

## RESEARCH PAPER

# Dutch emergency physicians insufficiently educated in geriatric emergency medicine: results of a nationwide survey

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## Abstract

**Background:** Emergency physicians (EPs) provide care to older adults with complex health problems. Treating these patients is challenging for many EPs, which might originate from modest geriatric education.

**Objective:** Our aim was to assess EPs' self-perceived needs regarding geriatric emergency medicine (GEM) education, factors determining these needs and the utilization of this education. Our secondary aim was to assess emergency department (ED) managers' view and support for GEM education.

**Methods:** All EPs and ED managers in the Netherlands received a survey by e-mail. The questionnaires focused on EPs' needs in GEM education, EPs' utilization of GEM education and managerial support for GEM education. We used descriptive statistics to analyse needs, utilization of- and support for GEM education. Regression analyses were used to identify factors associated with EPs' need for GEM education.

**Results:** EPs reported to need better training in diagnosing, treating and communicating with older adults. Seventy percent of EPs reported no GEM education program in their hospital, and 83% reported no utilization of GEM education outside their hospital. EPs working in EDs with a possibility for geriatric consultation, and EPs aware of actual GEM education programs, had lower educational needs. Of responding managers, 86.2% reported the care for older adults as an important topic; lack of finances and time were obstacles to provide GEM education for EPs.

**Conclusion:** EPs in the Netherlands feel insufficiently educated to treat older adults. ED managers largely recognize this educational challenge. This nationwide survey underlines the need to prioritize GEM education for EPs.

**Keywords:** emergency department, emergency physician, geriatric emergency medicine, educational needs, older people

## Key Points

- Emergency physicians in the Netherlands are insufficiently educated in geriatric emergency medicine.
  - Geriatric emergency medicine education is rarely organised for emergency physicians in the Netherlands.
  - Lack of finances and time are obstacles for organizing geriatric emergency medicine education for emergency physicians.
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## Introduction

Demographic changes have led to increasing numbers of older adults visiting the Emergency Department (ED) [1, 2]. Older adults currently make up one-third of all ED visits in the Netherlands, and this number is expected to further increase in the coming decades [3]. The increase of older adults visiting the ED challenges the provision of timely and adequate emergency care at the ED. Older adults often attend the ED in a vulnerable state with multimorbidity, polypharmacy, impaired cognitive health and atypical symptoms, which complicate the diagnosis and treatment in the ED [4]. As a result, older adults have a higher risk of experiencing a prolonged ED length of stay [5], misdiagnoses and adverse events [6], and unplanned ED revisits [7]. This also puts a strain on the resources in healthcare and society as a whole [8].

Numerous strategies have been used in the ED to facilitate adequate emergency care for older adults, such as establishing geriatric emergency units [9], interdisciplinary meetings in the ED [10], an ED-embedded geriatrician, and the use of geriatric screening instruments [11]. Another important strategy is geriatric emergency medicine (GEM) education for healthcare providers working in the ED [12]. GEM educational programs aim to increase the holistic view and geriatric expertise of physicians and nurses working in the ED, who are mainly used to treat acute health problems [8]. Evidence suggests that GEM education increases specific geriatric knowledge and skills to treat older adults better [13, 14], which may improve the quality of care and reduce adverse outcomes.

While the education in GEM for emergency physicians (EPs) is increasingly recognized as vital for providing high-quality emergency care [15], insight lacks into EPs' perceived educational needs on this topic and the factors determining these needs. This while several studies have reported that EPs feel unconfident in the treatment of older adults with complex problems [16, 17]. In the Netherlands, GEM education has no high priority during emergency medicine residency training [18]. No specific geriatric curriculum is offered for EM residency training in the Netherlands, and during EM residency training a geriatric internship is not mandatory. Therefore, we assume that EPs might lack specific geriatric skills and might need continuing medical education in GEM. Moreover, managerial recognition of the importance of GEM education and education support is an important prerequisite to equip EPs with adequate geriatric skills. To our best knowledge, there is no data available showing to what extent EPs are supported by their ED managers to be educated in GEM.

Therefore, the aim of this study is to assess and explore EPs' current educational needs in- and utilization of GEM education, factors determining these educational needs, and the recognition of- and support for GEM education by ED managers.

