



Education in Healthy Longevity as a prerequisite for a new healthcare model

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1. Introduction

Since the first epidemiological transition in late 19th-century Europe, healthcare has made remarkable strides in combating infectious diseases, acute conditions, and premature deaths, while significantly improving cancer survival. These advancements have contributed to substantial increases in lifespan. In the 21st century, however, the primary challenge has shifted: the objective is no longer merely to prolong life, but to extend the years of life spent in good health, also known as healthspan^[1].

In this context, the emerging medical field of healthy longevity medicine, which seeks to optimize health and healthspan by targeting the biological processes of aging^[2], is gaining increasing attention. In 2024, the United Arab Emirates became the first country to officially recognize this specialty^[3] and formally accredited its first healthy longevity medicine clinic. Furthermore, in 2025, the NUS Academy for Healthy Longevity published an integrated framework for implementing healthy longevity medicine in Singapore^[4], showing how this paradigm shift fundamentally reshapes power structures and responsibilities within healthcare systems.

2. From Disease Treatment to Health Education

While the classical medical model positions the physician primarily as an expert in treating illness, the emerging paradigm calls for a recalibration of knowledge relationships between healthcare professionals and citizens. In this context, education plays a crucial role, not only within medical schools but also broadly across society. We argue that education on healthy longevity is a fundamental prerequisite for the institutional, cultural, and epistemological shift that this new form of medicine requires.

The traditional medical training model, which shapes physicians and other healthcare professionals, is rooted in a pathogen-oriented framework where health is defined as the absence of disease^[5]. Diagnostics, pharmacotherapy, and interventional care form the core of this approach. In contrast, within the field of precision geromedicine, a salutogenic model is emerging, in which health is understood as a dynamic capacity for adaptation and self-management in response to physical, emotional, and social challenges^[6].

At the same time, a democratization of medicine is unfolding. With the rise of self-diagnosis tools and artificial intelligence, medical knowledge is no longer solely the domain of practitioners but increasingly shared, at least in part, with individuals^[7]. Indeed, some self-measurement devices are now as reliable as those used in healthcare institutions and provide continuous, real-time data on an individual's biomedical status^[8].

This shift carries profound implications for the medical domain. Authority in healthcare is gradually moving away from physicians alone toward a model of shared ownership between professionals and patients^[9]. Citizens are increasingly gaining access to, and



assuming responsibility for, knowledge previously confined to specialized domains, including epigenetics, inflammatory processes, hormesis, metabolic health, and neuroplasticity^[10]. The result is a distributed knowledge system in which laypeople become active participants in healthcare decision-making. The central challenge, however, is that most patients acquire large amounts of biomedical data that they can technically access but do not fully understand^[11]. Therefore, while data ownership is becoming shared, mastery of knowledge remains uneven.

3. Education as a Structural Prerequisite

To enable this form of shared mastery of knowledge, systematic and sustained education in healthy longevity is essential. Such education should not be limited to physicians or other healthcare professionals but extended to all citizens, across all ages and walks of life. In this broader perspective, education becomes more than the mere transfer of knowledge; it serves as a structural mechanism for building societal capacity, equipping communities to respond resiliently to the dual challenges of an aging population and the rising prevalence of chronic, lifestyle-related conditions.

In this context, education in healthy longevity cannot be regarded as a luxury or an optional enrichment for a privileged few. Instead, it should be recognized as a core prerequisite for the effective functioning of a future-proof healthcare system, one capable of balancing the demands of medical progress with the realities of demographic transformation. Such a system requires not only advanced therapeutics and biomedical innovations but also a citizenry that is prepared, informed, and empowered to engage proactively and intelligently with their health.

The curricula of secondary education, vocational programs, and higher learning provide strategic entry points for embedding this knowledge. Topics such as healthy lifestyles, behavioral psychology, bio-psycho-social health, stress resilience, and digital self-care should be integrated into formal educational structures. Just as mathematics and language literacy are considered essential foundations, health literacy and longevity literacy should be treated as universal competencies.

However, the effort cannot be limited to formal institutions alone. Citizen science initiatives, community-based health education programs, and intergenerational learning environments are equally important. These platforms foster a culture in which individuals do not merely consume health knowledge but actively participate in its creation, validation, and dissemination. Such environments can transform abstract concepts into lived practices, nurturing a collective ethos of health stewardship that transcends generational boundaries. In this sense, education in healthy longevity is not simply an academic subject; it forms the cultural foundation upon which the future of equitable and sustainable healthcare must be built.

