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ORIGINAL CONTRIBUTION

Development of Public Administration in Preventive Health Care: Innovative Vectors and World Experience

Iryna Shumilova[1], Yuliia Chaliuk[2], Olena Tonne[3], Oleksandr Akimov[4], Yuliia Kobylina[5]*

[1]National University of Life and Environmental Sciences of Ukraine, Kyiv, Ukraine

[2]Kyiv National Economic University named after Vadym Hetman, Kyiv, Ukraine

[3]Municipal Institution "Zaporizhzhia Regional Institute of Continuing Pedagogical Education" of Zaporizhzhia Regional Council, Zaporizhzhia, Ukraine

[4]Interregional Academy of Personnel Management, Kyiv, Ukraine/Scientific and Methodological Center for Personnel Center for Personnel Policy of the Ministry of Defence of Ukraine, Kyiv, Ukraine

[5]V. I. Vernadsky Taurida National University, Kyiv, Ukraine

Abstract— Preventive healthcare systems on a global scale face intensifying pressure caused by demographic aging, ever-increasing prevalence of chronic diseases, post-pandemic governance challenges, and deepening social inequalities. The current study aims to conceptualize innovative vectors for public administration development in preventive healthcare and identify organizational mechanisms capable of improving the effectiveness, adaptability, and sustainability of preventive health systems. Integrative review methodology is applied, in combination with elements of grounded theory and interdisciplinary analysis. The source sample was formed from the elements found in ScienceDirect, MDPI, Wiley, PubMed, and ResearchGate databases. After the multistage screening and coding process, 64 sources were selected and included in the final sample. The study combines approaches from public administration, organizational management, health governance, and innovation studies. Findings demonstrate that preventive healthcare increasingly requires a transition from reactive and treatment-oriented models toward predictive, preventive, and value-based governance systems. The study identifies value co-creation, Agile organizational approaches, digital health technologies, AI-supported preventive analytics, and public-private partnerships as key innovative vectors of preventive healthcare governance. Particular attention is paid to the metagovernance and stakeholder coordination role in the tendencies of strengthening institutional resilience and improving long-term population health outcomes. The originality of the study lies in designing an integrated conceptual framework that combines the value co-creation paradigm, Agile public management, and preventive healthcare governance into a unified organizational model for public administration. The paper contributes to preventive healthcare governance; theoretical advancement, and provides practical recommendations for policymakers and public management institutions seeking to modernize preventive healthcare systems under uncertainty conditions and complex societal challenges.

Index Terms— Health care, Preventive healthcare, Public health, Public administration, Innovations, Management of organization, European experience

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*Corresponding Author: scientistua@ukr.net

Introduction

Preventive healthcare systems around the world are under unprecedented strain due to demographic aging, the rising prevalence of chronic diseases, rapid technological innovation, and the long-term implications of the COVID-19 pandemic. According to international public health assessments, healthcare systems are confronted with increasingly complex challenges, which cannot be adequately addressed by traditional treatment-oriented approaches. ”The growing healthcare costs, health disparities, workforce shortages, and burden of non-communicable diseases indicate the need for a strategic shift from reactive healthcare delivery to models of prevention and population-focused governance (De la Torre et al., 2025). At the same time, modern public administration has to operate in an environment characterized by uncertainty, complexity, and rapid societal change. Thus, public institutions responsible for preventive healthcare should be able to guarantee the accessibility of the services, coordinate the multiple stakeholders, react to emerging health threats, and implement technological innovations in an effective manner. Traditional mechanisms of hierarchical governance tend to have limited capacity to deal with these multi-dimensional challenges, especially in contexts where health outcomes depend on collaboration between government agencies, health care providers, private organizations, community actors, and citizens (Ewald et al., 2023).

More recent scholarship has begun to emphasize the significance of governance innovation within the realm of healthcare management (Raingruber, 2017; RHIH, 2024; Richards et al., 2022; Rubin, 2017). The most influential developments include value co-creation approaches, agile governance principles, digital health technologies, artificial intelligence, and collaborative public-private arrangements. Value co-creation perspectives suggest that healthcare outcomes are created through active interaction of multiple stakeholders rather than unilateral governmental action (Jadotte et al., 2019). Agile governance approaches emphasize the ability of organizations to adapt, learn institutionally, and respond quickly to changing environments. At the same time, digital technologies, telemedicine platforms, predictive analytics, and AI-supported decision systems offer new opportunities for preventive interventions, early detection of diseases, and personalized healthcare management.

In addition to managerial and institutional transformation, the introduction of New Public Management (NPM) in the public services sector has led to an axiological revolution. One of the main tenets of the traditional, statist paradigm of public services was ensuring fair and equal access to them. According to Weber et al. (2021), NPM encourages tailoring services to individual clients’ needs and allowing them to choose a service provider from a competitive market. Building an effective preventive health motivation campaign and fostering a culture of value co-creation are two of the most difficult tasks facing organizational management in health care public administration bodies. These tasks call for extensive research and development efforts in the management of preventive healthcare public administration systems (Pupion, 2017).

Meanwhile, public administration in preventive healthcare faces enormous and diverse challenges that impede the proactive reduction of disease burden. These obstacles include chronic underfunding and fragmented institutions, as well as political, social, and technological constraints. Furthermore, a lack of cooperation among public health organizations, primary care providers, and hospitals leads to service gaps. Political interests, ideologies, and short-term electoral cycles frequently impact public health decisions at the expense of long-term health policies. Many public health projects suffer from a “non-implementation syndrome”, in which policies fail owing to poor design, a lack of leadership support, and the absence of evidence-based decision-making (Yang, 2025). This unstable and complex landscape requires adaptive strategies, approaches, and models in the public management of preventive healthcare. Preventive healthcare now operates in a BANI (Brittle, Anxious, Nonlinear, and Incomprehensible) environment, which demands greater agility and a multidimensional perspective. While scholarly attention to these developments grows, the existing literature remains rather fragmented. A broad range of studies examine healthcare innovation, digital transformation, preventive medicine, or public governance separately. As a result, insufficient attention is given to the foundational and critical issue - understanding how organizational management mechanisms within public administration can integrate value co-creation, Agile governance, digital innovation, and stakeholder coordination into a coherent preventive healthcare governance framework. This gap is especially important because the effectiveness of preventive healthcare systems is increasingly dependent not only on technological progress but also on the ability of public institutions to orchestrate collaborative and adaptive governance processes . Additionally, the COVID-19 pandemic brought to light pre-existing socioeconomic and health inequalities that disproportionately affect vulnerable groups due to upstream determinants (Aburto et al., 2021; Chen et al., 2021).

