

Revolutionizing Healthcare: Multi-Agent Systems in Palliative Care for Chronic Illness

Simoff Michael*

Department of Radiotherapy, Henry Ford Health System, Detroit, United States

Abstract

Palliative care seeks to alleviate caregivers from the responsibility of providing physical, psychological, and spiritual support. The pervasive challenge of insufficient healthcare infrastructure and resources for managing an aging population necessitates a shift in system management. The increasing burden on the healthcare system due to the aging population demands a transformative solution. The Multi-Agent System (MAS) emerges as a potential remedy for this issue. Programmers have devised this computerized networking system to collect relevant patient health data, facilitating collaboration with other agents to determine optimal disease management strategies. An enhanced synergetic mesh can empower a multidisciplinary healthcare team to offer precise and up-to-date information, enabling them to devise more informed plans of action for their patients. MASs hold the potential to deliver high-quality care, meeting the expectations of a growing chronic illness population in the US and signaling a noteworthy paradigm shift. This paper will explore the aging population and its contributing variables, the challenges in palliative care, the necessity for a multi-agent system, and clinical issues, drawing examples from healthcare systems in United States.

Keywords: Palliative care; Multi-agent systems; Chronic illness; Healthcare paradigm shift; Aging; Healthcare

Introduction

Palliative care, established in the 1960s, aims to provide quality treatment and comfort to patients with serious and terminal diagnoses. This interdisciplinary approach addresses physical, psychological, and spiritual aspects of care, alleviating the burden on family members or friends [1]. It complements medical care for conditions like cancer, HIV, and kidney disease, involving a collaborative team of doctors, nurses, mental health specialists, and clergy. Recognized for its value in improving quality of life and symptom control, expanding palliative care for chronic illnesses could address the growing epidemic in the US. Despite the benefits, the expansion of palliative care poses challenges such as increased costs and a demand for more healthcare workers [2]. The Multi-Agent System (MAS), utilizing various agents to autonomously monitor patient health and make decisions, emerges as a potential solution. This computerized networking system, by efficiently managing resources, can enhance the effectiveness of extensive palliative care [3]. When planning to enhance and expand palliative care, factors like an aging population, the need for a paradigm shift in treating chronic illnesses through palliative care with MAS support, and holistic care must be considered [4-6]. The prevalence of chronic diseases has surged in the US, affecting around 60% of Americans. Contributing factors include increased lifespan, unhealthy lifestyle choices, and genetic predispositions. The healthcare system, strained by the reactive approach to chronic illnesses, necessitates long-term treatments like palliative care. While palliative care enhances medical care and quality of life during end-of-life procedures, the rising prevalence of chronic diseases requires a more proactive medical system [7-10]. The MAS, with its ability to predict actions for patient health and coordinate in real-time, can augment existing resources and make palliative care more efficient in managing chronic diseases. The MAS's sociability, proactiveness, and responsiveness make it a valuable tool in addressing complex healthcare challenges and enhancing decision-making processes. Its interoperability can overcome coordination issues within the healthcare system, providing a comprehensive solution to patient issues. As the US population ages, MASs offer a practical solution for various healthcare sectors, including palliative care, by coordinating

stakeholders and improving information exchange.

Conclusion

The aging US population poses increasing challenges for the healthcare system. Embracing palliative care services facilitated by Multi-Agent Systems (MASs) could potentially address the needs of the growing population affected by chronic illnesses, providing a standard of high-quality healthcare. The adoption of MASs might represent a pivotal paradigm shift in healthcare, especially with the rising prevalence of chronic diseases. Despite ongoing efforts to prevent chronic diseases, there is a pressing need to enhance treatment for those currently dealing with these conditions. Supported by positive findings from various studies, further research and potential implementation of MASs as an integral healthcare system could significantly enhance the nation's overall wellness.

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Conflict of Interest

Author declares no conflict of interest.

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*Corresponding author: Simoff Michael, Department of Radiotherapy, Henry Ford Health System, Detroit, United States, E-mail: Simoffm@hfhs.org

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