

การสอนความรู้เกี่ยวกับเวชศาสตร์ฉุกเฉินผู้สูงอายุ ในแพทย์ประจำบ้านเวชศาสตร์ฉุกเฉินในประเทศไทย

แพรวา ธาตุเพชร^{1,2*}, Shan W. Liu², จิราภรณ์ ศรีอ่อน³, จูติ วงษ์ด้งมัน^{2,4}

¹ ภาควิชาเวชศาสตร์ฉุกเฉิน คณะแพทยศาสตร์ มหาวิทยาลัยขอนแก่น

² Department of Emergency Medicine, Massachusetts General Hospital, Boston, Massachusetts, USA

³ ภาควิชาเวชศาสตร์ฉุกเฉิน คณะแพทยศาสตร์วชิรพยาบาล มหาวิทยาลัยนวมินทราธิราช

⁴ กลุ่มงานเวชศาสตร์ฉุกเฉิน โรงพยาบาลเลิดสิน กรมการแพทย์ กระทรวงสาธารณสุข

*ผู้ประพันธ์บทความ

แพรวา ธาตุเพชร

ภาควิชาเวชศาสตร์ฉุกเฉิน คณะแพทยศาสตร์ มหาวิทยาลัยขอนแก่น

123 มิตรภาพ ต.ในเมือง อ.เมือง จ.ขอนแก่น 40002

อีเมล: phraewa@kkumail.com

โทรศัพท์ที่ทำงาน: 043 366 869

DOI: 10.14456/tjem.2021.1

บทคัดย่อ

■ บทนำ

จำนวนประชากรผู้สูงอายุเพิ่มมากขึ้นทุกปีเช่นเดียวกับผู้สูงอายุที่จำเป็นต้องใช้บริการการแพทย์ฉุกเฉิน ห้องฉุกเฉินเป็นหน่วยงานหนึ่งที่ได้รับผลกระทบจากปริมาณผู้สูงอายุที่เพิ่มขึ้น แพทย์เวชศาสตร์ฉุกเฉินได้รับการเตรียมพร้อมเพื่อดูแลผู้ป่วยในห้องฉุกเฉิน แต่เป็นที่น่าเสียดายว่าแพทย์จำนวนมากยังไม่มี ความเชี่ยวชาญในการดูแลผู้ป่วยสูงอายุ หลักสูตรแพทย์ประจำบ้านเวชศาสตร์ฉุกเฉินในไทยเริ่มก่อตั้งในปี พ.ศ.2546 แต่จนถึงปัจจุบันยังไม่มีหัวข้อเกี่ยวกับเวชศาสตร์ฉุกเฉินผู้สูงอายุในหลักสูตรแพทย์ประจำบ้านไทย

■ วัตถุประสงค์

วิจัยฉบับนี้มีจุดมุ่งหมายเพื่อทราบสถานการณ์การเรียนการสอนความรู้เกี่ยวกับเวชศาสตร์ฉุกเฉินผู้สูงอายุในแพทย์ประจำบ้านเวชศาสตร์ฉุกเฉินในประเทศไทย รวมถึงอุปสรรคในการเรียนการสอน เพื่อเตรียมพร้อมในการพัฒนาการดูแลผู้สูงอายุฉุกเฉินในประเทศไทยต่อไป

■ วิธีการศึกษา

ผู้วิจัยได้พัฒนาแบบสอบถามออนไลน์และรวบรวมรายชื่อสถาบันที่มีการเรียนการสอนหลักสูตรแพทย์ประจำบ้านเวชศาสตร์ฉุกเฉินทั้งหมด 22 สถาบัน และได้ส่งจดหมายอิเล็กทรอนิกส์พร้อมแบบสอบถามไปยังหัวหน้าภาควิชาหรือผู้จัดการหลักสูตรแพทย์ประจำบ้านเวชศาสตร์ฉุกเฉิน งานวิจัยนี้ใช้สถิติแบบบรรยาย

ผลการศึกษา

งานวิจัยฉบับนี้ได้รับอัตราการตอบกลับร้อยละ 64 (14 จาก 22 สถาบัน) มีทั้งหมด 7 สถาบันที่มีการเรียนการสอนความรู้เกี่ยวกับเวชศาสตร์ฉุกเฉินผู้สูงอายุ เวลาที่ใช้ในการเรียนการสอนความรู้เกี่ยวกับเวชศาสตร์ฉุกเฉินผู้สูงอายุเฉลี่ยที่ 4 ชั่วโมง (ค่าความเบี่ยงเบน \pm 2.8) มีสถาบันที่มีแพทย์เวชศาสตร์ฉุกเฉินผู้สูงอายุ 2 สถาบัน อุปสรรคที่สำคัญคือการไม่มีอาจารย์ผู้เชี่ยวชาญด้านเวชศาสตร์ฉุกเฉินผู้สูงอายุ ร้อยละ 92 คิดว่าการจัดหลักสูตรความรู้เกี่ยวกับเวชศาสตร์ฉุกเฉินผู้สูงอายุให้อาจารย์แพทย์ช่วยส่งเสริมการเรียนการสอนความรู้ด้านเวชศาสตร์ฉุกเฉินผู้สูงอายุแก่แพทย์ประจำบ้าน ผู้ตอบแบบสอบถามทั้งหมดมีความเห็นว่าความรู้เกี่ยวกับเวชศาสตร์ฉุกเฉินผู้สูงอายุมีความสำคัญแก่แพทย์เวชศาสตร์ฉุกเฉินและการจัดหลักสูตรออนไลน์จะช่วยส่งเสริมการเรียนการสอนความรู้ด้านเวชศาสตร์ฉุกเฉินผู้สูงอายุแก่แพทย์ประจำบ้านเวชศาสตร์ฉุกเฉิน