From this standpoint, preventive healthcare should be considered as a complex governance challenge that necessitates institutional coordination, organizational adaptability, and strategic innovation. The modernization of the preventive healthcare administration landscape necessitates governance models capable of integrating disparate actors, resources, technology, and policy instruments into a cohesive framework with the goal of improving long-term population health outcomes.

The purpose of this study is, therefore, to determine the features of the organizational and governance processes which promote: better preventive capability, greater institutional flexibility and healthcare sustainability; and to look at new areas for the development of public administration in preventive healthcare. This will be achieved through an integrated multi-disciplinary review of literature in the fields of innovation studies, organizational management, public administration, and healthcare governance. In particular, the role of value co-creation, agile governance, metagovernance, digital health technologies, and AI-based preventive healthcare solutions in the development of modern public administration systems is highlighted. The research methodology used is an integrative interdisciplinary review methodology, which combines the public administration approach, the approach of organizational management, the approach of healthcare governance, and the approach of innovation studies.

Theoretical Framework

The issues mentioned emphasize the importance of organizational management in public administration organizations that perform healthcare and prevention services, in the new complexity of the preventive healthcare environment. Based on the scholars and experts, public administration in healthcare is defined as the administration, funding, and provision of public health services (Amri & Logan, 2021; Batmunkh et al., 2026). The importance of this topic as a subject of evolution under various governance models – from a rigidly bureaucratic structure to a dynamic network of patients – is highlighted in the literature (Castro e Melo & Faria Araújo, 2020). Today, healthcare administration is driven by digital innovation and collaborative, cross-sector partnerships (Pitt & Gunn, 2024). In this context, Golea et al. (2025) explore the potential of AI to fundamentally reshape the process of policymaking in Romania's healthcare sector, aiming to transition from reactive governance to anticipatory and data-driven decision-making. The study suggests an organized methodology for AI integration that is adapted to Romania's institutional environment by looking at global best practices and spotting contextual opportunities.

Currently, the public sector's organizational management strategy is critical because it improves the efficiency, accountability, and transparency of government service delivery. Effective organizational management practices can be used by government agencies to improve the development of strategies, allocation of resources, and decision-making. Furthermore, Ewert and Loer (2018) remind us that the institutional processes of public health policy making are very complex; part of the reason why the behavioral turn now has a significant role in this policy domain. This, ultimately, leads to tangible benefits such as the improvement of internal processes, reduced costs, and an improved level of citizen services. Furthermore, the public sector's organization management approach fosters a culture of accountability and higher levels of responsibility among public servants. More openness in the management of public finances and the execution of governmental programs may be guaranteed by putting in place efficient monitoring and evaluation mechanisms. Also, it fosters compliance with high professional standards and the use of ethical procedures, which contributes to enhancing public trust in government institutions (Hinojos et al., 2024). Carrilho et al. (2023) report that international and regional policies play an important role in supporting this transition towards modern, value-driven care and in research and development (R& D) in Europe. Government innovation to create efficiency and ease administrative burdens for patients is encouraged by initiatives like the OECD Public Governance (Government) initiatives. The adoption of technology, Living Labs, and modern value paradigms within the public health system is a key element of the Horizon Europe Framework and also local Smart Specialization Strategies.

In contemporary scholarly discourse within healthcare public management, it is claimed that private and public actors are not just cooperating within the concept of public value generation - instead, they may coordinate their efforts and exchange knowledge to prevent gaps and generate synergies by acknowledging their mutual dependency (Budayan et al., 2024; Greve, 2025; Kravchenko et al., 2026). To identify requirements, clarify challenges, develop cooperative solutions, and facilitate implementation, they can pool and share their diverse resources and communicate collaboratively through debate. To put it briefly, public and private actors can jointly develop public value outcomes, and the public sector can promote this co-creation of public value by building venues and platforms that enable pertinent and impacted players to cooperate. Building on this realization, scholars assert that the promotion of co-creation as a fundamental tenet of public governance is a desirable and practical choice that will significantly enhance the creation of public value by fostering community development, creative policymaking, service enhancement, and democratic renewal (Sørensen et al., 2021).

The public sector always had a co-creation component. Ansell and Torfing (2021) suggest that a broader co-creation agenda could serve as the foundation for a new paradigm of public governance, one that fosters and maintains cross-border cooperation to promote public innovation and increase the collective ability to solve societal problems. Market-driven performance management and centralized bureaucratic control and rulemaking will not be eliminated if co-creation is made the foundational tenet of a new public governance paradigm. Although these government procedures will continue to be used as auxiliary tools, their methods will be changed to better facilitate co-creation processes. Roth et al. (2024) explore value-creation mechanisms within institutionally diverse social and health care ecosystems through the lenses of institutional logics and institutional work. Their empirical and theoretical evidence provides practical examples of value-creation processes, institutional logics, and institutional work practices in social and health care innovation ecosystems.

In modern liberal democracies, governance scholars are becoming increasingly more interested in the ways that co-creation might advance public good, particularly in the area of preventative healthcare. Technologies may have an impact on how value co-creation emerges in the national health system, according to Masucci et al. (2021). The authors try to investigate how resource sharing amongst players with multi-level relationships and technology-mediated interactions might result in the collaborative development of new value and possible innovation. Masucci et al. (2021) conceptualize the National Health System as a complex service system and offer a conceptual framework by examining the meaning of value co-creation.

Mathialagan and Kuthambalayan (2023) demonstrate how service-dominant reasoning can be applied to the sustainability of the health system and stress the need for collaboration to effectively enhance patient outcomes and affordability. The authors point out that the prevalence of chronic non-communicable illnesses that demand high levels of patient participation over an extended period of time is rising globally. One of the most important co-creation processes under these circumstances is information interchange, or integrating knowledge. In addition to "information exchange", their study takes into account the consumers' "knowledge development attitude" and "interaction quality", or reciprocal understanding, as activities that create value.

Co-creation aims to generate public value outcomes (Alalääkkölä et al., 2023; Botti & Monda, 2020; Hlongwane & Grobbelaar, 2022). These

outcomes may pertain to policies or services or, more generally, to issues and difficulties facing society that necessitate cooperation (Hamzah et al., 2026; Nordberg & Aflaki, 2025). The co-creation paradigm, in turn, requires appropriate organizational culture and organizational management in public administration agencies working in the field of preventive healthcare.

Ansell and Torfing (2021) suggest a model for studying co-creation of public value outcomes (see Fig. 1).

