximately $120,900 [3]. Many adults incorrectly assume that Medicare will cover most long-term care needs, but Medicare generally does not cover ongoing custodial care [3]. As a result, households often face large out-of-pocket expenses, and Medicaid becomes a major payer after individuals exhaust personal resources [3], [17]. This financing structure creates pressure on both families and public budgets.

6.4 Finding D: Workforce shortages and system fragmentation increase costs

Workforce shortages and fragmented care delivery reduce the efficiency and sustainability of aging-population healthcare systems. Older adults require support from multiple professionals, including physicians, nurses, geriatric specialists, pharmacists, home health aides, direct care workers, rehabilitation providers, and care coordinators [1], [18], [19]. Jones and Dolsten [1] report

projected shortages of approximately 1.2 million registered nurses and nearly 122,000 physicians by 2030. These shortages can increase wait times, reduce access to preventive care, increase provider burnout and contribute to higher downstream costs. Fragmented care delivery further increases costs through duplicated services, poor information exchange, medication errors, and preventable hospital use [15].

6.5 Finding E: Family caregivers provide major economic value but receive limited support

Unpaid family caregivers play a critical role in sustaining care for older adults, yet their contribution is often excluded from formal healthcare financing models. AARP estimates that unpaid family caregiving has substantial national economic value, while ASPE analysis shows that unpaid care reduces the need for formal long-term services and supports [12], [14]. However, caregivers often experience financial strain, employment disruption, physical stress, emotional burden, and limited access to training or respite services [12]–[14]. If caregiver capacity weakens, demand for publicly financed or privately paid long-term care may increase. Therefore, caregiver support should be treated as an economic sustainability strategy, not only as a social support issue.

6.6 Finding F: Preventive, home-based, and coordinated care can improve sustainability

Preventive, coordinated, and home-based care models can improve sustainability by reducing avoidable high-cost service use. Chronic disease prevention, medication review, fall prevention, vaccination, early diagnosis, and regular primary care can reduce complications that lead to emergency department visits, hospitalization, disability progression, and institutional care [20]–[22]. Home and community-based services can also support older adults in less costly and more preferred care settings, provided that adequate quality oversight, workforce support, and financing mechanisms are in place [16], [17]. Technology-enabled care, including telehealth, remote monitoring, digital records, and predictive analytics, can strengthen care coordination, but these tools require attention to access, interoperability, privacy, and usability for older adults.

Overall, the literature shows that aging-population healthcare sustainability is a system-level issue. Older adults tend to use more healthcare services, but expenditure growth is also driven by chronic disease burden, insurance design, workforce capacity, long-term care financing gaps, unpaid caregiving, care fragmentation, and the organization of healthcare delivery [1]–[23]. These interacting factors justify the need for an integrated framework that connects demand, financing, delivery capacity, and sustainability interventions.

7. Discussion

The findings suggest that the U.S. healthcare system faces a structural sustainability challenge as the population ages. A reactive model that relies heavily on hospital-based treatment after illness progression is economically inefficient because it allows preventable complications, functional decline, and avoidable acute care use to increase costs. A more sustainable model would emphasize earlier intervention, chronic disease management, coordinated primary care, medication safety, fall prevention, caregiver support, and home and community-based services [1], [3], [16], [17], [20]–[22].

The financing challenge is particularly serious in long-term services and supports. Many older adults will require assistance with daily activities, but the current financing system leaves large gaps between Medicare coverage, Medicaid eligibility, private insurance, and household resources [3], [17]. Because Medicare does not generally finance ongoing custodial care, individuals and families often bear substantial costs until Medicaid eligibility is reached [3]. This creates both household-level financial insecurity and public-sector budget pressure.

The findings also show that workforce capacity is central to economic sustainability. Even if financing is expanded, the system cannot deliver efficient care without adequate physicians, nurses, geriatric specialists, direct care workers, home health aides, and care coordinators [1], [18], [19]. Workforce shortages may increase delays, reduce access to primary and preventive care, increase provider burnout, and shift patients toward more expensive emergency or hospital-based care.

Technology can support sustainability, but it should not be treated as a substitute for system reform. Electronic health records, telehealth, remote patient monitoring, artificial intelligence-based risk prediction, and digital care coordination tools may reduce fragmentation and support earlier intervention [15], [16]. However, these tools require interoperability, privacy protection, digital access for older adults, reimbursement alignment, and integration into clinical workflows. Without these conditions, technology may add complexity rather than reduce costs.

Unpaid family caregiving is another central but underrecognized component of sustainability. Family caregivers reduce demand for formal paid services, but they often absorb financial, emotional, and employment-related burdens [12]–[14]. Ignoring caregivers in economic models understates the true cost of aging-related care. Policies that provide caregiver training, respite

care, workplace flexibility, tax support, and inclusion in care planning may help preserve caregiving capacity and reduce pressure on formal care systems.