สรุปผลการศึกษา

แม้ว่าผู้ตอบแบบสอบถามจะมีความเห็นตรงกันว่าความรู้ด้านเวชศาสตร์ฉุกเฉินผู้สูงอายุมีความสำคัญต่อแพทย์ประจำบ้านเวชศาสตร์ฉุกเฉินแต่การเรียนการสอนความรู้ด้านเวชศาสตร์ฉุกเฉินผู้สูงอายุยังไม่ได้มีการพัฒนามากนักในหลักสูตรแพทย์ประจำบ้านเวชศาสตร์ฉุกเฉินไทย อุปสรรคที่สำคัญคือการไม่มีอาจารย์แพทย์ผู้เชี่ยวชาญด้านเวชศาสตร์ฉุกเฉินผู้สูงอายุซึ่งอาจแก้ไขได้โดยการพัฒนาหลักสูตรเวชศาสตร์ฉุกเฉินผู้สูงอายุแก่อาจารย์แพทย์ รวมถึงการจัดหลักสูตรมาตรฐานร่วมกับจัดการเรียนการสอนทางออนไลน์แก่แพทย์ประจำบ้านอย่างสม่ำเสมอ การประเมินผลโดยการเพิ่มหัวข้อเกี่ยวกับเวชศาสตร์ฉุกเฉินผู้สูงอายุในการสอบเพื่อรับรู้คัมภีร์เวชศาสตร์ฉุกเฉินอาจช่วยเพิ่มความสนใจในความรู้ด้านเวชศาสตร์ฉุกเฉินผู้สูงอายุได้

คำสำคัญ

เวชศาสตร์ฉุกเฉินผู้สูงอายุ แพทย์ประจำบ้านเวชศาสตร์ฉุกเฉิน ประเทศไทย

Geriatric emergency medicine-related knowledge teaching among Thai emergency medicine residents

Phraewa Thatphet^{1,2}, Shan W. Liu², Jiraporn Sri-On³, Thiti Wongtangman^{2,4}

¹ Emergency Department, Faculty of Medicine, Khon Kaen University, Khon Kaen, Thailand

² Department of Emergency Medicine, Massachusetts General Hospital, Boston, Massachusetts, USA

³ Department of emergency medicine, Faculty of Medicine Vajira Hospital, Navamindradhiraj University, Bangkok, Thailand

⁴ Emergency department, Lerdsin Hospital, Department of Medical Service (DMS), Ministry Of Public Health (MOPH), Bangkok, Thailand

*corresponding author

Phraewa Thatphet

Emergency Department, Faculty of Medicine, Khon Kaen University, 123 Mittrarp Road, Amphur Muang, Khon Kaen, 40002, Thailand

Email: phraewa@kkumail.com

Tel. 043 366869

DOI: 10.14456/tjem.2021.1

Abstract

Introduction

The number of the older adult population and the geriatric patients seeking emergency has been increasing. The emergency department (ED) is affected by this growing number. Emergency physicians (EPs) are prepared to take care of patients in the ED. Unfortunately, some physicians still unfamiliar with taking care of older adult patients. Emergency medicine (EM) in Thailand was established in 2003 but yet, there is no specific topic about geriatric emergency medicine in the current EM residency curriculum.

Objective

This study aims to explore how GEM knowledge is taught in the Thai EM residency curriculum and the barriers to teaching GEM.

Study design

We developed a web-based survey. We gathered the list of EM residency training institutions, contacted 22 training sites, and sent out the email with the survey link to the EM department or EM residency program director. Descriptive analysis was performed.

Result

We had a 64% (14/22) response rate. Seven institutions were teaching GEM. The mean time spent on teaching GEM-related knowledge was 4 hours ($SD \pm 2.8$). Two (28.6%) institutions had GEM staff. No GEM specialist staff was the main barrier to teaching GEM-related knowledge. Most (92.9%) thought providing GEM course for EM staffs will enhance teaching GEM-related topics to EM residents. All participants thought that GEM-related knowledge is important to EP and thought an online course could enhance GEM-related knowledge.

Conclusion

Despite unanimous opinions that GEM-related knowledge is important to EM residents, teaching GEM-related knowledge is still a novelty in the Thai EM residency curriculum. The major barrier was a lack of GEM specialists which might be solved by creating a GEM course for EM staff with setting up a standard course and a regular online course for the residents. Evaluation after the course and adding GEM-related knowledge in board examination might enhance interested in the GEM-related knowledge.