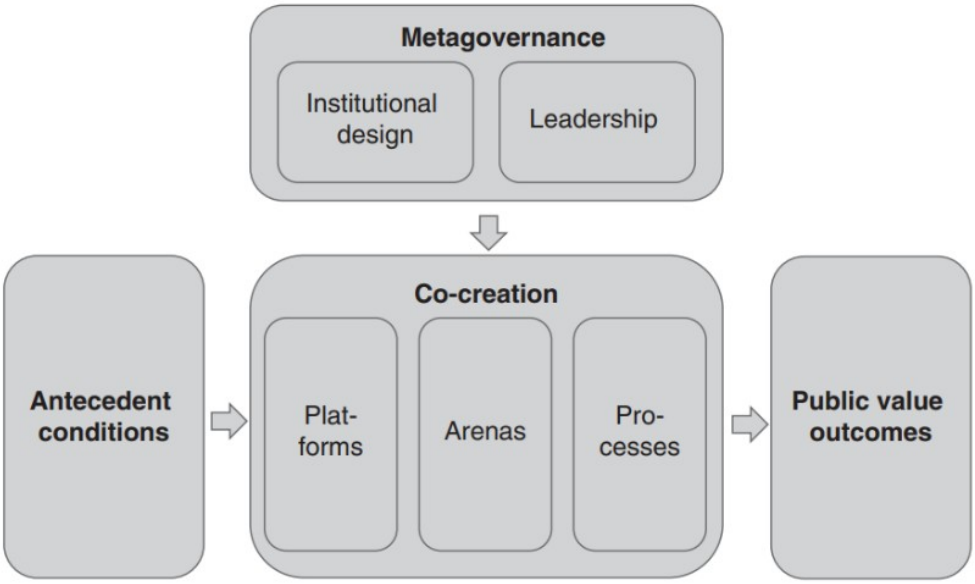

Fig. 1 *Model for studying co-creation of public value outcomes (Ansell & Torfing, 2021)*

The concept of meta-governance, which is the conscious attempt to influence interactive governance processes and outcomes without reverting to traditional statist command-and-control steering mechanisms, encapsulates the proactive attempt to initiate, support, and give direction to co-creation (Novikova et al., 2021; Pohrishchuk et al., 2023; Rozskazov et al., 2021). There are two types of meta-governance: hands-on meta-governance, which focuses on leading collaborative processes with an eye toward co-creating public solutions, and hands-off meta-governance, which operates through the institutional design of frameworks for public–private collaboration Ansell and Torfing (2021). Platforms, venues, and processes are the three inherently connected parts of co-creation itself. As a result, all three elements ought to be handled at the appropriate organizational management levels, and managerial initiatives and strategies ought to be in line with level-based, continuous business operations.

The reviewed literature demonstrates that contemporary preventive healthcare governance cannot be adequately explained through a single theoretical perspective. Rather, the modernization of preventive healthcare administration emerges from the interaction of several complementary governance mechanisms that operate at different organizational and institutional levels.

Value co-creation provides the participatory foundation of preventive healthcare governance. As noted by Ansell and Torfing (2021), Sørensen et al. (2021), Fusco et al. (2023), and Nordberg and Aflaki (2025), healthcare outcomes increasingly depend on collaborative interactions among public authorities, healthcare providers, patients, private organizations, and civil society actors. Through these interactions, preventive healthcare is shifting from a provider-centered model toward a stakeholder-centered governance system.

However, participation by stakeholders is not enough to ensure adaptability to rapidly changing health care environments. The following is an answer to these problems: Agile governance. Based on results from agile governance studies by Neumann et al. (2024), this form of governance provides public institutions with flexibility, incremental decision-making, ongoing learning, and adaptive management, which are all aspects that enable them to better address changing demographics, technological disruption, and uncertain epidemiological situations.

Digital technologies, Artificial Intelligence, telemedicine platforms, predictive analytics, and health applications are also considered enablers that will increase the capacity of preventive healthcare systems. They are not governance models themselves, but instead help to facilitate evidence-based decision making, early identification of risk, personalized interventions, and better access to services. These characteristics of collaboration, adaptation, and technology require an all-encompassing coordinating framework. In this environment, meta-governance plays an evidently important role in enabling alignment across various stakeholders, governance networks, and institutional actors. Meta-governance helps public administration systems to coordinate value co-creation processes, promote agile organizational principles, and guarantee that technical breakthroughs contribute to larger public health goals. Figure 2 below depicts an integrated governance system for preventative healthcare administration. Therefore, preventive healthcare governance can be understood as a multilevel system in which digital innovation improves preventive capabilities, agile governance offers organizational flexibility, value co-creation creates stakeholder engagement, and meta-governance

guarantees strategic coordination among these elements. When combined, these strategies help create healthcare systems that are more sustainable, preventative, and robust.

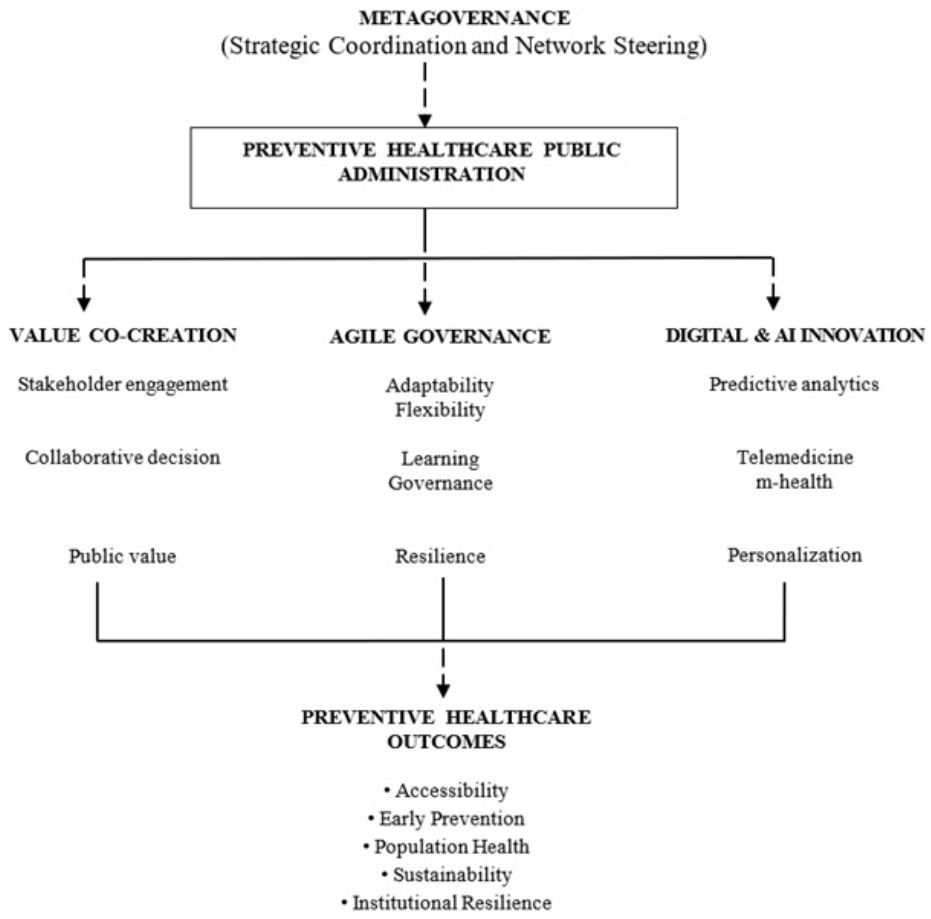

Fig. 2 *Integrated governance framework for preventive healthcare administration (* developed by the authors)*

