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INCORPORATING GERIATRICS INTO UNDERGRADUATE MEDICAL EDUCATION IN LEBANON

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ABSTRACT • Background : Although the proportion of older adults in Lebanon is expected to increase rapidly over the next few decades, the current healthcare workforce is unprepared to address the needs of this population. Currently, emphasis on geriatrics is lacking in medical education curricula of most universities in Lebanon, and there is a shortage of geriatricians in the country. **Methods** : In this paper we present specific methods of integrating geriatrics into the undergraduate medical curriculum based on the experience of medical schools in the United States. **Results** : Incorporating geriatrics into the medical curriculum requires support from deans and faculty members at medical schools, as well as training of non-geriatricians to teach geriatrics within their specialty. Geriatrics training can be gradually incorporated into existing courses throughout the four years of medical school, and should consist of a holistic approach that teaches students how to diagnose, treat, and interact with older adults and their caregivers while being mindful of their psychological, physical and social wellbeing. **Conclusions** : Increasing exposure to geriatric education during medical school promises to increase interest in geriatrics, and ultimately help address the shortage of geriatricians in the country.

Keywords : geriatrics, medical education, medical students, older adults, Lebanon

RÉSUMÉ • Contexte : Au cours des prochaines décennies, la proportion de personnes âgées va augmenter rapidement au Liban. Désormais, le système de santé et les effectifs médicaux existants ne sont pas en mesure de répondre aux besoins de cette population. Actuellement, la gériatrie n'est pas suffisamment intégrée dans les cursus des facultés de médecine au Liban et il y a une pénurie de gériatres dans le pays. **Méthodes** : Dans cet article nous présentons des méthodes pour faciliter l'intégration de la gériatrie dans le cursus des facultés de médecine en se basant sur l'expérience des facultés de médecine aux États-Unis. **Résultats** : L'intégration de la gériatrie dans le cursus médical nécessite le soutien des doyens et des professeurs de médecine, ainsi que la formation de non-gériatres pour enseigner la gériatrie dans leur spécialité. La formation en gériatrie doit être progressivement intégrée dans les cours tout au long des études médicales et doit consister en une approche holistique qui enseigne aux étudiants comment diagnostiquer, traiter, et communiquer avec les personnes âgées et leurs familles, tout en étant conscients de leur bien-être psychologique, physique, et social. **Conclusions** : Exposer les étudiants en médecine à la gériatrie au cours de leurs études pourrait accroître leur intérêt à poursuivre une spécialité dans cette discipline et contribuer à diminuer la pénurie de gériatres dans le pays.

INTRODUCTION

Though only 8% of the Lebanese population is over the age of 65 years, this segment of the population consumes a disproportionate amount of the healthcare cost and long-term care services because of multiple chronic diseases associated with aging such as disability, dementia, cardiovascular diseases, and cancer among others [1]. In addition, older adults suffer from complex conditions with multiple comorbidities. On average, a person over 75 years of age has three chronic conditions and uses more than four prescription medications. Compared to younger patients, older adults may have atypical disease presentations and medication responses, and drug-drug-interactions and polypharmacy are widely encountered in this age group [2]. Therefore, physicians of the future must have the adequate knowledge and skills to address the healthcare needs of older adults irrespective of the specialty they intend to pursue [3-4]. Patient outcomes improve when providers receive specialized training in care for older adults [5].

In Lebanon, geriatrics is not emphasized in undergraduate and graduate medical education curricula of most universities. A global study on geriatric education found minimal teaching of geriatrics for medical students in Lebanon, and significant variability between universities [6]. The curriculum of two major private universities, the American University of Beirut and Saint Joseph University, was composed of 5% and 22% geriatric courses respectively. The Lebanese University included geriatric teaching in 3% of the curriculum while the Beirut Arab University had the most teaching of geriatrics in the curriculum, reaching 60%, because it was the only medical school where geriatric medicine consists of a mandatory 20-40 hour course covering social and psychological

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aspects of aging. In addition, there is a lack of post-graduate training in geriatrics and gerontology. General practitioners and family physicians trained in geriatrics are limited as the trend in Lebanon is towards specialization and sub-specialization [7]. Current conservative estimates in Lebanon indicate a ratio of one geriatrician for every 8500 persons over 75 years old. By way of comparison, in the United States, there is currently one geriatrician for every 2600 Americans over the age of 75 years [8]. Lack of geriatric services and training in medical schools adversely affects the quality of life of older adults [9].