Keywords

Geriatric emergency medicine, Emergency medicine resident, Thailand

Introduction

The proportion of older adults in the population has been consistently increasing compared to other age groups. The main factors that contribute to this aging population increase are advancing medical technologies, early detection and treatment of diseases, health promotion, healthy lifestyle trends, as well as decreasing the birth rate.¹ In 2020, the number of people aged 65 years old or more was 727 million globally and it is projected to increase more than double, to 1.5 billion in 2050.² Given the rising proportion of the geriatric population, the number of geriatric patients seeking emergency healthcare is increasing too. The emergency department (ED) is one of the departments that is most affected by a growing number of geriatric patients.^{3,4} The percentage of older adults visit the ED has been increasing and it is projected that older adults will represent one-third of the patients who visit the ED in 2030.^{5,6} Thailand is no exception. The data show the number of the elderly has increased five-fold from 1960 to 2010, representing 8 million people or 13% of the Thai population. The number of older adults is projected to be over 20 million (more than 30% of the population)

in 2040.⁷ Thailand is projected to have the highest aging population proportion in the Association of Southeast Asian Nations (ASEAN) in 2025.⁸

Older adults have different physiology compare with their younger peers. Aging affects cellular processes and leads to alteration in cardiovascular, respiratory, renal and urological, nervous, muscular and skeletal, endocrine, integumentary, and gastrointestinal systems.⁹ These changes make it more difficult in triage, history taking, physical examination, diagnosis, treatment decision, medications prescription, and discharge care planning.¹⁰ Physicians who work in the ED should have the knowledge and understand the altered physiology of geriatric patients. Emergency physicians (EPs) are prepared to take care of patients in the ED. Unfortunately, even though physicians have positive attitudes towards the care of older adults, some physicians still express unfamiliarity in taking care of older adult patients and thought they lacked of geriatric knowledge and felt that it was more difficult, time-consuming, and resource-intensive to take care of geriatric patients than younger patients.¹¹⁻¹³ Lack of understanding of

different physiology in older adults can lead to delayed treatment, improper treatment, re-admission, increase the length of stay, and increased death.^{14, 15} Furthermore, medical students, residents, and emergency medicine (EM) program directors thought there was not adequate teaching of geriatric emergency care.¹⁶⁻¹⁸ In 1986, Jones et al. mentioned the need to improve geriatric emergency patient care¹⁹ and in 1990, the Society for Academic Emergency Medicine (SAEM) created an interdisciplinary Geriatric Emergency Medicine Task Force to establish and develop the geriatric emergency knowledge for the EM residency curriculum using various modules of learning and assessment.²⁰⁻²⁶

Emergency medicine in Thailand was established as a medical specialty in 2003 with the permission of the Thai Medical Council.^{27, 28} To date, there are 22 emergency medicine training sites including university hospitals, general hospitals, and a military hospital.²⁹ The EM residency curriculum is a 3-year curriculum that aims to provide the residents with patient care, medical knowledge and skills, interpersonal skills and communication, practice-based learning and improvement, professionalism, and systems-based practice. There are

18 major systems learning points (See supplement 1) but there is no specific topic about geriatric emergency medicine in the curriculum.³⁰ This study aims to be the first step of developing GEM knowledge in the Thai EM residency curriculum by exploring how GEM knowledge is taught in each training institution as well as the barriers of teaching GEM to EM residents with the ultimate aim of improving care for older adults in the Thai ED in the future.

Methodology

Study Design and Population

We conducted a web-based survey of the emergency medicine residency directors. We gathered the list of emergency medicine residency training institutions that were listed on the Thai College of Emergency Medicine website.²⁹ From overall 22 training sites, we contacted each institution for the contact of the emergency medicine department or emergency medicine residency program director. This study was exempted by Khon Kaen University ethic committee. (HE631414)

Survey development

The survey was developed corresponding to the Emergency Medicine

survey guideline³¹ by the authors, who have expertise in survey question design. We reviewed and adapted the survey from previous studies about giving geriatric emergency medicine knowledge.^{11, 12, 18, 21} The survey consisted of 23 questions divided into four parts. Section one of the survey included questions about the demographic data of the institution. Since there are no previous studies about how GEM-related knowledge was taught in Thailand, we developed Section two of the survey to assess the baseline level of teaching GEM-related knowledge in responders' current institutions. The third section asked about opinions about GEM-related knowledge, for example, how important GEM-related knowledge, barriers to teaching GEM-related knowledge, and how can we improve teaching GEM-related knowledge for EM residents. The last section included open-ended comments. (See supplement 2). Survey data were collected and managed by web-based software. We piloted the survey with emergency medicine residency directors, emergency physicians, and geriatric emergency medicine fellows for a total of 5 people. After the pilot tests, we made minor edits to the survey to improve

clarification but there was no major change in questions or sequences.

Survey Administration

We sent out the email with the survey link to the potential participants 3 times total, each time was two weeks apart.

Data analysis

We analyzed the hospitals' demographic data, geriatric patients-related demographic data, institutions' current GEM-related knowledge baseline, and opinions on GEM-related knowledge. The results were analyzed in a blinded fashion. We reported questions with discreet answer choices with descriptive data. For normally distributed data, we used percentages and means to display and used medians and interquartile ranges (IQR) otherwise.

Result

The demographic data displayed in Table 1. From overall 22 potential participants, 14 (64%) answered. Participant ages ranged between 33-44 (Mean=37.6, SD±3.05), 11(78.6%) were male. Eight (57.1%) were working at University hospitals, 5(35.7%) at general hospitals, and 1(7.1%) at a military hospital. Emergency visits ranged from 30,000-

120,000 patients/year. (Mean 66,636, SD±27,495) The annual rate of the

geriatric patients' volume ranges from 20-70%. (Mean 41%, SD±17)

Table 1 Demographic data

	N = 14 (%)
Age in years (mean±SD)	37.6±3.05
Male	11 (78.6)
Type of hospital	
University hospital	8 (57.1)
General hospital	5 (35.7)
Military hospital	1 (7.1)
Annual emergency visits (mean±SD)	66636±27495
The annual rate of the geriatric patients in percentage (mean±SD)	41±17