According to the proposed approach, preventive healthcare governance is seen as an adaptive organizational structure made up of four mutually reinforcing elements in the model shown in Figure 2. Value co-creation, which forms the social basis of preventive healthcare governance, is the first dimension. Preventive healthcare strategies become more sensitive to local conditions and population requirements through cooperative exchanges between governmental authorities, healthcare providers, private organizations, civil society actors, and individuals. Agile governance, which offers institutional adaptability and flexibility, is the second dimension. Agile principles can ready public administration systems to respond swiftly to new health risks, shifting epidemiological circumstances, and changing social expectations. In this context, decentralized coordination, learning within organizations, and iterative decision-making are key tools of governance. The third dimension is digital and AI-enabled advances such as telemedicine, mHealth apps, predictive analytics, and data-driven decision support systems. These technologies improve preventative capacity with better risk assessment, early intervention, and individualized healthcare delivery. The fourth dimension is meta-governance, which plays an integrative and coordinating role. Meta-governance provides the institutional instruments to align stakeholders, coordinate cooperative processes, and assure strategy coherence for multiple governance actors across multiple sectors and organizational levels.

An integrated preventive healthcare governance system that may produce long-term public benefit is ”shaped” by the interaction of these dimensions. According to this concept, digital innovations increase the efficacy of prevention, value co-creation improves stakeholder engagement, Agile governance fortifies institutional adaptation, and meta-governance guarantees systemic coordination. These pieces, when taken together, enable the healthcare systems to be resilient, accessible, sustainable, and prevention-capable.

Based on this, the study provides an integrated conceptual framework, which views the preventive healthcare governance as an ad hoc dynamic interaction between collaborative governance mechanisms, adaptive organizational management, and technological innovation in the context of growing complexity in society. The study proposes two analytical propositions, which will be used for conceptual discussion based on the literature synthesis, as follows:

Hypothesis 1: Incorporation of value co-creation mechanisms in public administration contributes to effectiveness in preventive healthcare

governance.

Hypothesis 1: The more value co-creation mechanisms are incorporated in public administration, the more effective is health care's preventive governance. Hypothesis 2: When uncertainty exists, agile approaches to managing organizations are more likely to enhance the adaptability and resilience of preventive healthcare systems.

Materials and Methods

The research design is an integrative review with the application of grounded theory elements, which allowed seamless combining of interdisciplinary perspectives. Sampling of literature sources for analysis was carried out in ScienceDirect, MDPI, Wiley, PubMed, and ResearchGate databases for the period 2012-2025. Keywords were as follows: preventive healthcare, public administration, agile governance, value co-creation, digital health, and healthcare innovation. Inclusion criteria were the following: peer-reviewed, English language, public administration/public governance focus. preventive healthcare relevance. Exclusion criteria were as follows: clinical studies without governance dimension, duplicate records, conference abstracts, and editorials.

During the preliminary search, 132 sources were identified, which were then subjected to screening based on abstracts. After excluding duplicate and irrelevant (out-of-topic or insufficient quality) publications, 93 entries were included in the sample for grounded theory application. Axial coding and further categorization (see Table I for thematic coding matrix) allowed formulating the final query for search (value co-creation; Agile governance; digital innovation; AI-supported prevention; public-private partnerships; meta-governance), based on which 60 entries were selected and included in the final sample for the integrative review (see Fig. 3 for PRISMA diagram).

Table I
Thematic Coding Matrix

Coding Stage	Emerging Theme	Description	Representative Literature
Open Coding	Value Co-Creation	Collaborative involvement of patients, healthcare providers, public institutions, and communities in preventive healthcare processes	Ansell & Torfing (2021), Sørensen et al. (2021), Fusco et al. (2023), and Stender et al. (2024)
Open Coding	Agile Governance	Adaptive organizational mechanisms, flexibility, iterative decision-making, institutional resilience	Neumann et al. (2024) and Greve (2025)
Open Coding	Digital Health Innovation	Telemedicine, mHealth, electronic health systems, digital service delivery	Botti & Monda (2020), Carrilho et al. (2023)
Open Coding	Artificial Intelligence	Predictive analytics, risk identification, personalized prevention, decision-support systems	Nagykaldi et al. (2017), Golea et al. (2025), Batmunkh et al. (2026), Shchokin et al. (2024)
Open Coding	Public–Private Collaboration	Cross-sectoral partnerships supporting preventive healthcare delivery	Budayan et al. (2024) and Vecci & Hellowell (2018)
Axial Coding	Stakeholder Integration	Coordination of actors involved in preventive healthcare governance	Nordberg & Aflaki (2025) and Roth et al. (2024)
Axial Coding	Organizational Adaptability	Institutional capacity to respond to uncertainty and changing healthcare needs	Neumann et al. (2024) and Greve (2025)
Axial Coding	Technology-Enabled Prevention	Use of digital tools to support preventive interventions and monitoring	Stadnick et al. (2025) and Carrilho et al. (2023)
Axial Coding	Governance Coordination	Mechanisms aligning stakeholders, resources, and policy objectives	Ansell & Torfing (2021) and Sørensen et al. (2021)
Selective Coding	Integrated Preventive Healthcare Governance	Combined interaction of co-creation, Agile governance, digital innovation, and metagovernance within public administration systems	Synthesized by authors

* developed by the authors

The coding process revealed four dominant governance dimensions that consistently appeared across the reviewed literature: value co-creation, agile governance, digital innovation, and stakeholder coordination. In axial coding, these dimensions were shared into several larger analytical categories: organization's adaptability, use of technology for prevention, and integration of governance. The selective coding stage resulted in the development of an integrated conceptual framework explaining how these mechanisms jointly contribute to the modernization of preventive healthcare governance.

