

Geriatric Medicine in the Medical Curriculum: A MUST in the Globally Aging World



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ABSTRACT

Geriatrics is a branch of medicine concerned with diagnosing, treating, and preventing diseases in older people and problems specific to aging. The World Health Organization (WHO) has reported that the number of people aged 65 or older is projected to grow from an estimated 524 million in 2010 to nearly 1.5 billion in 2050. The burden of diseases in the aging population will dramatically impact healthcare expenses in low- and middle-income countries and even developed ones. A preventive approach is essential. The role of medical institutions and inclusion of geriatrics in the medical curriculum have become important. However, incorporating geriatrics into the medical curriculum is associated with various issues and challenges: compact pre-existing curriculum, attitudes of teachers and students, and shortage of teaching geriatricians. An individualized institutional approach to curricular integration guided by the American Geriatrics Society's minimum required competencies for the undergraduate will circumvent these challenges.

Key words: geriatric medicine, geriatrics, aging population, medical curriculum, curriculum integration

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INTRODUCTION

The lowered fertility rate and improvement in life longevity have shifted the demographics of the global population to increased numbers of aging individuals, and thereby population aging will accelerate fast to reach 1.5 billion people over 65 years old by 2050, more than the younger population (Figure 1).[1] Between 2015 and 2050, the proportion of the world's population over 60 years will nearly double from 12% to 22%.[2] This demographic change is observed globally and more so in developing countries.[2] In 2050, 80% of older people will live in low- and middle-income countries. All countries face significant challenges in ensuring their health and social systems are ready to make the most of this demographic shift.[2]

The aging population will increase non-communicable chronic diseases like heart disease, hypertension, cancer, diabetes, stroke, lung diseases, and mental health problems. By 2030, non-communicable diseases are projected to be more than one-half of the disease burden in low-income countries and more than three-fourths in middle-income countries.[1] Associated with these healthcare burdens are socioeconomic challenges. Family structures are changing with fewer options for caring aged members. Shifting patterns of work and retirement schemes increase health and pension system strains. Escalating social insurance expenditures puts pressure on sustainability of these systems. Social entitlement programs, labor, trade, and savings demand new fiscal approaches, and with rapid population growth there is intensified time pressure [1,3].

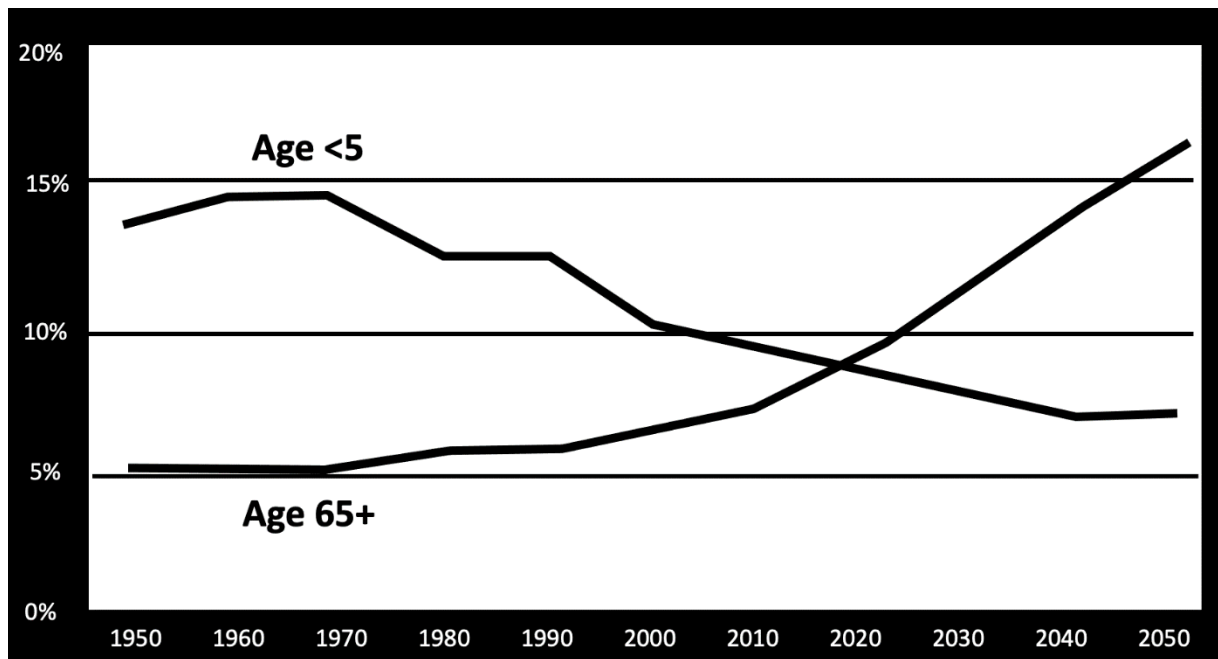


Figure 1. The WHO report on the global aging population projected in 2050. Adapted from Dobriansky, PJ, Suzman RM, Hodes, R J. <https://www.nia.nih.gov/sites/default/files/2017-06/WPAM.pdf> [1]