Table 2 GEM-related demographic in current institutions

	N = 14 (%)
The current institution is teaching GEM-related knowledge to residents	7 (50) N = 7 (%)
Time spending teaching GEM-related knowledge in hour (mean±SD)	1-10 (4±2.8)
The current institution has GEM physician	2 (28.6)
Who takes responsibility for teaching GEM-related knowledge to EM residents	
EM staffs	4 (57.1)
EM and GEM staffs	1 (14.3)
EM staff and geriatricians	1 (14.3)
EM and internal medicine staffs	1 (14.3)
Appropriateness of an amount of GEM-related topics	
Optimized	4 (57.1)
Too few and want to add more	3 (42.9)
Has GEM-related knowledge evaluation during resident training	2 (28.6)

Table 2 shows current GEM-related knowledge teaching in participated institutions. Half (N=7) of the participants' institutions taught GEM-related knowledge to their EM residents. The topics that were taught in these institutions were general geriatric emergency, geriatric trauma, geriatric pre-hospital care, atypical presentation, pain management, and addition in other emergency topics. The range of time spent on teaching GEM-related knowledge was between 1-10 hours (Mean 4, SD±2.8) in the overall 3-year residency curriculum. There were two (28.6%) institutions that have GEM staff. In the institutions that taught GEM-related knowledge, the responsibility of teaching GEM-related knowledge to EM residents was EM staff in four (57.1%) hospitals and the others were a combination of EM staffs, GEM staffs, and geriatricians. Four institutions (57.1%) thought the amount of GEM-related topics were optimal while three (42.9%) thought there were too few and wanted to add more. Two of seven hospitals that taught GEM-related knowledge the evaluation during resident training.

Table 3 displays opinions about Geriatric emergency medicine-related knowledge. Every institution (N=14) thought

that GEM-related knowledge is important to EP. Five participants (35.7%) thought GEM knowledge is as important as compared to critical care, 3 (21.4%) to pediatric emergency medicine, 2 (14.3%) to palliative emergency medicine and resuscitation, and 1 (7.1%) to emergency ultrasound and emergency medical services (EMS). The participants expressed the barriers of teaching GEM-related knowledge to residents, the most common barrier was no GEM specialist staff (N=10, 71.4%), the next reasons were GEM-related topics are not interesting (N=2, 14.3%), there was no consensus about topics that should be learned by EM residents (N=1, 7.1%) and no time availability in EM curriculum to add GEM-related topics. (N=1, 7.1%) Most (N=13, 92.9%) thought that providing GEM course for EM staffs will enhance teaching GEM-related topics to EM residents and all participants (N=14) thought that an online course could enhance GEM-related knowledge to EM residents.

From Hogan et al, there are 8 major geriatric competencies for Emergency Medicine Residents which are the atypical presentation of disease, trauma including falls, cognitive and behavioral disorders, emergent intervention modifications,

medication management, transitions of care, pain management/palliative care, and the effect of co-morbid conditions.²⁵ We asked the participants to rank from the most interesting competency that emergency medicine residents should know to the least interesting one. The participants thought atypical presentation is the most

interesting topic, followed by medication management, trauma including falls, the effect of co-morbid conditions, emergent intervention modifications, cognitive and behavioral disorders, pain management/palliative care, and transitions of care, respectively. The result shows in Figure 1.

Table 3 Opinions about Geriatric emergency medicine-related knowledge

	N = 14 (%)
GEM-related knowledge important to EP	14 (100)
GEM knowledge is as important as compared to	
Critical care	5 (35.7)
Pediatric emergency medicine	3 (21.4)
Palliative emergency medicine	2 (14.3)
Resuscitation	2 (14.3)
Emergency ultrasound	1 (7.1)
Emergency Medical Services (EMS)	1 (7.1)
The barrier to teaching GEM-related topic	
No GEM specialist staff	10 (71.4)
GEM-related topics are not interesting	2 (14.3)
There is no consensus about topics that should be learned by EM resident	1 (7.1)
No available period in EM curriculum to add GEM-related topics	1 (7.1)
Providing GEM course for EM staffs will enhance teaching GEM-related topics to EM residents	13 (92.9)
Online course will enhance GEM-related knowledge to EM residents	14 (100)

Table 4 displays comments about GEM-related knowledge teaching for EM residents from all participants.

Comments
<ul style="list-style-type: none"> - Setting the clear scope of knowledge that residents need to learn, like as in ATLS and PHTLS scopes of learning, and creating a standard course focuses on online course and self-learning for the staffs and residents to learn by themselves will help to enhance GEM teaching. - There should be an evaluation by adding geriatric emergency knowledge in the Emergency board examination. - Creating regular conferences or online rounding and record for restudying will make staffs and residents understand how to approach older adult patients and practical points. - Palliative care is important too.
<ul style="list-style-type: none"> - Articles or studies that were created by emergency physicians will make emergency residents interested in geriatric emergency medicine more.
<ul style="list-style-type: none"> - There should be a specific bi-annual course for each training year residents (PGY1, 2,3) 1-2 days per course, 6-8 hours a day. The course should be on the weekend so all the residents can join. Should have the post-course examination and get the certification required for the Emergency board examination. The objectives of the course are to make the residents understand how taking care of geriatric patients is different from the normal population and to prepare the residents for post-graduate work or further plan to study in geriatric emergency medicine fields.
<ul style="list-style-type: none"> - Everyone should concern about geriatric knowledge since there will be more and more people in this population group.
<ul style="list-style-type: none"> - Creating a course that the physicians can take self-learning and have a certification or provide a CME score can be a good motivation.
<ul style="list-style-type: none"> - Providing geriatric emergency knowledge as well as enhancing and create the emergency system to take care of older adult patients (primary care, EMS, palliative care) are important to adapt using geriatric emergency knowledge in real-life practice.