## Methods

### Study design

The study consisted of two nationwide cross-sectional surveys conducted in April 2018 in the Netherlands among EPs and ED managers.

According to the Dutch 'Medical Research involving human subjects Act', neither obtaining informed consent nor formal ethical approval for this study was required.

### Participants

All EPs working in Dutch hospitals and managers of all EDs were eligible for participation in the survey. In the flow chart (Figure 1) and supplement 1 we described recruitment and selection procedure and their results.

### Data collection

Two questionnaires were developed by researchers, managers and clinicians from the departments of Emergency Medicine and Geriatrics of the Radboudumc. Supplement 2 describes the development, pilot testing and distribution of the questionnaires to study participants.

### Data analysis

Descriptive statistics were used to summarize item responses. Statistical analyses are described in detail in Supplement 3 and shortly described in the table notes. Statistical analysis was done using SPSS Version 25 (SPSS, Inc., Chicago, IL). Statistical significance was set at  $P < 0.05$  in two-tailed tests.

Non-responder bias was assessed by comparing respondents' and non-respondents' characteristics regarding gender, the geographic location of hospitals they were working in in terms of population density (*number of inhabitants per 1 km<sup>2</sup>*) and aged population (*percentage of population older than 65 years*).

## Results

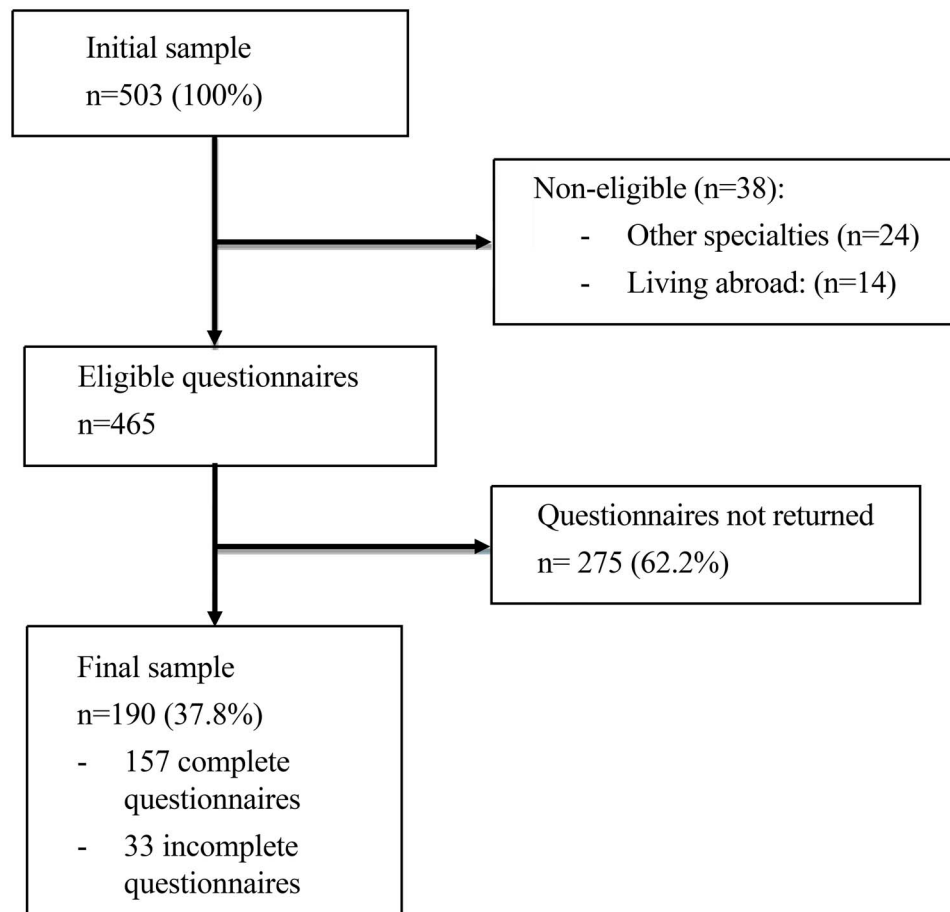
### Survey among emergency physicians

#### Participant characteristics

Of 503 EPs contacted, 38 were not eligible and 275 did not respond. The final sample consisted of 190 questionnaires available for analysis (response rate: 37.8%). Participants did not always respond to all questions: 157 (82.6%) had no missing values (Figure 1).