Overall, the burden of diseases in the aging population will dramatically influence health care expenses with increasing demand per capita expenditures affecting not only the low- and middle-income countries but even the developed ones.[1-3] The expenses include education of the health workforce, improvement and update of facilities, and coverage of health care maintenance. Prevention remains the primary goal and most cost-effective approach to caring for aging people.[1,3]

The scarcity of knowledge about leading health issues in older people has hampered a practical preventive management approach. Therefore, we must increase our understanding of the complex evolution of health and well-being and determinants in older adults.[3] The role of medical schools has long been recognized to be significant in addressing health issues in the elderly through the introduction of Geriatric Medicine in the curriculum.[4-7] Although surveys on teaching geriatrics in the US and European institutions have shown progress, there remains a considerable need for reinforcing and harmonizing geriatric teaching activities to prepare the next generation of medical doctors to address the projected increase in chronic and disabled older patients.[6,7] This article will elaborate on the relevance, importance, challenges and solutions, and overall advantages of incorporating geriatrics into the medical curriculum.

Importance and Relevance of Geriatrics Medicine in the Medical Curriculum: The Role of Medical Schools in the Problem of Increased Aging Population

There are three (3) phases of medical education: medical school (undergraduate medical education), residency training [graduate medical education (GME)], and continuous education and improvement [continuing medical education (CME)]. The emphasis in medical care for the elderly has shifted from treating acute conditions to managing more chronic illnesses, and physicians now increasingly treat aging-related problems.[8] Tackling these medical concerns at the level of primary education is essential. This approach and strategy will provide a significant foundation for higher clinical practice levels (GME and CME) to care for aged individuals. Therefore, remodeling the medical curriculum to include geriatric medicine is a must as an early strategy to address the didactic aspect of the problem.

Global Status of Geriatric Medicine in the Medical Curriculum

The 2012 report of a survey among Canadian medical schools on the inclusion of geriatrics content in the undergraduate and postgraduate curricula indicated that only a few institutions heeded such instructions.[5] Canadian medical administrators

suggested that additional instruction in geriatrics competencies is unnecessary. Although the teaching of geriatric medicine in the undergraduate curricula had increased, teaching hours in some schools were reduced.[5]

The US national survey on the status of general internal medicine residency education in geriatric medicine showed variability and very little time devoted to geriatric medicine. Moreover, facilitators are lacking and have low priority among institution directors and administrators. The prominent potential barrier to implementing geriatric medicine curricula was conflicting time demands with other medical subjects.[6]

In a Singaporean medical school report, an introductory lecture on geriatric medicine is given only in the third year. Exposure to elderly community healthcare services is provided within a generally short time of geriatric medicine exposure.[4]

In the current setting of the University of Santo Tomas Faculty of Medicine and Surgery (UST-FMS), geriatric medicine is not structured within the UST-FMS curriculum. Generally, clinical teaching is introduced in the second year with a one-hour introductory lecture for geriatric medicine and nothing in the third year. A weekly one-hour discussion of a geriatric case among fourth-year medical students is being performed by the same faculty staff who gives the introductory lecture to second-year medical students.

Incorporating Geriatric Medicine into the Medical Curriculum

In 2017, a framework of Geriatrics 5Ms (Mind, Mobility, Medications, Multicomplexity, what Matters most) was formulated as a foundation for the American Geriatrics Society's minimum geriatrics competencies for graduating medical students. *Mind* includes cognitive concerns, capacity, delirium diagnosis, and agitation. *Mobility* encompasses functional assessment, fall risk screening, and fall risk management. *Medications* include medication reconciliation, geriatric pharmacology, prescribing cascades, and deprescribing. In *Multicomplexity*, there are health equity, transitions of care, hazards of hospitalization, atypical presentations, aging physiology, frailty, prognosis, individualized recommendations, sensory impairment, pressure injuries, and urinary incontinence. Moreover, lastly, what *Matters Most* includes communication,

psychosocial and spiritual needs, symptom assessment, patient priorities, and advance care planning.[9]