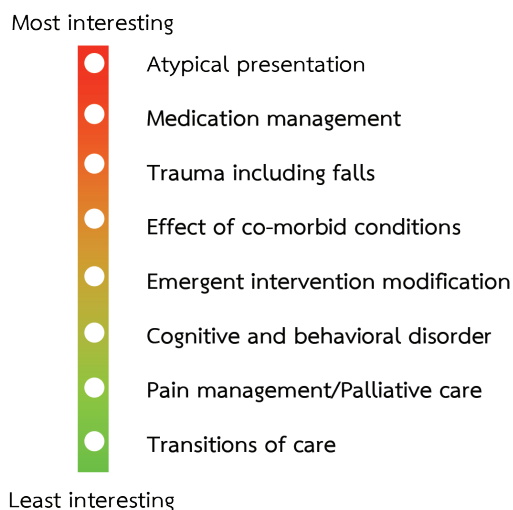


Figure 1 shows interesting topics that should be added to the EM training curriculum by ordering.

Discussion

Our research shows that GEM-related knowledge is important to EM residents and should be taught in the EM residency curriculum. The demographic showed a variety in the proportion of the estimated ED older adult patients, ranged from 20-70% which is much more than the average number from previous studies (between 11-24%).^{5, 32} However, this survey was based on participant's estimation.

To date, there has been no specific topic about geriatric care in the Thai EM residency curriculum. But half (7) of the responders' institutions have started providing GEM-related knowledge to the

EM residents showed an awareness of how important taking care of older adult patients in the ED. These institutions spend an average of 4 ± 2.8 hours for teaching GEM-related knowledge which 57.1% thought was adequate and 42.9% thought it was inadequate and wanted to add more. Jones et al. surveyed in 1992 and found the average hours spent on teaching GEM-related knowledge was 24.5 hrs. Despite the significant difference in the number of hours spent on teaching, more than half (54%) of our participants also thought their teaching hours were adequate too.¹⁸ Hence, evaluation is important to assess the effectiveness of the educational

program,³³⁻³⁵ only 2 (28.6%) from 7 institutions that taught GEM-related knowledge evaluated resident knowledge during training. The participants suggested having the evaluation either after the course, in terms of getting the certificate that will be required for the completion of the residency program or add the direct GEM-related questions in the board examination.

There was a unanimous opinion that GEM-related knowledge is important to the EP, which echoed various previous articles.^{18, 19, 36, 37} However, there are some barriers to teaching GEM-related knowledge to the EM resident, the major one was no GEM specialist staff in the institution followed by uninteresting of GEM-related topics, no consensus on the topics, and limited in the EM curriculum to add GEM-related topics. In terms of GEM specialist staffs, our survey found that there were only 2 institutions that had GEM EP. The GEM-related knowledge teaching overall was the responsibility of mixing between GEM staffs, EM staffs, geriatricians, and internal medicine staffs. This information showed the power of interdisciplinary teams in education. In the current situation when Thailand doesn't have enough GEM EP, it may be a good solution to have help

in some topics from other specialties that specialized in geriatric patients, for instance, internal medicine, psychiatry, or family medicine.³⁸ Moreover, almost all (92.9%) of the participants thought that providing GEM course for EM staffs will enhance teaching GEM-related topics to EM residents at the institution level.

Another barrier may be that GEM is not as interesting as other topics, for example, critical care or Emergency Medical Service (EMS), to the EM residents who tend to prefer exciting, adventurous, and managing cases with time-limiting.³⁹ Nevertheless, previous studies showed that providing geriatric education enhances not only knowledge, care behaviors, decision-making, but also the attitudes toward older adults.^{22, 40-41} Therefore, adding geriatric knowledge to the curriculum might enhance residents' empathy for geriatric caring and interest in this field.

There were comments about creating the standard online course or national bi-annual course for all EM residents plus regular conferences or online rounding and record for restudying will enhance GEM-related knowledge to EM residents too. However, Hesselink et al.'s study showed the EM residents' opinions

that too frequent hours on geriatric education limited them from studying other relevant topics since EM specialty is very broad.⁴² They also commented that online course was one-way, theoretically, and irrelevant to their experience. Another study in 2019 described the barriers of teaching GEM-related knowledge to EM residents including the competing of other educational demands, the enthusiastic level for geriatric care, the difficulty of scheduling program activities within existing duty hours and rotations, and the teaching method that does not fit with learners' needs and preferences.⁴³ These barriers are similar to one of the participants' opinions that there is no available period in the EM curriculum to add GEM-related topics. Therefore, those who are planning to create an online course should be aware of these barriers and plan the curriculum with maximum efficiency and be the least time-consuming for the residents. Hogan et al. described 8 major geriatric competencies that EM residents should learn.²⁵ However, given the limited timeframe in the EM curriculum, prioritizing the topics to teach might be important. Our study findings rank the various topics which may help educators prioritize topics. Beyond

giving the knowledge to EM residents, a participant mentioned applying the knowledge to practice in the real world by providing the knowledge to other healthcare personnel and creating a larger system to take care of older adults. This would help the graduated resident to maintain caring for older adult patients after they graduated which corresponded with previous studies that mentioned the importance of a multidisciplinary approach in taking care of geriatric patients.⁴⁴⁻⁴⁶