The majority of respondents were female (62.1%) and had a mean age of 40.1 years (SD 5.6). Seventeen respondents (8.9%) had an employment in an academic hospital. The majority of the respondents (63.2%) stated that there was a possibility of consulting a geriatrician in their ED. Respondents had a mean of 6.3 years (SD 4.0) of working

## Dutch emergency physicians insufficiently educated in geriatric emergency medicine



**Figure 1.** Diagram of study participation among emergency physicians.

experience as an EP. The majority of respondents had a part-time employment, with a mean full-time equivalent of 0.9 (SD 0.1). Respondents estimated that about 31.5 patients (SD 18.3) out of the 86.9 patients (SD 32.8) they treat on average in a week, had an age of 70 years or older. More than 50% of respondents (57.6%) estimated that 10–30% of patients aged 70 years or older at the ED was overdiagnosed or overtreated (Table 1).

Responder and non-responder groups were significantly different in sex: female EPs were overrepresented in the group of non-respondents (70.6 vs. 62.1%,  $P = 0.031$ ). No significant differences were found between respondents and non-respondents regarding population density and aged population in the municipality in which the EP was employed.

### Educational needs of emergency physicians

About a quarter of the respondents (27%) reported no need for more skills to better recognize geriatric problems. Almost half of the respondents (48%) stated that they need more skills to determine the right diagnostic approach for older adults, while only 16% responded no need for more skills to better treat older adults. Of all educational needs, respondents felt most certain about their communication skills: a quarter (28%) reported to need more skills to better

communicate with older adults. Our results showed that most respondents needed knowledge about primary care to better organize the right community follow-up for older adults (66%) (Table 2). What stands out in this table is, that a third of respondents were undecided regarding statements in this table.

Respondents described (in the free-text fields) educational needs for: older adults with polypharmacy ( $n = 7$ ), organizing community care follow-up ( $n = 4$ ), skills for better teamwork with medical specialist (including geriatricians) ( $n = 4$ ), and knowledge/skills regarding specific geriatric conditions ( $n = 7$ ). Nine respondents reported miscellaneous needs (supplement 4).

### Utilization of GEM education by emergency physicians

The majority of respondents (55%) stated that they get sufficient time to follow GEM education. Almost 90% of respondents (87%) also stated that they were autonomous in their utilization of GEM education. Only 15% of respondents reported to spend sufficient time on GEM education. The majority of respondents (70%) were not aware where to obtain GEM education (Table 3). What stands out in this table is the high rate of EPs responding to be undecided regarding statements in Table 3.

**Table 1.** Demographic- and experience characteristics of emergency physicians; *N* = 190

	EPs; <i>n</i> (%) or mean (SD)
Sex	
Male, <i>n</i> (%)	72 (37.9)
Female, <i>n</i> (%)	118 (62.1)
Age in years, mean (SD)	40.1 (5.6)
Employed in an academic hospital, <i>n</i> (%)	17 (8.9)
Employed in a hospital with a possibility of geriatric consultation at the ED, <i>n</i> (%)	120 (63.2)
Working experience as an EP in years, mean (SD)	6.3 (4.0)
Employment (fte.), mean (SD)	0.9 (0.1)
Estimated number of patients treated by responding EP per week, mean (SD)	86.9 (32.8)
Estimated number of adults aged ≥70 years treated by responding EP per week, mean (SD)	31.5 (18.3)
Estimated length of stay at the ED (hours) of adults aged ≥70 years, mean (SD)	3.6 (5.6)
Estimated percentage of adults aged ≥70 years at the ED with overdiagnosis or overtreatment:	
>80% of adults aged ≥70 years; number of EPs that agree (%)	4 (2.7)
60–80% of adults aged ≥70 years; number of EPs that agree (%)	12 (8)
30–60% of adults aged ≥70 years; number of EPs that agree (%)	48 (31.8)
10–30% of adults aged ≥70 years; number of EPs that agree (%)	87 (57.6)