Table 1 briefly describes each minimum competency. Collaboration with interprofessional teams for specific concerns has been emphasized, such as pharmacists, physical therapists, occupational therapists, audiologists, social workers, and chaplains. The role of allied health professionals with specialized knowledge and skills in dealing with older people's issues is essential, and a multidisciplinary team is required to deliver optimal care in response to the needs and aspirations of the elderly.[10] In advance care planning, it is essential to distinguish between healthcare proxies, advance directives, and life-sustaining treatment orders in context of the country's laws in which one is training or studying.[9]

Challenges and Solutions in Establishing Geriatric Medicine in the Medical Curriculum

Although geriatric medicine has long been incorporated into the medical curriculum in some western countries, it is still in its early integration stage in most medical schools, specifically in the Asian region. The challenges in incorporating geriatric medicine into the medical curriculum are multidimensional - expanding a fully packed curriculum, resentment from maximally loaded faculty staff, shortage of trained teaching geriatricians,[10-14] and the administration's dilemma for salary adjustment. Furthermore, on the attitude of students towards the aged [11,15-18], Bagri and Tiberius reported that students had not felt appropriately engaged in geriatrics, despaired at the futility of care, and were depressed and frustrated by the decline and death of their patients.[19]

The problem of non-geriatricians teaching Geriatrics has been addressed through various approaches. Faculty staff was provided with intensive training through educational scholarship, mentoring with a geriatrician colleague, and community and geriatric clinic immersion to develop geriatric educational experiences.[20,21] The online teaching mode provides ease in unburdening teachers' tasks [22] and salary adjustment and provides incentives for enhanced and sustained teaching motivation.[23]

Table 1. The 5M framework and minimum competencies with brief descriptions for the undergraduate medical curriculum by the American Geriatrics Society.[9]

Framework	Minimum Competencies	Brief Description
Mind	Cognitive concerns	Use of validated screening tools to differentiate normal aging, delirium, dementia, and depression.
	Capacity	Identify abilities and capacities for medical decision.
	Delirium diagnosis	A medical emergency to work-up for precipitating factors.
	Agitation management	Identify underlying cause for treatment strategies to avoid pharmacological and physical restraints unless it poses a risk to self and others.
Mobility	Functional assessment	Includes basic and instrumental activities of daily living.
	Fall risk screening	Identify intrinsic and extrinsic risk factors, environmental hazards, and improper use of assistive devices. Use validated gait and balance screening tools.
	Fall risk management	Approach through interprofessional team, such as pharmacists, physical therapists, and occupational therapists
Medications	Medication reconciliation	Document dosage, indications, and adherence issues, if any.
	Geriatric pharmacology	Review age-related physiologic changes that may impact pharmacokinetics and pharmacodynamics.
	Prescribing cascades	With new symptoms, review drug adverse effects, drug-drug interactions, and drug-disease interaction, to avoid prescribing cascade.
	Deprescribing	Optimize medication regimens and deprescribe medications which are inappropriate, high risk and lack indication.
Multicomplexity	Health equity	Take steps to address racism, ageism, and sexism to overcome biases and address healthcare outcome and healthcare access.
	Transitions of care	Plan of care at discharge based on functional status and community resources with accurate and reconciled medication list given to the receiving clinician.
	Hazard of hospitalization	Assess for loss of mobility, falls, malnutrition, delirium, pressure injuries, infection, inappropriate medication, incontinence, and procedural risks and utilize strategies for prevention.
	Atypical presentations	Awareness on conditions presenting uniquely in older adults, such as infections, surgical emergencies, cardiac conditions, as well as fluid and electrolyte abnormalities.
	Aging physiology	Understand the normal aging process.
	Frailty	Recognize and identify spectrum of fit to frail using validated screening tool.
	Prognosis	Use validated disease-specific or multimorbidity-based prognostic tools as well as social and structural determinants of health.
	Individualized recommendations	Use of prognostic information, frailty status, and patient preference.
	Sensory impairment	Screen for hearing, vision, and oral health concerns that may impact cognition, function, social isolation, and health outcomes.
	Pressure injuries	Identify skin breakdown and routinely examine high-risk pressure injury areas.
	Urinary incontinence	Screen and identify type of urinary incontinence.

(Continue..)

Table 1. The 5M framework and minimum competencies with brief descriptions for the undergraduate medical curriculum by the American Geriatrics Society.[9] (Continued)

Framework	Minimum Competencies	Brief Description
Matters Most	Communication	Use communication techniques and body language to demonstrate cultural sensitivity and respect.
	Psychosocial and spiritual needs.	Identify the psychological, social, and spiritual needs of an older patient and/or caregiver, and recognize signs of caregiver stress, elder neglect, and elder abuse.
	Symptom assessment	Assess non-pain and pain symptoms to reduce suffering through non-pharmacologic and pharmacologic treatments, based on the patient's goals of care and safe prescribing principles.
	Patient priorities	Elicit what matters and work with the patient and team to honor these priorities.
	Advance care planning	Distinguish among healthcare proxies, advance directives, and life sustaining treatment orders, in the context of the laws of the country in which one is training or studying.