4. The Changing Role of Physicians

The medicalization of health, as critically examined by Illich^[12], has fostered a relationship of dependency between patients and healthcare professionals in recent decades. Within the framework of healthy longevity, however, this dynamic is no longer sustainable. The physician of the future will increasingly be expected to function not only as a practitioner but also as an educator, coach, and curator of information, guiding patients in understanding and applying knowledge relevant to their own health. This evolution implies a significant expansion of the professional competency profile, including pedagogical expertise, advanced communication skills, and competencies grounded in the behavioral sciences.

Moreover, physicians and other healthcare professionals must embrace the necessity of continuous learning. Healthy longevity is inherently interdisciplinary and rapidly evolving, integrating insights from genetics, metabolism, neuroscience, behavioral science, and data science. Keeping pace with these developments requires that lifelong learning become a structural and inseparable component of professional identity^[13], ensuring that practitioners remain effective educators, guides, and collaborators in a healthcare landscape increasingly defined by shared responsibility and knowledge co-production.

5. Healthy Longevity as a Shared Responsibility

The transition toward a society in which healthy longevity is a central value requires not only scientific and medical innovation but also a profound cultural and societal shift. Health can no longer be regarded solely as a personal possession or individual achievement. Instead, it must increasingly be understood as a public good and a shared responsibility, embedded within communities and safeguarded by collective institutions^[4]. In this context, education emerges as a key instrument of transformation. Through education, individuals and societies acquire the conceptual frameworks and practical skills necessary to make informed, health-promoting choices that remain sensitive to the social, economic, and cultural conditions in which people actually live.

At the same time, it is crucial to avoid individualizing or moralizing the discourse on healthy longevity. A narrow focus on personal responsibility risks obscuring the structural determinants of health, such as income, education, housing, work, and access to healthcare, which shape life expectancy and well-being. Without inclusive and accessible educational strategies, the benefits of healthy longevity medicine may accrue disproportionately to socially and economically privileged groups. In such a scenario, the promise of healthier and longer lives could paradoxically deepen existing inequalities, turning healthy longevity into another marker of social stratification. For this reason, education must explicitly prioritize health equity: it should address gaps in health literacy,

provide accessible learning opportunities across all demographic groups, and ensure that the capacity to benefit from new medical paradigms is distributed fairly.

6. From Individual Knowledge to Collective Learning

Knowledge about healthy longevity should not remain confined to formal academic or professional training environments. To truly anchor this emerging field within society, it must also permeate community-based learning ecosystems, including spaces such as community centers, libraries, local associations, digital platforms, patient organizations, and intergenerational networks. These arenas can embed scientific knowledge within lived experience, ensuring that education about health is not abstract or inaccessible but directly relevant to the rhythms of daily life.

In such settings, education functions not merely as the transfer of factual information but as the creation of environments that foster collective reflection, dialogue, and experiential learning. Through these processes, individuals can share experiences, compare strategies, and develop practical skills for managing health, resilience, and aging. This collective dimension is critical, transforming the pursuit of longevity from a private endeavor into a shared cultural project.

Furthermore, by nurturing collective learning environments, societies cultivate infrastructures for social validation and trust-building. Communities gain the tools to critically assess, interpret, and integrate new scientific knowledge into their own cultural frameworks. This is especially important in an era marked by an abundance of health-related information, much of which is contradictory, misleading, or intentionally deceptive. By embedding education within trusted communal networks, societies can mitigate the harmful effects of misinformation and address growing skepticism toward medical and scientific institutions.

7. Conclusion: Education as the Structural Foundation of the Precision Geromedicine

Healthy longevity is more than a medical specialty; it represents a fundamental redefinition of medicine itself. It changes not only how health is understood but also who has access to knowledge and how that knowledge is applied to shape individual lives and collective futures. Achieving this vision requires deep institutional reform, cultural innovation, and pedagogical renewal. Education should therefore be recognized not as an auxiliary tool but as the structural foundation of this new medicine, a foundation without which the promises of healthy longevity cannot be realized.

A society that invests in healthy longevity education invests in its own future. Such investment empowers citizens with knowledge and agency, equips healthcare professionals with expanded competencies, and democratizes access to medical innovation. Equally important, it redefines health as a shared societal achievement rather than the privilege of those with wealth, education, or access. Only by adopting an inclusive and equity-driven approach can the promise of longer and healthier lives be realized universally, not as the triumph of a fortunate few but as a collective advancement in human dignity, solidarity, and flourishing.

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Authors contribution

Meij HJ: Designed the editorial, wrote the initial draft.

Maier AB, Kroemer G: Designed the editorial.

All authors contributed to the final version of this editorial.

Conflict of interest

Guido Kroemer serves as the Editor-in-Chief, and Hans J. Meij and Andrea B. Maier are Deputy Editors of *Geromedicine*. The authors declare no other conflicts of interest.

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