This paper aims to provide an overview of how geriatrics could be incorporated into the undergraduate medical curriculum in Lebanon by providing specific examples of geriatrics teaching methods used in other countries, mostly the United States. We also present recommendations to facilitate the process of incorporating geriatrics into the medical school curriculum in Lebanon and to address the lack of formally trained geriatricians.

MAJOR COMPONENTS OF THE GERIATRIC CURRICULUM FOR MEDICAL STUDENTS

In the early 2000's, forty medical schools in the United States were funded to incorporate geriatric education into the undergraduate medical curriculum given the pressure to address the healthcare needs of the baby boom generation. Geriatric training was incorporated within existing courses throughout the four years of medical school [10]. The curriculum consisted of a holistic approach to teach students how to diagnose, treat, and communicate with older adults and their caregivers, and encompassed the psychological, physical, social, and spiritual health needs of the elderly. Several curricula followed a longitudinal approach whereby students start with well-elders and move to frail adults.

In 2008, the American Association of Medical Colleges (AAMC) disseminated a set of 26 geriatric competencies in eight domains based on the experiences of medical schools which incorporated geriatric courses into their curriculum [11-12]. These core domains include:

1. Medication management
2. Cognitive and behavioral disorders
3. Self-care capacity
4. Falls, balance and gait disorders
5. Health care planning and promotion
6. Atypical presentation of disease
7. Palliative care
8. Hospital care for elders.

In the United Kingdom, the British Geriatrics Society developed a geriatrics curriculum for medical students emphasizing the following concepts:

1. Respect for patients of all ages
2. The aging process and theories of aging
3. Diagnosis and management of diseases in older adults with an emphasis on differences in disease patterns and presentation of illness with aging
4. Drug prescription
5. Ethical and legal issues
6. Concept of healthy aging [3].

In both the American and British models, teaching of geriatrics involved diverse methods ranging from traditional didactic lectures to more interactive sessions such as role playing, geriatric education videos, problem-based learning, use of internet resources, and clinical experiences [3, 13].

SELECTED EXAMPLES OF GERIATRIC EDUCATION MODULES

The sections below provide specific examples of geriatric courses that were introduced during pre-clinical and clinical years of undergraduate medical education in several medical schools in the United States. Review of the literature could not identify specific examples from other countries.

Geriatric teaching during the pre-clinical years

Introduction to older adult care starts as early as the first two years of medical school in several programs in the United States. Basic science courses were modified to include 1-2 hours per course of geriatric teaching provided by a geriatrician [14]. Didactic sessions are also complemented by web-based modules which address pharmacology; cognitive and functional assessment; women's health; infectious disease; and organ-specific aspects of aging and disease. The pharmacology course introduces the student to the challenge of geriatric polypharmacy and to the risk of drug-drug interactions [14-15]. Introduction of geriatrics during the anatomy course addressed discussions about causes of death and differentiation of normal (physiologic) aging from pathologic changes leading to disease and death by using demographic information and anatomical findings of cadavers [13, 16-17]. After a lecture presenting basic concepts on aging in relation to cadavers, students present their findings in small group discussions with geriatricians. Evaluations conducted at University of Rochester, Brown, and Florida State Universities indicated that more than 80% of students highly rated the incorporation of geriatrics in the anatomy course as students were eager to be introduced to clinically relevant matters early on in their studies. In addition, faculty members reported that this activity was of very low cost to programs [16].

In other schools, students are exposed to interactive modules consisting of various activities and interactions with older adults. For example, within the required first year course on *Medicine, Patients and Society* at Weil Cornell Medical College, four hours are allocated to communication techniques between older patients and physicians, the importance of obtaining a detailed social history and functional assessment, and the consequences of ageism in the medical setting [18]. Teaching of these concepts is performed using various interactive methods,

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and students are provided a list of recommended readings prior to the course. A video introducing thought-provoking aspects of aging is followed by a discussion of the student's perceptions of aging. The module also includes role plays by faculty members to introduce communication skills with older adults and the need to avoid a paternalistic approach. The module ends by having the students collect a social history and geriatric screen on a healthy older adult followed by a discussion.