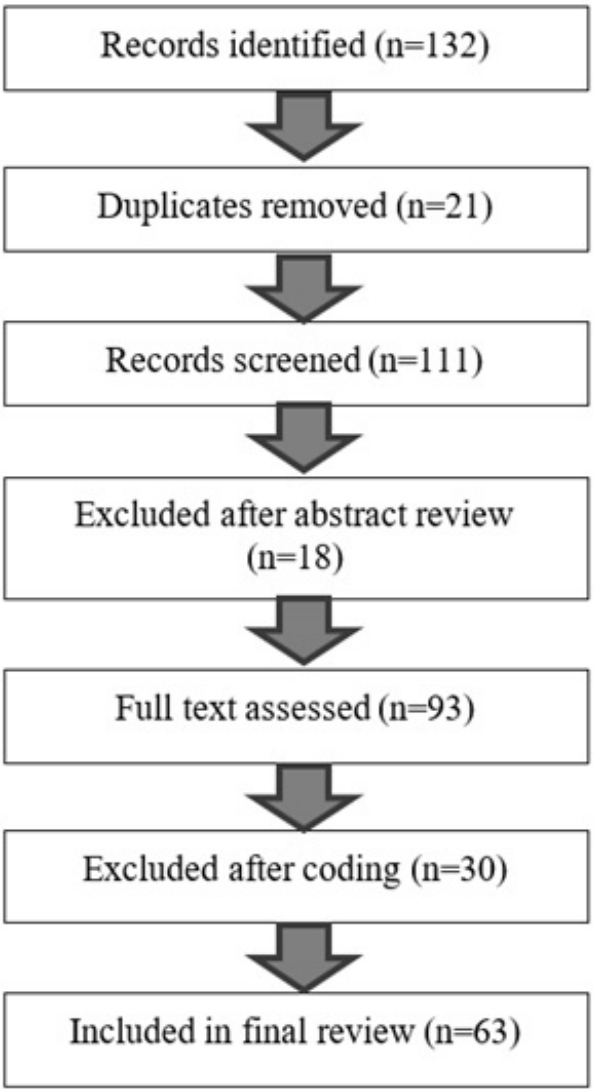

Fig. 3 *PRISMA diagram (* developed by the authors)*

Ethical considerations (such as informed consent), as well as confidentiality issues, were not applicable in the study, since the research is based on secondary sources and does not involve the participation of human or animal subjects.

The authors declare no conflict of interest. No funding sources were involved. Generative AI tools were used exclusively for language editing, grammar correction, and stylistic refinement of author-generated text. AI systems were not used for literature search, data analysis, interpretation of findings, or generation of scientific conclusions. All intellectual content, analytical decisions, and final manuscript revisions remained the responsibility of the authors.

Results and Discussion

Challenges, forecasts, and trends of efforts

The primary health issue facing Europe now and in the near future will be chronic illnesses. It is anticipated that some of these may cause more deaths. For instance, according to forecasts, most malignancies, particularly lung, colon, breast, and prostate cancers, will result in a rising number of fatalities by 2030 (Cuffari, 2024). Chronic illnesses necessitate many therapies and patient care since they are seldom cured and persist over extended periods. As the workforce and, consequently, the percentage of taxpayers decline, life expectancy and the proportion of the population that is reliant on health care will rise, putting increasing financial strain on health care systems. It is forecasted that the developed world's present economic position will make this scenario even more critical (Bazaluk et al., 2025). The ideas of patient empowerment and self-management (the

participatory component of "P4 medicine") can serve as the foundation for prevention (De Almeida et al., 2024). They include patients playing a greater role in the transition from health to illness. A decrease in health risk factors, such as smoking, is anticipated as a result of this. It is also advised to empower companies and communities to support preventative initiatives and wellness practices.

These demographic and epidemiological transformations are not merely healthcare challenges; they fundamentally reshape the organizational logic of public administration in preventive healthcare. The growing burden of chronic diseases requires public management systems to move beyond episodic treatment-oriented governance toward continuous, data-driven, and population-oriented prevention strategies. Consequently, healthcare administration increasingly depends on interinstitutional coordination, long-term strategic planning, and adaptive organizational structures capable of integrating medical, social, technological, and behavioral dimensions of prevention.

One of the main forces behind health care prevention strategies and tactics is innovation. Industries and sectors give rise to several kinds, which might be institutional, social, behavioral, or cultural, or technical. It is important to note that prevention is linked to the health care industry's development into a consumer health care market, where customers' needs drive purchasing decisions. The growing use of web-based and mobile technology, self-monitoring gadgets, health tourism, self-care medications, and functional meals is what is causing this change.

The goal of health protection is to employ laws, rules, and governmental policies to protect the population's health from outside dangers. Access to high-quality, easily accessible, and reasonably priced healthcare is the duty of local, state, and federal government organizations. via choices and policies that influence health care directly as well as via sociological, economic, and environmental frameworks that support health and well-being, governments hold a special role in stewarding health (Largent et al., 2020). How governments and the electorate develop in guiding public health objectives based on ethical and societal values, as well as how they handle contradicting public health advice and communication, are some of the crucial elements that may have an impact on health protection (Gurdasani et al., 2021).

Meanwhile, disease prevention efforts are complicated by views that support individual liberty and oppose widespread restrictive measures, except for the targeted protection of high-risk elderly populations (D. K. D. Kim & Kreps, 2020). These perspectives are frequently seen as unjust to those who are less vulnerable. On the other hand, the principle of equality and usefulness has also been promoted, according to which restricting measures are generally implemented to maximize the reduction of sickness and death for the entire population (Hunt, 2012). These ideological differences give rise to a new realm of disease-preventive public health policy, where the extent of public health limitations is heavily reliant on shared values and ethics. The growing problem of misinformation and disinformation coexists with the intricate function of government in managing public health. To combat an infodemic of false information that seriously jeopardizes the efficacy of public health communication, public health officials have prioritized new collaborations with social media and search engine platforms. Serious communication issues within government systems are exacerbated by the proliferation of disinformation and differences in how significant health data is presented at the national and regional levels (Mheidly & Fares, 2020).

Unequal access to healthcare is another major issue. Access to healthcare may be hampered by obstacles, including a lack of transportation, job constraints, and geographic remoteness. The already widespread digital gap was widened by COVID-19, leading to disparities in the use of health-related technology, where those who have access to telehealth significantly benefit in managing chronic illnesses.

The identified communication asymmetries and digital inequalities demonstrate that effective preventive healthcare governance increasingly depends on organizational capacity for coordinated information management, digital inclusion, and stakeholder communication. In this regard, public administration institutions perform not only regulatory functions, but also meta-governance roles aimed at coordinating actors, reducing informational fragmentation, and strengthening institutional trust in preventive healthcare systems.