Medical students' negative attitude towards the aged is another essential concern that must be recognized and curtailed.[11,16-18] Personal contact, prior knowledge of aging, and exposure to aged patients have influenced students' interest in geriatric medicine. In a systematic review by Meiboom and his group, medical students prefer young patients with acute illnesses that can be cured. [17] Perotta and colleagues have shown that students' prior experience with the aged (grandparents, volunteer work for the aged) correlated with interest in studying geriatrics.[15]

Incorporating geriatric medicine into a preexisting compact medical curriculum has posed a serious challenge.[11] One specific approach is the vertical curriculum, whereby educational objectives are longitudinally incorporated into other courses throughout the four-year medical school curriculum. No separate course or clerkship is presented in a given year. However, the material is presented in existing courses longitudinally throughout all four years of medical school.[24] Supiano, et al. have shown in their longitudinal observational cohort study that student performance in geriatric activities led to significant improvement as they progressed into their senior years.[25] Moreover, Lee and colleagues have demonstrated that students obtain higher scores as they acquire higher levels of geriatric learning.[26] Introduction of geriatric medicine in the first year has shown advantages as students acquire early understanding and better perception

of the health of older persons from healthy aging to illness.

The integration of Geriatrics must maintain effective geriatric content without expanding the program. Several measures have been demonstrated for assessing curriculum content in geriatrics and summarized in the report by Eleazar and his group. [27] These include direct observation by a qualified faculty member, test question analysis, student reports, and course director self-report.[11,27] Early on, institutions relied on the course director self-reporting to monitor the vertical curriculum in geriatrics. Eleazar and colleagues' research has demonstrated that formulating learning objectives was a better approach to provide direction and clarity for students. It was an effective platform for instructors to create a measurable and accurate assessment of the individual learner.[27]

Further, curricular integration of geriatric medicine into a preexisting loaded medical curriculum is a dilemma for the faculty staff and administration. If needed, curricular restructuring must address concerns of all stakeholders, most notably teachers and students. Medina-Walpole and colleagues formulated a ten-step model for incorporating aging as a curricular theme into the undergraduate medical school curriculum (Figure 2). Vital operational challenges addressed in the scheme are the engagement of course directors, tracking the experience of the aging theme, inter-specialty collaboration and camaraderie, and evaluation of students' attainment of learning

Step 1: Getting in the game: Cooperate rather than compete

Step 2: Select captains and coaches: Identify theme directors and an aging theme design team

Step 3: Create a playbook: Develop learning objectives and a curricular map

Step 4: Create team spirit: Develop a working relationship with your medical school

Step 5: Quarterback sneak----Get the ball and run with it! Develop geriatric curricular initiatives

Step 6: Develop your most valuable players: Mentor and encourage your medical students

Step 7: Postgame review: The evaluation process

Step 8: Touchdowns and extra points: Effect of curricular initiatives

Step 9: Interceptions and fumbles: Barriers to success

Step 10: There's always next season: Incremental growth is OK!

Figure 2. Ten-step model in incorporating aging as a curricular theme into the undergraduate medical school curriculum. Adapted from Medina-Walpole A, Clark NS, Heppard B, Dannefer E, Hall W, McCann R, et al. A user's guide to enhancing geriatrics in an undergraduate medical school curriculum: The ten-step model to winning the "geriatric Game." *J Am Geriatr Soc* 2004;52:814–821.

objectives. They have shown that the aging theme successfully enhanced geriatric curricular content of undergraduate education and positively influenced the students' perspectives on learning geriatrics. [28]

CONCLUSION AND INSIGHTS

The rate of population aging is fast. Globally, the healthcare system will be burdened with significant challenges of caring for the aged population. The evolution and improvement of the healthcare force towards appropriate care for the elderly is a big concern.

Medical schools play an essential role in addressing the problem of workforce in caring for older individuals. Although besieged with challenges, the gradual integration of geriatric medicine eases the strain of expanding a compact preexisting undergraduate medical curriculum. Further, empowering nongeriatrician faculty staff through continuous mentoring and training is imperative. Introduction and inclusion of geriatrics in the basic subjects with early exposure of medical students as they enter their clinical learning have shown promising outcomes for satisfactory clinical performance in geriatric medicine as they progress to their senior undergraduate years.

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