EP = Emergency physician N.a. = Not applicable Fte. = full-time equivalent

**Table 2.** Educational needs of emergency physicians regarding geriatric competencies, *N* = 157

Statement	Disagree* <i>n</i> (%)	Undecided* <i>n</i> (%)	Agree* <i>n</i> (%)
I need more skills to better recognize geriatric problems in older adults.	42 (26,7)	53 (33,8)	62 (39,5)
I need more skills to better determine the right diagnostic approach for older adults.	37 (23,6)	44 (28,0)	76 (48,4)
I need more skills to better treat older adults.	25 (15,9)	47 (29,9)	85 (54,1)
I need more skills to communicate better with older adults.	65 (41,4)	48 (30,6)	44 (28,0)
I need more skills to work better with other care providers of older adults (either primary care providers or medical specialists).	43 (27,4)	53 (33,8)	61 (38,9)
I need more skills to better determine the right community follow-up for the older adult.	30 (19,1)	43 (27,4)	84 (53,5)
I need more knowledge of primary care to better organize the right community follow-up for the older adult.	29 (18,5)	23 (14,6)	105 (66,9)

\*Disagree = Likert score 1 or 2, Undecided = Likert score 3, Agree = Likert score 4 or 5

**Table 3.** Utilization of GEM education by emergency physicians, *N* = 157

Statement	Disagree* <i>n</i> (%)	Undecided* <i>n</i> (%)	Agree* <i>n</i> (%)
I do get sufficient time to follow GEM education.	24 (15,3)	46 (29,3)	87 (55,4)
I'm allowed to determine the amount of GEM education I want to follow.	2 (1,3)	19 (12,1)	136 (86,6)
I do spend a sufficient amount of time on GEM education.	84 (53,5)	49 (31,2)	24 (15,3)
I'm satisfied with GEM education for EPs in my hospital.	5 (3,2)	76 (48,4)	76 (48,4)
I'm aware of GEM education for EPs, both regionally and nationally.	110 (70,1)	28 (17,8)	19 (12,1)
Education in GEM is of high priority for the management of our ED.	77 (49,0)	53 (33,8)	27 (17,2)
Education in GEM is of high priority for my EP colleagues.	78 (49,7)	60 (38,2)	19 (12,1)

GEM = Geriatric emergency medicine EP = Emergency physician \*Disagree = Likert score 1 or 2, Undecided = Likert score 3, Agree = Likert score 4 or 5

**Scale of GEM education utilized by emergency physicians**

The majority of respondents (70%) reported the absence of GEM education in their hospital. Forty-five respondents reported having the possibility to follow GEM education in their hospital; the majority of this group (78%) actually followed this education. A large majority of respondents (83%) did not follow GEM education outside their own hospital (supplement 5).

The annual amount of time for GEM education, offered in hospitals, was estimated at an average of 9.3 (SD 8.2)

hours by respondents. The annual estimated mean time of GEM education utilized outside the hospital employed was slightly higher than in the own hospital, yet not statistically significant (7.4 vs 6.7 h; *P* = 0.09).

**Factors associated with GEM educational needs**

Having the possibility to consult geriatrician and respondents' knowledge about where to find GEM education (both regionally and nationally) were significantly associated with a lower need for education in GEM (supplement 6). The

need for education on the transition and follow-up of older adults is positively associated with EPs experiencing over-diagnosis for >30% of older adults in their hospital and negatively associated with EPs taking sufficient time for GEM education (supplement 7).

### Survey among ED managers

#### Participant characteristics

Of 77 respondents contacted, 38 responded to the survey (response of 49.4%). Twenty-nine respondents fully completed the survey, whereas 9 respondents did not respond to one or two questions. Almost half of respondents (47.4%) were female. The mean age of these respondents was 47.9 years (SD 7.1). Most of the 38 respondents were employed as a manager at the ED for a mean time period of 5.8 years (SD 5.8). The majority of respondents (65.8%) had a medical background and about a quarter (26.3%) had a background as nurse. Almost 40% of respondents were working in a teaching hospital.

Responder and non-responder groups were not significantly different in gender ( $P = 0.78$ ). Respondents working in a hospital situated in a region with 250–500 inhabitants per km<sup>2</sup> were overrepresented when compared to non-responders ( $P = 0.03$ ). No significant differences were found between responders and non-responders regarding working in densely populated areas (>2,500 inhabitants per 1 km<sup>2</sup>), and working in the municipality with an aged population.