In the meantime, there are opportunities to improve public health responses in the areas of illness prevention, health promotion, and health protection. Disease prevention, health promotion, and health protection encompass a wide range of cutting-edge public health ideas that may be used in clinical settings, businesses, communities, and by governmental agencies. When implemented across these levels, they can serve as effective instruments for enhancing the health and well-being of both individuals and populations.

Evolution of preventive healthcare governance paradigms

The literature review conducted in this study allowed the conclusion that there have been many different but overlapping paradigmatic stages in the evolution of preventive healthcare governance. These paradigms represent shifting beliefs about the state's role, the mechanisms that determine how accountability for health outcomes is distributed, how resources are allocated, and the organizational tenets of disease prevention. Preventive healthcare governance was previously characterized by a biomedical and managerial approach centered around the operation of interventions led by specialists, vaccination campaigns, screening programs, and a centralized public health approach. The governance arrangements of this approach were predominantly command-and-control, emphasizing knowledge and skills of professionals, regulation, and measurable clinical outcomes. This paradigm greatly enhanced population health, but was often challenged as being too narrowly focused on the role of individual behaviors in making health decisions and failing to value higher-order social and economic factors (Sendall et al., 2023).

The socio-ecological theory added to the governance perspective by acknowledging that socioeconomic status, educational opportunities, housing status, and environmental conditions, as well as community resources, are important factors that shape the health of communities. This change led to a cross-sectoral cooperation and whole-of-government governance mechanisms approach, known as Health in All Policies (HiAP) (Aljohani et al., 2024). This paradigm has shifted the focus of health care from facilities to other policies and responsibilities in the community,

and it places a preventative health care responsibility on everyone outside of health care. At the same time, behavior and neoliberal governance approaches offered market-oriented approaches to increase the effectiveness of preventive interventions. Health governance has grown more important as a tool through wellness programs, financial incentives, 'nudges,' and involvement of the private sector (J. Kim et al., 2022). Although these approaches often increased the effectiveness and involvement of people, some people argued that they could turn health into a commodity, and that they did not address the underlying structural inequities that might affect health behaviors.

The digital paradigm of preventative healthcare governance added to the additional transformation. This paradigm relies on the increasing application of digital technologies, wearable technologies, telemedicine platforms and solutions, artificial intelligence, predictive analyses, electronic health records, and personalized feedback systems (Bandyopadhyay, 2024). Unlike traditional approaches to prevention, digital governance enables the continuous monitoring, real-time risk assessment, and more targeted prevention measures.

Online health portals, telemedicine platforms, and mobile applications are making preventive care more readily available and accessible. These solutions lower barriers to preventative care by enabling people to remotely consult with healthcare experts, monitor their health, and access instructional materials.

The global preventative healthcare technologies and services market is expected to account for USD 522.97 million by 2028 (see Fig. 4).

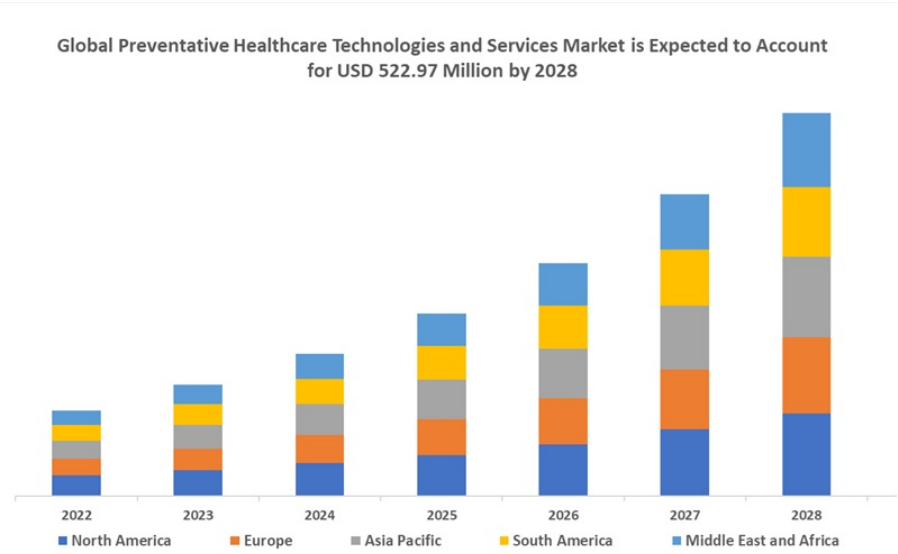

Fig. 4 *Global preventative healthcare technologies and services market forecast by regions (Bridge, 2022)*

Also, artificial intelligence and genomic sequencing offer a novel approach to estimating a patient's risk of contracting an illness. In particular, the Genome Program, which was unveiled by the Abu Dhabi Department of Health in 2019, uses artificial intelligence and DNA sequencing to compile a database of genomic data from 100,000 individuals. Changes in genes, chromosomes, and proteins that cause genetic diseases can be found by analyzing the genomes in the database. To act at far earlier stages of the disease, public health experts will utilize this knowledge to anticipate the possibility of genetic disease in groups. For addressing the unique health requirements of the Arab population, the Genome Program also seeks to further understand their genetic composition (Richards et al., 2022).

Public administration within this paradigm becomes progressively data-driven and dependent on collaboration between healthcare institutions, technology providers, regulatory bodies, and citizens. The digital paradigm significantly expanded the capacity of preventive healthcare systems to identify population-level risks, improve service accessibility, and support evidence-based policymaking (Buyandelger et al., 2026). However, it also introduced new governance challenges, including data privacy, cybersecurity, algorithmic bias, digital exclusion, and the concentration of technical power within a small number of public and commercial players, which are among the new governance issues it brings. Therefore, effective preventive healthcare governance increasingly requires institutional frameworks that can strike a compromise between technological innovation and accountability, transparency, and social equality (Clarke et al., 2024).

There is an emerging pattern of more flexible and connected governance systems in recent times (Carrilho et al., 2023). The landscape of preemptive health care has been transformed by technological innovation, artificial intelligence, predictive analytics, telemedicine, and health systems, making it a data-driven industry now. The one health concept or approach increased the scope of governance by highlighting the link between human and animal and environmental health and by fostering collaboration and integration between sectors and authorities (Zhou et al., 2024).