Limitations

Our study has some limitations. The first one is the response bias. Given the nature of the educational survey study, the participants who are interested in GEM-related knowledge might have a higher chance of responding more than the ones who are not. However, our research had a 64% response rate which is high compared to other specialist physician web-based surveys.^{47, 48} Therefore we assumed that our responders included both people who were interested in GEM and those who were not. The second limitation was because we analyzed the response in blinded-fashion, we cannot relate the link of each question to the

others, especially about current teaching hour and the opinion about how adequate of current teaching hour in each institution. Lastly, this study explored the opinions from the program directors' side which might not be related to the point of view of the EM residents, the major educational recipients. Further study may have to assess the EM residents' opinions to create the most suitable and effective curriculum for the EM residents.

Conclusion

Despite unanimous opinions that GEM-related knowledge is important to EM residents, teaching GEM-related knowledge is still a novelty in the Thai EM residency curriculum. The major barrier was a lack of specialists in the GEM field which might be solved by creating a GEM course for EM staff with setting up a standard course and a regular online course for the residents. Evaluation after the course and adding GEM-related knowledge in board examination might enhance interested in the GEM-related knowledge. However, given the limited period of learning, designing the course to maximize benefit with the least time spending by prioritizing the topics is crucial. Multidisciplinary education will

help to improve knowledge and the ability to care for geriatric patients in real-world practice.

Acknowledgement

-

References

1. Hwang U, Morrison RS. The Geriatric Emergency Department: THE GERIATRIC EMERGENCY DEPARTMENT. *J Am Geriatr Soc*. 2007 Nov;55(11):1873–6. <https://doi.org/10.1111/j.1532-5415.2007.01400.x>
2. United Nations, Department of Economic and Social Affairs, Population Division. World population ageing 2020 Highlights: living arrangements of older persons [Internet]. 2020. [cited 2021 Jan 15] Available from: https://www.un.org/development/desa/pd/sites/www.un.org.development.desa.pd/files/undesapd-2020_world_population_ageing_highlights.pdf
3. George G. Effect of population ageing on emergency department speed and efficiency: a historical perspective from a district general hospital in the UK. *Emer Med J*. 2006;23(5):379–83. <http://doi.org/10.1136/emj.2005.029793>
4. Schumacher JG, Deimling GT, Meldon S, Woolard B. Older adults in the emergency department: Predicting physicians' burden levels. *The Journal of Emergency Medicine*. 2006 May;30(4):455–60. <http://doi.org/10.1016/j.jemermed.2005.07.008>
5. Ashman JJ. Emergency Department Visits Among Adults Aged 60 and Over: United States [Internet], 2014–2017. 2020;(367):8.) [cited 2021 Jan 15] Available from: <https://www.cdc.gov/nchs/data/databriefs/db367-h.pdf>

6. Wilber ST, Gerson LW, Terrell KM, Carpenter CR, Shah MN, Heard K, et al. Geriatric Emergency Medicine and the 2006 Institute of Medicine Reports from the Committee on the Future of Emergency Care in the U.S. Health System. *Acad Emerg Med*. 2006;13(12):1345–51. <http://doi.org/10.1197/j.aem.2006.09.050>
7. Knodel J, Prachuabmoh V, Chayovan N. The Changing Well-being of Thai Elderly An update from the 2011 Survey of Older Persons in Thailand: HelpAge International East Asia/Pacific Regional Office. [Internet]; 2013. [cited 2021 Jan 15] Available from: <https://www.helpage.org/silo/files/the-changing-wellbeing-of-thai-elderly-an-update-from-the-2011-survey-of-older-persons-in-thailand.pdf>
8. Department of Economic and Social Affairs. World Population Prospects The 2010 Revision Volume I: Comprehensive Tables[Internet]. United Nations; 2011 [cited 2021 Jan 15] Available from: https://www.un.org/en/development/desa/population/publications/pdf/trends/WPP2010/WPP2010_Volume-I_Comprehensive-Tables.pdf
9. Geriatric medicine: a problem-based approach. New York, NY: Springer Berlin Heidelberg; 2017.
10. Salvi F, Morichi V, Grilli A, Giorgi R, Tommaso GD, Dessi-Fulgheri P. The elderly in the emergency department: a critical review of problems and solutions. *Intern Emerg Med*. 2007; 2:292-301. <http://doi.org/10.1007/s11739-007-0081-3>
11. Hogan TM, Chan SB, Hansoti B. Multidimensional Attitudes of Emergency Medicine Residents Toward Older Adults. *West J Emerg Med*. 2014 Jul 7;15(4):511–7. <http://doi.org/10.5811/westjem.2014.2.19937>
12. Li Y, Wang S, Li J, Dong B-R, Li Z-X, Yu J-M, et al. A survey of physicians who care for older persons in Southwest China. *J Nutr Health Aging*. 2013;17(2):192–5. <http://doi.org/10.1007/s12603-012-0086-0>
13. Carpenter CR, Lewis LM, Caterino JM, Wilber ST, Scheatzle MD, Fiorello AB. 375: Emergency Physician Geriatric Education: An Update of the 1992 Geriatric Task Force Survey. Has Anything Changed? *Ann Emerg Med*. 2008 Oct;52(4):S156. <http://doi.org/10.1016/j.annemergmed.2008.06.402>
14. Rathore SS, Mehta RH, Wang Y, Radford MJ, Krumholz HM. Effects of age on the quality of care provided to older patients with acute myocardial infarction. *Am J Med*. 2003;114(4):307–15. [http://doi.org/10.1016/S0002-9343\(02\)01531-0](http://doi.org/10.1016/S0002-9343(02)01531-0)
15. Magid DJ, Masoudi FA, Vinson DR, van der Vlugt TM, Padgett TG, Tricomi AJ, et al. Older Emergency Department Patients With Acute Myocardial Infarction Receive Lower Quality of Care Than Younger Patients. *Ann Emerg Med*. 2005;46(1):14–21. <http://doi.org/10.1016/j.annemergmed.2004.12.012>
16. 1. McNamara RM, Rousseau E, Sanders AB. Geriatric emergency medicine: A survey of practicing emergency physicians. *Ann Emerg Med*. 1992;21(7):796–801. [http://doi.org/10.1016/S0196-0644\(05\)81024-8](http://doi.org/10.1016/S0196-0644(05)81024-8)
17. Drickamer MA, Levy B, Irwin KS, Rohrbaugh RM. Perceived needs for geriatric education by medical students, internal medicine residents and faculty. *J Gen Intern Med*. 2006;21(12):1230–4. <http://doi.org/10.1111/j.1525-1497.2006.00585.x>
18. Jones JS, Rousseau EW, Schropp MA, Sanders AB. Geriatric training in emergency medicine residency programs. *Ann Emerg Med*. 1992 ;21(7):825–9. [http://doi.org/10.1016/S0196-0644\(05\)81029-7](http://doi.org/10.1016/S0196-0644(05)81029-7)
19. Jones J, Dougherty J, Cannon L, Schelble D. A geriatrics curriculum for emergency medicine training programs. *Annals of Emergency Medicine*. 1986 ;15(11):1275–81. [http://doi.org/10.1016/S0196-0644\(05\)81029-7](http://doi.org/10.1016/S0196-0644(05)81029-7)