A one-week course on aging and dying was incorporated during the pre-clinical years at Emory University School of Medicine. It was developed by geriatricians and basic scientists with the objective to deliver an *"overview of aging that moves successively through the cellular, physiological, clinical, and sociological levels; culminating with a last day dedicated to death and dying"* and an emphasis on normal aging rather than disease states [19]. The course included the following sessions: 1) Cellular aging, 2) Organisms to people, 3) Individuals and aging, 4) Society and aging, 5) Aging and dying [19]. Students interviewed with simulated patients who were at different stages of life followed by interactive discussions and workshops, as well as standard lectures and assigned readings.

Interactive modules were very well received by medical students at Emory and Weil Cornell University; they enhanced knowledge of aging, improved interpersonal skills, and changed their perception of older patients from one of frail debilitated persons to gracefully aging and functional individuals [14, 18-19]. These modules also led to an interest in pursuing a specialty in geriatric medicine, which many students were unaware of prior to the module.

In some programs, during the second year, medical students are required to visit nursing homes and assisted living facilities in groups, and accompany a geriatrician in pairs to conduct house calls to two home-bound older patients [14]. During those visits, each student completes a focused cognitive, functional, and social assessment of an older adult, and writes-up the clinical encounter and medication review.

Geriatric teaching during the clinical years

The clinical years (last two years of medical school) are designed to reinforce the lessons learned previously through clinical rotations, seminars, and electives, and provide further opportunities to interact with geriatricians. Although medical students encounter older adults in all clinical rotations with the exception of pediatrics, this does not preclude the availability of a special rotation in geriatrics in order to have a thorough knowledge about the diagnosis and treatment of diseases in this age group. For example, a one-month geriatric rotation in outpatient settings including clinics, home visits, and nursing homes, is mandatory for all fourth-year medical students at Boston University School of Medicine [20]. As part of an interdisciplinary team, students accompany clinicians on site visits and are assigned three patients per clinic-day to examine and follow-up with. The rotation also includes formal lectures, online material, and interactive workshops covering incontinence, dementia, falls, medications, hospice and end-of-life care. This rotation covers 24 of the 26 geriatric competencies required by the AAMC, and students' knowledge and skills in managing geriatric patients significantly improved after the rotation [20].

The University of Pittsburgh School of Medicine and University of South Florida opted to include a one-week intensive course of geriatrics for third-year medical students instead of introducing major changes to their curriculum [21-22]. The learning objectives of the course are to introduce the concepts of diagnosis and management of geriatric syndromes, principles of geriatric pharmacology, and the ethical and communication skills involved in dealing with complex patient situations like the evaluation of decision making capacity. In brief, the geriatrics syndromes session includes discussion of falls and delirium; the geriatric pharmacology session addresses changes in pharmacokinetics and pharmacodynamics, drug-drug and drug-disease interactions, drug-induced geriatric syndromes, drugs to avoid in older adults, principles of optimal prescribing for elders, and taking a medication history and determining adherence; and the ethics and communication session uses film clips to illustrate common challenging situations, and draws on discussions with geriatricians and caregivers. In addition, the course includes a visit to a long-term care facility to introduce students to older adults living in those facilities, post-acute hospital rehabilitation, and dementia unit. The course also includes interviews with a geriatric patient who experienced multiple hospitalizations, was transferred to the nursing home, and then returned to the community, in order to demonstrate the continuum of care. The course was interactive and involved small group discussions after short lectures. Students presented their case evaluations in groups on the last day and had an exam to evaluate their knowledge after the module. After the program was implemented at the University of Pittsburgh, an evaluation of the intensive course revealed that 84% of students had a better understanding of geriatric medicine, 74% felt more comfortable addressing geriatric issues, and 69% of the students said that several situations addressed in this course would be helpful for other clerkships [21].