These signs reflect a more polycentric approach to governance in modern-day preventive healthcare that involves community engagement and participation, digital innovation, local implementation, coordinated preventive strategies at the public health level, and tailored preventive strategies (Cairney et al., 2025). Instead of replacing the older models, contemporary governance models are more often a combination of several

models all put into practice at once. Consequently, in the complex governance landscapes in which administration of preventive healthcare is currently taking place, public institutions, healthcare providers, private institutions, technology companies, civil society, and citizens are involved in value creation and the decision-making process of prevention.

Organizational context: This movement represents a change in the way organizations have traditionally been managed, from hierarchical governance structures towards adaptive governance systems that have many characteristics of stakeholder engagement, coordination of networks, institutional flexibility, and continuous learning. These developments provided the institutional basis for increasingly significant agile governance and value co-creation, which are emerging as key means of addressing complexity, ambiguity, and creativity in preventative healthcare systems.

Taken together, these paradigm shifts signal a broader shift from hierarchical, sector-based models of prevention to networked, flexible, and polycentric governance systems. With the advancement of modern preventive healthcare administration, new knowledge from the biomedical field, the socio-ecological coordination aspect, new development of behavioral therapies, digital innovation, community participation, and cross-sectoral collaboration are increasingly being integrated. Due to this increasing complexity, value-based healthcare, value co-creation, agile governance, and meta-governance are complementary approaches to organizing preventive healthcare systems in a context of unpredictability, technological changes, and increasing demands of society.

Towards an integrated governance framework for preventive healthcare

The reviewed literature in the context of the present study reveals that there is considerable conceptual disintegration in the modern governance of preventive health care. Existing studies tend to focus on specific dimensions of preventive healthcare transformation, including value-based healthcare, value co-creation, agile governance, digital health technologies, artificial intelligence, public-private partnerships, patient-centered care, social determinants of health, or community participation. Although each of these perspectives provides important insights, they are frequently examined in isolation and within separate disciplinary traditions. While different streams address similar issues, they seldom converge on a single analytical framework. As a result, preventive healthcare governance is usually investigated using narrow conceptual lenses. Value co-creation is regularly explored independently of organizational flexibility; digital transformation is frequently examined apart from stakeholder governance; and public-private partnerships are frequently investigated without regard for their interplay with larger preventative healthcare goals. This disciplinary separation has made it challenging to understand the achievement of resilience, prevention effectiveness, public engagement, technological innovation, and sustainability of preventive healthcare systems in the current research.

To date, the literature available does not offer much understanding of the interaction between the various governance mechanisms in a common public administration system. The public health literature is mostly concerned with the outcomes of prevention; the management literature is concerned with the adaptability and innovativeness of organizations; the digital health literature is concerned with the capabilities of technologies; while the governance literature is concerned with the coordination of stakeholders and institutional arrangements. A lack of an integrative perspective makes it hard to appreciate the challenges in achieving a system of preventive healthcare that is resilient, personal, sustainable, equitable, and cost-effective at the same time. The findings of the thematic synthesis undertaken in this study indicate that the concepts seem to be complementary elements of a more comprehensive governance transformation. These concepts – value co-creation, agile governance, digital innovation, stakeholder engagement, public-private collaboration – and the preventive healthcare strategies are not mutually exclusive, but rather seem to cover various aspects of the same organizational problem: how to govern new and increasingly complex preventive healthcare systems in a context characterized by uncertainty, technological change, demographic aging, and rising demands from citizens.

The fragmentation is especially apparent in today's context of governance that features demographic aging, the presence of chronic diseases, epidemiological uncertainty, and technological advances. In these settings, the outcomes of preventive healthcare are becoming more and more dependent on several governance mechanisms, not just on one organizational or technological solution. However, there is no literature that currently explains the reinforcement, complement, or constraints that are provided by one another.

Thematic synthesis indicates that the concepts that are usually discussed in isolation are viewed as interrelated aspects of a larger governance transformation. Value co-creation takes care of the participatory dimension of preventive healthcare, agile governance of the organization, innovations based on digitalization and artificial intelligence, public-private partnerships, and meta-governance for strategic coordination of different actors and different levels of governance. Thus, the contribution of the study is more a synthesis of previously separate perspectives in an analytical framework than an entirely new governance concept is developed. The proposed framework offers a more detailed account of the possible functioning of preventive health care systems within complex and uncertain contexts, synthesizing knowledge from public administration, health governance, organization, and digital innovation studies.

The integrated governance architecture (see Fig. 5) is proposed based on the coding results and literature research. The framework conceptualizes preventive healthcare administration as a polycentric governance system, in which value co-creation facilitates the involvement of stakeholders, agile governance boosts the adaptability of organizations, digital and AI innovations reinforce the capacity to prevent health problems, and meta-governance facilitates coordination among public institutions, health providers, private actors, communities, and citizens. Together, these strategies can support the design of prevention health systems that can incorporate patient-centered, data-driven, and socially targeted methods of service delivery and public health goals.

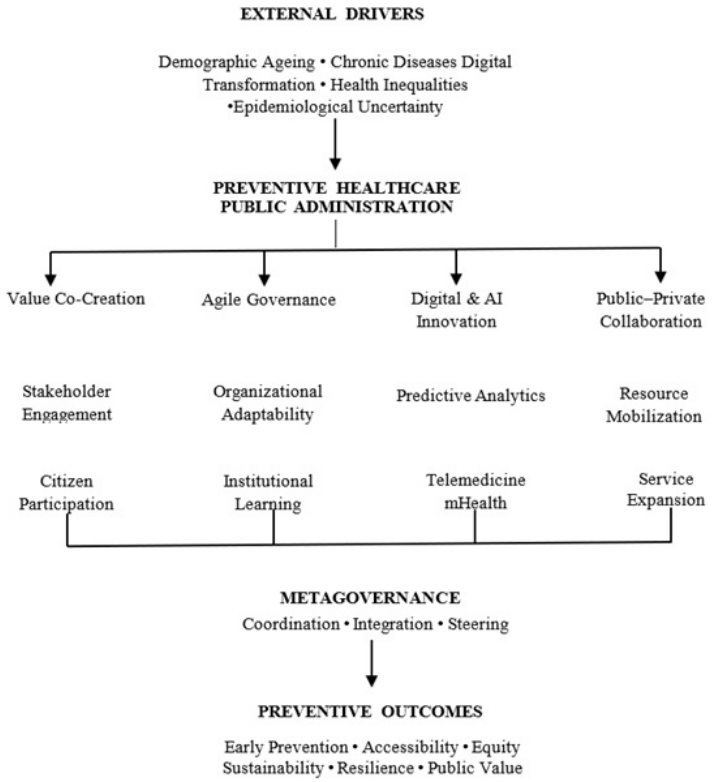

Fig. 5 *Integrated polycentric governance framework for preventive healthcare*

The proposed framework brings together analyses of organization, technical, public health, and governance perspectives, thus complementing existing literature. The paradigm focuses on stakeholders and the involvement, flexibility, and adaptability of organizations, digital innovation, and institutional coordination, whereas other models mostly addressed separate aspects of the preventative healthcare change. It therefore offers a framework for preventative healthcare governance, which is not independent and fragmented like a collection of policy instruments or administrative procedures, but rather dynamic and polycentric.