Therefore, the central implication of this study is that healthcare sustainability for an aging population cannot be achieved through spending increases alone. It requires integrated reform across financing, delivery, workforce planning, prevention, technology, and caregiver support. A sustainable system must reduce avoidable high-cost care while improving access, quality, coordination, and affordability for older adults.

8. Policy Recommendations

8.1 Expand preventive and chronic disease management programs

The United States should strengthen preventive care and chronic disease management programs for older adults. Priority areas include hypertension control, diabetes management, cardiovascular disease prevention, medication review, vaccination, fall prevention, nutrition counseling, mental health screening, and early diagnosis of functional decline. These interventions can reduce avoidable complications, hospitalizations, emergency department use, and long-term disability progression [20]–[22]. Medicare and other payers should strengthen incentives for preventive services, coordinated primary care, and evidence-based chronic disease management.

8.2 Strengthen home and community-based services

Policy should expand access to home and community-based services as an alternative to unnecessary institutional care. Many older adults prefer to remain in their homes and communities, and well-designed home-based services may reduce avoidable nursing home placement and hospital readmission [16], [17]. Medicaid HCBS programs should be strengthened through improved funding stability, reduced waiting lists, workforce support, quality monitoring, and integration with primary care and social services.

8.3 Reform long-term services and supports financing

The United States needs a more sustainable financing approach for long-term services and supports. Current arrangements leave many households exposed to high out-of-pocket costs because Medicare does not generally cover ongoing custodial care, while Medicaid often becomes available only after significant asset depletion [3], [17]. Policymakers should consider financing models that combine public protection, private savings incentives, affordable insurance options, and stronger support for home-based care. The goal should be to reduce catastrophic household burden while limiting unsustainable pressure on Medicaid.

8.4 Invest in geriatric workforce development

A sustainable aging-healthcare system requires targeted investment in the healthcare workforce. Federal and state policy should expand training, recruitment, retention, and reimbursement support for geriatricians, nurses, home health aides, direct care workers, pharmacists, rehabilitation professionals, and care coordinators [1], [18], [19]. Workforce policy should also address wages, working conditions, career pathways, and burnout prevention, particularly in long-term care and home-based care settings.

8.5 Support unpaid family caregivers

Unpaid caregivers should be formally recognized as part of the aging-care infrastructure. Policies should provide caregiver training, respite services, tax credits, paid family leave, workplace flexibility, counseling, and inclusion in care planning [12]–[14]. Supporting caregivers can reduce stress, preserve employment, improve care quality, and delay or reduce the need for costly formal long-term services and supports.

8.6 Improve digital health infrastructure and care coordination

The healthcare system should invest in interoperable digital health infrastructure to reduce fragmentation. Shared records, telehealth, remote monitoring, medication management tools, and care coordination platforms can improve continuity across hospitals, primary care, specialists, pharmacies, rehabilitation facilities, home health agencies, and caregivers [15], [16]. However, digital health strategies must address privacy, cybersecurity, reimbursement, usability, broadband access, and digital literacy among older adults.

8.7 Align payment incentives with sustainability goals

Payment models should reward prevention, care coordination, home-based care, caregiver engagement, and reduced avoidable hospitalization. Fee-for-service payment can encourage fragmented service delivery, whereas value-based payment models may

support coordinated and preventive care when properly designed. Medicare, Medicaid and private payers should align incentives around improved outcomes, reduced avoidable utilization, and better management of complex chronic conditions [4]–[7].

9. Conclusion

Population aging creates a long-term economic sustainability challenge for the U.S. healthcare system. The reviewed literature shows that this challenge is not caused by demographic change alone. It reflects the interaction of rising healthcare demand, chronic disease burden, Medicare and Medicaid financing pressure, long-term services and supports gaps, workforce shortages, fragmented care delivery, household out-of-pocket burden, and unpaid family caregiving [1]–[23].

This paper contributes to the literature by proposing an integrated conceptual framework that connects these factors as one system-level sustainability problem. The framework suggests that sustainability requires more than increased healthcare spending. It requires a shift from reactive, hospital-centered care toward preventive, coordinated, technology-supported, home and community-based care. It also requires long-term care financing reform, workforce development, and formal support for unpaid caregivers.

The policy implication is clear: the United States must reduce avoidable high-cost care while improving access, quality, coordination, and affordability for older adults. Without reform, aging-related healthcare spending and long-term care burden will continue to place pressure on public programs, households, and healthcare providers. With coordinated reform, the healthcare system can better balance economic sustainability with the health and dignity of older adults.

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