#### Management support for GEM education of emergency physicians

Eight of the 38 respondents (21.1%) stated that there was a GEM education program for EPs in their hospital. According to them, GEM education was offered by e-learning (10.5%), cased based discussions (7.9%) or geriatric internship (2.6%).

Improving care for older adults in the ED is considered an important issue by most respondents (86.2%). About half of the respondents (58.6%) indicated that sufficient expertise was available for GEM education in their hospital. Time and finances were reported as major obstacles to provide GEM education for EPs; 17.2% of the respondents stated sufficient time for education and 31% of respondents reported sufficient finances for GEM education. A high percentage of respondents remained neutral regarding available expertise, time and finances to provide GEM education for EPs (Table 4).

### Discussion

The findings of our nationwide survey first and foremost showed that a large proportion of EPs in the Netherlands need more skills on all geriatric competency domains. EPs reported the need for medical skills (i.e. recognizing geriatric problems, determining the right diagnostic approach, treatment of older adults). They also described the need for skills allowing them to better work with counterpart colleagues

and determining the right community follow-up for older adults at the ED.

These described needs are not met with sufficient possibilities and supporting conditions for EPs to follow GEM education. The majority of EPs in our survey stated that there was no GEM education offered in the hospital employed, and only 12% of EPs was aware of where (else) to obtain GEM education. Moreover, the EPs themselves play an important role in not fulfilling their geriatric educational needs as only a small part spends sufficient time to follow GEM education. More than half the EPs reported to receive sufficient time to follow GEM education. As emergency medicine covers a wide clinical domain, we believe that EPs are challenged with a broad range of educational topics offered. Many clinical expertise areas are relevant to their clinical practice, which might contribute to a lower priority for GEM education.

Regression analyses additionally showed that, factors at the personal level and organizational factors in the ED are associated with the EPs' need for GEM education. EPs with the possibility to consult a geriatrician in the ED, had lower educational needs, which may be explained by having the option to consult a geriatrician in complex cases. Another explanation could be that this group of EPs may have obtained more geriatric knowledge through their prior collaboration with geriatricians. A surprising finding of our analysis is, that EPs aware of geriatric education, apparently had less need for GEM education. One explanation for this finding could be, that EPs aware of actual GEM education programs, were physicians with high interest in geriatrics and may have already gained geriatric knowledge/skills throughout their career.

Although most of ED managers prioritized care for older adults, surprisingly less than half found improving geriatric skills of EPs important. Reported key obstacles for ED managers to organize local geriatric education for EPs were financial limitations and lack of time. Previous studies have addressed these factors as important barriers for hospitals that aim to organize advanced educational programs for their medical staff [19–21]. Managers may choose for alternative and creative ways to improve care for older adults, such as implementation of frailty screening instruments, an ED-embedded geriatrician with individual feedback on geriatric practice, and close cooperation between emergency- and geriatric medicine faculties to organize short and low-cost geriatric courses.

To the best of our knowledge, only one study has examined the self-perceived needs of EPs regarding GEM education before [22]. In that survey, 45% of EPs stated to have more difficulty in the management of certain presenting complaints in older adults compared to younger adults. We confirmed what was found in that study: the majority of EPs believed that time spent for GEM education during residency training-, and continuing geriatric medical education post-residency, was insufficient for their needs. Their main finding, that EPs were uncomfortable with the management of older adults, is in line with results of our study.

**Table 4.** ED managers view on older adult care and GEM education of emergency physicians

Statement	Disagree* n (%)	Undecided* n (%)	Agree* n (%)
The management of the ED finds improving care for the older adult at the ED an important issue.	0 (0)	4 (13.8)	25 (86.2)
The management of the ED finds improving geriatric skills of EPs an important issue.	4 (13.8)	11 (13.9)	14 (48.3)
Sufficient expertise is available within the hospital employed, to provide GEM education for EPs.	2 (6.9)	10 (34.5)	17 (58.6)
Sufficient time is available to provide GEM education for EPs.	11 (37.9)	13 (44.9)	5 (17.2)
Sufficient finances are available to provide GEM education for EPs.	6 (20.7)	14 (48.3)	9 (31.0)

ED = Emergency department GEM = Geriatric emergency medicine EP = Emergency physician \*Disagree = Likert score 1 or 2, Undecided = Likert score 3, Agree = Likert score 4 or 5