Geriatrics modules that encompass the four years of undergraduate medical education

- ***The Senior Mentor Program (SMP).*** One of the most widely implemented and successful longitudinal training module in geriatrics for medical students is the senior mentor program (SMP). This concept was introduced in several medical schools whereby first-year medical students are matched, in pairs, with a relatively healthy adult over the age of 65 years and living in the community [10, 15, 23-27]. The objectives of the SMP are to: 1) Expose students to healthy older adults, 2) Foster a positive view of older adults

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by building a longitudinal relationship across all four years of medical school, 3) Provide an out-of-class venue to teach geriatrics, and 4) Provide a new tool to increase exposure to geriatric content in medical school.

In the SMP, students and mentors (older adults) meet at least six times per year. At implementation, the geriatricians would select older adults from their own pool of patients knowing who would be capable of participating in the program (reasonably cognitively intact, community dwelling, and has transportation access). In subsequent years, older adults living in the community started to volunteer given the positive experience and wide local and national press coverage [15]. The students' meetings with mentors complemented ongoing classroom curriculum. For instance, during the pharmacology course, students meet with their mentors to complete a medication review, summarize the major side effects and drug-drug interactions, and then discuss their findings in small groups with a geriatrician and a pharmacist. During the preventive medicine course, students work with their mentors to promote a healthy habit or activity, and follow-up whether behavioral changes have occurred. Student-mentor interactions continue throughout all clinical rotations allowing exposure to various health conditions of older adults which are encountered in ophthalmology, surgery, urology, psychiatry, and gynecology. SMP implementation required minimal cost and administrative burden. In some medical schools, a group of faculty members provides short didactic lectures prior to the mentor-student meetings and conducts small case discussions of their findings [23-24]. More than half of the geriatric competencies are covered in the SMP and students' evaluations indicated that geriatric training was adequately covered throughout the four years of medical school [15].

SMP success depended on the integration of geriatrics topics within current medical school curricula which facilitated subsequent senior-mentor meetings and activities [23-24]. While in some schools mentor recruitment was easy and attrition rates were low [15, 27], in others it was difficult to recruit mentors belonging to minority population and some seniors were reluctant to have a "stranger" visit their home [23-24]. Hence, it is important for geriatricians to recruit patients who would be willing to commit to this activity throughout the four years of medical school in order to optimize the experience of medical students.

- ***The geriatrics medical student scholar program.*** The University of Cincinnati College of Medicine implemented the Geriatric Medical Student Scholars (GMSS) Program, a longitudinal four-year geriatrics education program [28]. The objective of this program is to present a variety of extracurricular didactic and clinical activities to a group of medical students who volunteer to enhance their knowledge of the complex social and health challenges facing older adults. Geriatric medicine faculty members help students better appreciate their experiences and apply them to the clinical setting. A topic pertaining to older adult care (e.g. end-of-life ethical and legal considerations, hospital-nursing home interface, personal experiences of aging) is presented each month and students discuss their thoughts about the program on a regular basis. Reflective journaling is also required whereby students describe their experiences with older adults in a journal. Evaluation of this program by analyzing the student's journal entries found that several competencies required in geriatric education were being covered, and that students changed their perception of the elderly from a frail older adult to one that can be healthy and independent [28].
- ***Internet-based education.*** Almost 80% of 68 medical schools surveyed in the United States reported the use of the internet for geriatric education [29]. The most common databases used were PubMed, MEDLINE, Up-to-Date, and MD consult. In addition, the portal of geriatric online education (POGO-e; http://www.POGOe.org) which is freely available and includes geriatric teachings and assessment materials for all disciplines was used by 60% of programs. This website is being used in several medical schools in the United States to develop course content and case discussions. POGO-e covers a variety of topics ranging from basic science to clinical skills, and each module can be rated by faculty members. Internet-based education is increasingly being used in medical education; however, it is important to ensure accurate content as well as appropriate integration into the medical curriculum [29].

Recommendations for integrating geriatrics in undergraduate medical education in Lebanon

While there is no doubt that geriatric medicine needs more emphasis in the undergraduate medical curriculum in Lebanon, many challenges and opportunities lie ahead. The following section provides some suggestions to help integrate geriatrics into the medical curriculum in Lebanon based on the experience of other countries.

- ***Secure the support of medical schools and medical professionals.*** Most geriatrics teaching in Lebanon is currently done during the internal medicine or family medicine rotations; however, experience from other countries indicates that geriatrics exposure should start during the basic science courses and expand to all clinical rotations. Successful integration of these activities as early as the first year of medical school depends on support from both teachers of basic science courses as well as clinicians and geriatricians [10, 16]. To secure an effective training in geriatrics, a greater frequency and consistency of involvement in geriatric education from faculty members is needed.