- org/10.1016/S0196-0644(86)80608-4
20. Witzke DB, Sanders AB, for the SAEM Geriatric Emergency Medicine Task Force*. The Development and Evaluation of a Geriatric Emergency Medicine Curriculum. *Acad Emerg Med*. 1997 Mar;4(3):219–22. <http://doi.org/10.1111/j.1553-2712.1997.tb03745.x>
21. Prendergast HM, Jurivich D, Edison M, Bunney EB, Williams J, Schlichting A. Preparing the Front Line for the Increase in the Aging Population: Geriatric Curriculum Development for an Emergency Medicine Residency Program. *J Emerg Med*. 2010 ;38(3):386–92. <http://doi.org/10.1016/j.jemermed.2008.05.003>
22. Biese KJ, Roberts E, LaMantia M, Zamora Z, Shofer FS, Snyder G, et al. Effect of a Geriatric Curriculum on Emergency Medicine Resident Attitudes, Knowledge, and Decision-making: EFFECT OF A GERIATRIC CURRICULUM ON EMERGENCY MEDICINE RESIDENTS. *Acad Emerg Med*. 2011 Oct;18:S92–6. <http://doi.org/10.1111/j.1553-2712.2011.01170.x>
23. Wadman M, Lyons W, Hoffman L, Muellemann R. Assessment of a Chief Complaint-Based Curriculum for Resident Education in Geriatric Emergency Medicine. *West J Emerg Med*. 2011;12(4):484–8. <http://doi.org/10.5811/westjem.2010.10.1722>
24. Hogan TM, Hansoti B, Chan SB. Assessing Knowledge Base on Geriatric Competencies for Emergency Medicine Residents West J Emerg Med. 2014;15(4):409–13. <http://doi.org/10.5811/westjem.2014.2.18896>
25. Hogan TM, Losman ED, Carpenter CR, Sauvigne K, Irmiter C, Emanuel L, et al. Development of geriatric competencies for emergency medicine residents using an expert consensus process. *Acad Emerg Med*. 2010 ;17(3):316–24. <http://doi.org/10.1111/j.1553-2712.2010.00684.x>
26. Sanders AB. Care of the elderly in emergency departments: Conclusions and recommendations. *Ann Emerg Med*. 1992;21(7):830–4. [http://doi.org/10.1016/S0196-0644\(05\)81030-3](http://doi.org/10.1016/S0196-0644(05)81030-3)
27. Pek JH, Lim SH, Ho HF, Ramakrishnan TV, Jamaluddin SF, Mesa-Gaerlan FJC, et al. Emergency medicine as a specialty in Asia: Emergency medicine in Asia. *Acute Med Surg*. 2016 ;3(2):65–73. <http://doi.org/10.1002/ams2.154>
28. Iamsanpang S, Sangcharaswichai A. Emergency Medicine. *bkkmedj*. 2011 Feb 26;01(01):68–70. <http://doi.org/10.31524/bkkmedj.2011.02.011>
29. EM training board [Internet]; Thai College of Emergency Physicians. 2019 [update 2019 Sep18; Cited 2020 Oct 21] Available from: <https://tcep.or.th>
30. Residency Training in Emergency Medicine [Internet]; Thai College of Emergency Physicians. 2017. [cited 2021 Jan 15] Available from: https://tcep.or.th/sites/default/files/hlaksuutrewchsaastrchukechin_2561.pdf
31. Mello MJ, Merchant RC, Clark MA. Surveying Emergency Medicine. Cone DC, editor. *Acad Emerg Med*. 2013 ;20(4):409–12. <http://doi.org/10.1111/acem.12103>
32. Samaras N, Chevalley T, Samaras D, Gold G. Older Patients in the Emergency Department: A Review. *Ann Emerg Med*. 2010 ;56(3):261–9. <http://doi.org/10.1016/j.annemergmed.2010.04.015>
33. Holmboe ES, Iobst WF. Assessment Guidebook. [Internet]; Accreditation Council for Graduate Medical Education (ACGME). 2020 [cited 2021 Jan 15] Available from: <https://www.acgme.org/Portals/0/PDFs/Milestones/Guidebooks/AssessmentGuidebook.pdf?ver=2020-11-18-155141-527>
34. Holt KD, Miller RS, Nasca TJ. Residency Programs' Evaluations of the Competencies: Data Provided to the ACGME About Types of Assessments Used by Programs. *J Grad Med Educ*. 2010 Dec 1;2(4):649–55. [http://doi.org/10.1016/S0196-0644\(05\)81030-3](http://doi.org/10.1016/S0196-0644(05)81030-3)