Our study has several strengths. First, the response rate of EPs is comparable to response rates of published physician survey-based studies [23]. The response rate of ED managers in our survey was markedly higher than physicians' response rate. This is in line with literature, as physicians are often a group with relatively low survey response rates [24]. Studies on our topic with higher response rates (>65%) of physicians comprise studies with EM trainees [17, 25]. We speculate that trainees receive less survey requests and do indeed have more time to participate in survey-based studies. Second, a strength of this study is that it is conducted on EPs. Most studies exploring the need for GEM education are conducted on EM trainees [16, 17, 25] or trainees of other specialties [26] and not on EPs, cannot be extrapolated to specialist ED care. Third, we combined a survey of EPs and ED managers. Our study is the first to investigate ED managers' view on GEM provided by EPs. Only one study investigated the care for frail older people in the ED and surveyed geriatricians as well as ED managers [27]. In that study, the results of ED managers were not incorporated in the final results of the study, because of low response rate: only 12% of ED managers returned (incomplete) questionnaires. Other strengths of our study are our sample size and our extensive questionnaire.

Our study also has some limitations. First, it is a survey study and therefore includes non-responder bias. This is inherent to the nature of this type of study. However, our non-responder analysis showed that the group of responding EPs was comparable to non-responding EPs, except for the sex. Female EPs were overrepresented in the group of non-responders. Though they mostly show higher response rates [24]. Second, as this is a survey study, the results represent a subjective evaluation of medical practice. Actual clinical practice may differ. A third limitation of the study is, that our analysis is mainly based upon Likert scores. Although it is a convenient and natural seeming scale to use, it is known that Likert scores are subject to a central tendency bias: respondents usually avoid the most extreme options to obtain variation in their answers [28]. These phenomena might explain high percentage of respondents choosing for midline answers in our surveys.

The combined results of our study illustrates the shortcomings of current GEM curricula and EM residency training, and provides input to future education programs in core curricula and emergency medicine residency training. Strategies may include e-learning modules, rotations at geriatric wards, or additional rotations in related fields such as palliative medicine and community-based geriatrics. Such educational strategies are currently not often employed in EM residency training in the Netherlands. Formalizing and implementing a geriatric curriculum in residency training, could empower future EPs in the Netherlands with key geriatric skills.

## Conclusions

The current study showed that a minority of EPs in the Netherlands find themselves sufficiently skilled in competences of geriatric emergency care. Although Dutch EPs appear to get sufficient time for GEM education and seem to be allowed to manage their GEM education, the majority of EPs did not follow enough GEM education to fulfil their educational needs. Future studies should explore how current EPs most effectively can achieve their geriatric emergency skills.

**Supplementary Data:** Supplementary data mentioned in the text are available to subscribers in *Age and Ageing* online.

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## References

1. Roberts DC, McKay MP, Shaffer A. Increasing rates of emergency department visits for elderly patients in the United States, 1993 to 2003. *Ann Emerg Med* 2008; 51: 769–74.