  In addition, medical schools and the medical profession are usually resistant to change and outside influence. Therefore, revision of the medical curriculum to incorporate geriatrics would need the support of

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professional societies, medical school and university administration (including university presidents, medical school deans, and chairmen of medical school departments), governmental agencies, as well as promotion of public education. By ensuring the support of medical schools, it will become easier to secure the necessary resources that will be needed to support geriatric education which include resources needed for curriculum development and teaching, and to support students in dedicated courses and fellowships.

- ***Gradual integration of geriatrics into the medical curriculum.*** A major hurdle is how to accommodate geriatrics competencies in an already crowded curriculum [4]. Gradual changes to the curriculum might allow the introduction of geriatrics without drastic changes to the course structure until a more integrated geriatrics curriculum is in place. In fact, most of the medical schools in the United States gradually integrated geriatrics before reaching complete integration throughout the four years of medical school [10]. Incorporation could start during the first two years by introducing geriatrics in the basic science courses; following successful implementation, the curriculum of the last two years could then be revised [13].
  Based on the evaluation of undergraduate geriatrics curricula of medical schools in the United States, students seem to benefit the most from the interactive sessions including house visits and nursing home visits compared to the didactic lectures which might be skipped [14]. Hence, introducing these hands-on modules to the Lebanese medical education system might prove most beneficial.
- ***Address the absence of a national governing body to revise the medical school curriculum.*** While medical schools in the United States follow guidelines from the AAMC to develop their curriculum, there is no governing body in Lebanon to dictate a national policy. The shortage of geriatricians in Lebanon and the lack of geriatric medicine divisions provide further systemic obstacles. AAMC competencies and proven teaching modalities cannot be implemented wholesale in Lebanon, which has a different cultural background compared to the United States. The absence of social support services, primary care culture, and interdisciplinary spirit markedly limit the ability to teach good geriatric medicine care across all settings. However, early efforts are starting to bear fruit. Since overhauling the geriatric medicine rotation for internal medicine residents at the American University of Beirut in June 2011, several medical students and residents have opted for additional elective months in geriatrics, and three residents have applied for a geriatric fellowship. With adequate training and continuing education of non-geriatricians, the academic healthcare workforce should be able to provide geriatric teaching within the medical specialties – a good launching point for a journey just beginning. This goal can be achieved with the persistent effort of the dedicated few geriatricians who have chosen to pursue the practice of geriatric medicine in Lebanon against the odds, but with a vision of a better future for all.

CONCLUSION

In conclusion, Lebanon will be experiencing the most rapid increase in the proportion of older population in the coming years among the Arab countries. Medical schools are still unprepared to address the health needs of the elderly population as geriatrics is not incorporated into the medical school teaching curriculum. The benefits of geriatric care have been documented in the United States compared to conventional care [30]. An economic analysis revealed that good geriatric care not only improved survival and functional independence of older patients, but also saved direct healthcare costs, particularly nursing home placement costs [31].

Given the shortage of geriatricians in the country, education of current medical providers in principles of geriatric medicine is necessary. This will require securing the support of medical schools and medical professionals to revise the medical curriculum, career-long demonstration of geriatric competence, and an increase in the number of faculty members teaching geriatrics. Furthermore, geriatric education should not be confined to the classroom or hospital setting but should include visits to assisted living facilities and nursing homes as well as patients' homes. A comprehensive geriatric medicine curriculum should also address communication skills and the unique social, psychological, financial, and emotional concerns of older adults. Incorporation of geriatric teaching in medical school curricula requires the cooperation from faculty members, geriatricians, and medical school administrations.

Training medical students in geriatrics throughout medical school is a first step towards having a healthcare workforce capable of providing excellent care for older adults regardless of the specialty they pursue in the future. In addition, increasing exposure to geriatrics during medical school might increase the student's interest in pursuing a specialty in geriatrics [14, 18-19], and ultimately help address the shortage of geriatricians in the country. Furthermore, geriatricians should be better compensated for their services to encourage more physicians to pursue this specialty.

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