- doi.org/10.4300/JGME-02-04-30
35. Wu JS, Siewert B, Boisselle PM. Resident Evaluation and Remediation: A Comprehensive Approach. *J Grad Med Educ.* 2010 Jun 1;2(2):242–5. <http://doi.org/10.4300/JGME-D-10-00031.1>
36. Southerland LT, Lo AX, Biese K, Arendts G, Banerjee J, Hwang U, et al. Concepts in Practice: Geriatric Emergency Departments. *Ann Emerg Med.* 2020;75(2):162–70. <http://doi.org/10.1016/j.annemergmed.2019.08.430>
37. Kahn JH, Magauran B. Trends in Geriatric Emergency Medicine. *Emergency Medicine Clinics of North America.* 2006 May;24(2):243–60. <http://doi.org/10.1016/j.emc.2006.01.012>
38. แพทยสภา. ข้อมูลแพทย์ที่ได้รับหนังสืออนุมัติ-วุฒิบัตรจากแพทยสภา (รายสาขา) [อินเทอร์เน็ต]. กรุงเทพฯ: แพทยสภา; 2563 [เข้าถึงเมื่อ 15 มกราคม 2564]. เข้าถึงได้จาก <https://tmc.or.th/pdf/ข้อมูลแพทย์ที่ได้รับหนังสืออนุมัติ-วุฒิบัตรจากแพทยสภา2563.pdf>
39. Freeman BS. The ultimate guide to choosing a medical specialty (Emergency Medicine). New York: McGraw-Hill Medical; 2013.
40. Samra R, Griffiths A, Cox T, Conroy S, Knight A. Changes in Medical Student and Doctor Attitudes Toward Older Adults After an Intervention: A Systematic Review. *J Am Geriatr Soc.* 2013 Jul;61(7):1188–96. <http://doi.org/10.1111/jgs.12312>
41. Rhew DC. The Effects of an Educational Intervention on Emergency Nurses' Attitude, Knowledge, and Care Behaviors toward Older Adults. *BJSTR [Internet].* 2017 Dec 14 [cited 2021 Jan 27];1(7). Available from: <http://biomedres.us/fulltexts/BJSTR.MS.ID.000593.php>
42. Hesselink G, Sir Ö, Öztürk E, Heiwegen N, Olde Rikkert M, Schoon Y. Effects of a geriatric education program for emergency physicians: a mixed-methods study. *Health Educ Res.* 2020 Jun 1;35(3):216–27. <http://doi.org/10.1093/her/cyaa007>
43. Hesselink G, Demirbas M, Rikkert MO, Schoon Y. Geriatric Education Programs for Emergency Department Professionals: A Systematic Review. *J Am Geriatr Soc.* 2019 ;67(11):2402–9. <http://doi.org/10.1111/jgs.16067>
44. Perdue C. Falls in older people: taking a multidisciplinary approach. *Nurs Times.* 2003 5;99(31):28–30.
45. Mikolaizak AS, Lord SR, Tiedemann A, Simpson P, Caplan GA, Bendall J, et al. A multidisciplinary intervention to prevent subsequent falls and health service use following fall-related paramedic care: a randomised controlled trial. *Age Ageing.* 2016 ;2017(46):200–8. <http://doi.org/10.1093/ageing/afw190>
46. Todd P, Semla, John O. Barr, Judith L. Beizer. PHA/AGS Multidisciplinary Competencies in the Care of Older Adults at the Completion of the Entry-Level Health Professional Degree. the Partnership for Health in Aging Workgroup on Multidisciplinary Competencies in Geriatrics. [Internet]. 2010 March [cited 2021 Jan 15];1(7). Available from: https://pogoe.org/sites/default/files/PHA_Multi_Disc_Comps_Final%20Mar%202010.pdf
47. Cunningham CT, Quan H, Hemmelgarn B, Noseworthy T, Beck CA, Dixon E, et al. Exploring physician specialist response rates to web-based surveys. *BMC Med Res Methodol.* 2015 ;15(1):32. <http://doi.org/10.1186/s12874-015-0016-z>
48. Shoham G, Levy-Toledano R, Leong M, Weissman A, Yaron Y, Shoham Z. Oncofertility: insights from IVF specialists—a worldwide web-based survey analysis. *J Assist Reprod Genet.* 2019 ;36(5):1013–21. <http://doi.org/10.1007/s10815-019-01419-8>