Theoretical and governance implications of the integrated framework

The study shows that a one-dimensional policy approach or separate governance system is not able to tackle current challenges in preventive health care. All of this, combined with the increased prevalence of chronic disease, the aging population, and the uncertainty of epidemiology, the digital revolution, and increasing public expectations, creates a complex, interwoven, and continuously governing environment. There are some interesting findings from the literature synthesis; the continued disintegration of previous studies. Organizational research looks at the ability to adapt and innovate; governance scholarship is mainly about cooperative arrangements and involving the stakeholders; public health research has a strong emphasis on prevention outcomes and population health indicators; and digital health literature is about technological solutions and data infrastructure. While multiple research streams address issues related to the topic, very few of them combine the efforts within a common analytical framework. Therefore, it remains uncertain how value co-creation, Agile governance, digital innovation, public-private partnership, and preventive healthcare results are related to each other.

The results show that both strategies could be considered complementary governance approaches for tackling different aspects of the same governance issue rather than as conflicting paradigms. Value co-creation enhances the legitimacy and involvement of stakeholders. Digital and AI-driven innovations improve prevention capacities; meta-governance increases the strategic coordination between different actors and governance levels; agile governance increases flexibility and institutional learning. Their links form the basis for the institutional conditions for good and lasting preventive healthcare systems.

The proposed framework is theoretically novel in the integration of various ideas; it adds to the literature. It does not present a new governance paradigm; rather, it adopts an integrated approach, connecting public administration, hospital governance, management, and digital innovation research. This synthesis enhances the understanding of the role of preventive health care systems in the general population in a time of ambiguity and complexity. As regards the governance, the findings show that the power to shape the interests of different actors, to allow for cross-sectoral interaction, and to facilitate continuous organizational change becomes further and further a matter of public institutions'

capacities to do so. Beyond the technological innovations, a shift from ”reactive” health care administration to preventative and personalized health care necessitates significant changes in institutional cultures, decision-making processes, and governance.

But, there is still a challenge to implement agile governance in preventive healthcare systems, which is institutional and context-dependent. Public organizations often operate in environments that are extremely regulated and have constraints on their operating budgets, political oversight, legal frameworks, and accountability. These factors may make it difficult for the organization to be adaptable and delay the implementation of adaptive management approaches. Agile governance should therefore be considered a governance approach and not a one-size-fits-all solution, and be made effective by the readiness of administrations, the digital maturity of public bodies, political support, and willingness to change.

Further, the findings show that governance systems that are more than typical healthcare delivery systems are required to respond to SECoDOH. To achieve effective preventative healthcare, the integration of various stakeholders, evidence-based decision making, patient participation, and public policy support is needed. A consistent message in the literature is that collective action involving multiple sectors and multiple actors (including health care, public sector, community-based organizations, and the private sector) under the framework of a collaborative governance structure, with adequate data and accountability, is more likely to yield longer-term results. Therefore, social determinants of health should not be considered as a policy field but as an integral component of preventive health care governance.

The analyzed proportion related to the value co-creation and the Agile governance in the preventive healthcare public administration has been supported by the conducted integrative analysis. The findings are particularly relevant for Proposition 1, as they show how value co-creation mechanisms help coordinate stakeholders and improve the coordination of preventive healthcare systems to make them more patient-oriented and sustainable. The analysis also shows that agile organizational responses enhance institutional adaptability, flexibility, and resilience in the face of uncertainty, such as in the post-pandemic healthcare context and in the evolving public health needs. The results of these findings support the conceptualization of Proposition 2 and validate the increasing significance of adaptive governance models in preventive healthcare administration.

The results provide conceptual support for the idea that value co-creation is a key tool to improve stakeholder engagement and responsiveness of preventive healthcare systems. Moreover, studies have shown that agile governance has positive impacts on institutional adaptation through the increase of flexibility, learning, and better response to new public health problems. Together, these strategies help move from a more reactive, hierarchical approach to hospital management towards more cooperative, flexible, and truly preventative hospital governance.

Conclusion

The study examined the relationship between value co-creation, Agile governance, digital innovation, and cooperation among stakeholders to tackle increasingly complex governance issues of prevention. This study investigated the link between value co-creation, Agile governance, digital innovation, and stakeholder cooperation in order to address the escalating challenges of governance of prevention. The results were an indication that the challenge of operating modern systems of preventative health care is not simply a matter of using individual policy instruments or a traditional hierarchical health administration. Rather, the dynamic governance processes necessary for a preventative health system that is agile, responsive, and inclusive of diverse stakeholders and adapting to rapidly evolving social and epidemiological conditions are becoming increasingly important.

The creation of an Integrated Polycentric Governance Framework for Preventive Healthcare is the study’s main contribution. It bridges the fields of public administration, healthcare governance, organizational management, and digital innovation research to explain how value co-creation, Agile governance, digital transformation, and meta governance work together to contribute to public value creation, equity, sustainability, and resilience in preventive healthcare systems. The findings indicate from a governance perspective that the modernization of preventive healthcare should be seen less as a series of individual projects and more as a systemic change. Long-term public benefits of investments in digital technology, AI, telemedicine, or predictive analytics at the institutional level are uncertain without changes to the way the institutions coordinate, to the way they are structured, and to the way they engage stakeholders. The proposed paradigm highlights the importance of associating technological innovation with governance innovation, having the ability to make preventive healthcare systems more responsive to demographic, epidemiological, and social challenges.

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Conflicts of interest

We declare the absence of conflicts of interest.

Author contributions

Conceptualization, methodology, investigation, formal analysis, writing – original draft preparation, writing – review and editing were performed collaboratively by the authors. All authors read and agreed to the published version of this manuscript.

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Ethical approval

This study is based on secondary sources and did not involve human/animal subjects. Thus, ethical approval is not applicable.

Informed consent

Not applicable.

Data availability statement

No new empirical data were generated or analyzed during this study. All sources used in the analysis are publicly available and cited in the reference list.

Statement on the use of generative AI

Generative artificial intelligence tools were used exclusively for grammatic and stylistic editing and manuscript formatting. The authors take full responsibility for the content, interpretation, and conclusions presented in this article.

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