2. Di Somma S, Paladino L, Vaughan L, Lalle I, Magrini L, Magnanti M. Overcrowding in emergency department: an international issue. *Intern Emerg Med* 2015; 10: 171–5.
3. Gaakeer MI, Veugelers R, van Lieshout JM, Patka P, Huijsman R. The emergency department landscape in The Netherlands: an exploration of characteristics and hypothesized relationships. *Int J Emerg Med* 2018; 11: 35. <https://doi.org/10.1186/s12245-018-0196-5>.
4. Limpawattana P, Phungoen P, Mitsungnern T, Laosuankoon W, Tansangworn N. Atypical presentations of older adults at the emergency department and associated factors. *Arch Gerontol Geriatr* 2016; 62: 97–102.
5. Sir Ö, Hesselink G, Van Den Bogaert M, Akkermans RP, Schoon Y. Risk Factors for Prolonged Length of Stay of Older Patients in an Academic Emergency Department: A Retrospective Cohort Study. *Emerg Med Int* 2019; 2019: 4937827. <https://doi.org/10.1155/2019/4937827>.
6. Aminzadeh F, Dalziel WB. Older adults in the emergency department: a systematic review of patterns of use, adverse outcomes, and effectiveness of interventions. *Ann Emerg Med* 2002; 39: 238–47.
7. Lowthian J, Straney LD, Brand CA *et al*. Unplanned early return to the emergency department by older patients: the Safe Elderly Emergency Department Discharge (SEED) project. *Age Ageing* 2016; 45: 255–61.
8. Kahn JH, Magauran BG Jr, Olshaker JS, Shankar KN. Current Trends in Geriatric Emergency Medicine. *Emerg Med Clin North Am* 2016; 34: 435–52.
9. Rosenberg M, Rosenberg L. The Geriatric Emergency Department. *Emerg Med Clin North Am* 2016; 34: 629–48.
10. Seuren LM, Stommel W, van Asselt D, Sir Ö, Stommel M, Schoon Y. Multidisciplinary meetings at the emergency department: A conversation-analytic study of decision-making. *Soc Sci Med* 2019; 242: 112589. <https://doi.org/10.1016/j.socscimed.2019.112589>.
11. Hesselink G, Sir Ö, Schoon Y. Effectiveness of interventions to alleviate emergency department crowding by older adults: a systematic review. *BMC Emerg Med* 2019; 19: 69. <https://doi.org/10.1186/s12873-019-0288-4>.
12. 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; 35: 216–27.
13. Partridge JS, Harari D, Dhese JK. Frailty in the older surgical patient: a review. *Age Ageing* 2012; 41: 142–7.
14. Hogan TM, Hansoti B, Chan SB. Assessing knowledge base on geriatric competencies for emergency medicine residents. *West J Emerg Med* 2014; 15: 409–13.
15. Carpenter CR, Bromley M, Caterino JM *et al*. Optimal older adult emergency care: introducing multidisciplinary geriatric emergency department guidelines from the American College of Emergency Physicians, American Geriatrics Society, Emergency Nurses Association, and Society for Academic Emergency Medicine. *J Am Geriatr Soc* 2014; 62: 1360–3.
16. Biese KJ, Roberts E, LaMantia M *et al*. Effect of a geriatric curriculum on emergency medicine resident attitudes, knowledge, and decision-making. *Acad Emerg Med* 2011; 18: S92–6.
17. 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: 386–92.
18. Emergency medicine residency curriculum in the Netherlands (Dutch). Website of Netherlands Society of Emergency Physicians: [https://www.cmua.nl/Cmua/OOR\\_Ams\\_Bev\\_files/Opleidingsplan%20SEG,%20versie%202017%20def.pdf](https://www.cmua.nl/Cmua/OOR_Ams_Bev_files/Opleidingsplan%20SEG,%20versie%202017%20def.pdf).
19. Dolcourt JL, Zuckerman G, Warner K. Learners' decisions for attending Pediatric Grand Rounds: a qualitative and quantitative study. *BMC Med Educ* 2006; 6: 26. <https://doi.org/10.1186/1472-6920-6-26>.
20. Glazebrook RM, Harrison SL. Obstacles and solutions to maintenance of advanced procedural skills for rural and remote medical practitioners in Australia. *Rural Remote Health* 2006; 6: 502.
21. Neate SL, Dent AW, Weiland TJ, Farish S, Jolly BC, Crotty B. Barriers to continuing medical education in Australian prevocational doctors. *Aust Health Rev* 2008; 32: 292–300.
22. McNamara RM, Rousseau E, Sanders AB. Geriatric emergency medicine: a survey of practicing emergency physicians. *Ann Emerg Med* 1992; 21: 796–801.
23. Cunningham CT, Quan H, Hemmelgarn B *et al*. Exploring physician specialist response rates to web-based surveys. *BMC Med Res Methodol* 2015; 15: 32. <https://doi.org/10.1186/s12874-015-0016-z>.
24. Nakash RA, Hutton JL, Jørstad-Stein EC, Gates S, Lamb SE. Maximising response to postal questionnaires—a systematic review of randomised trials in health research. *BMC Med Res Methodol* 2006; 6: 5. <https://doi.org/10.1186/1471-2288-6-5>.
25. Snider T, Melady D, Costa AP. A national survey of Canadian emergency medicine residents' comfort with geriatric emergency medicine. *CJEM* 2017; 19: 9–17.
26. 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: 1230–4.
27. Devriendt E, De Brauwier I, Vandersaenen L *et al*. Geriatric support in the emergency department: a national survey in Belgium. *BMC Geriatr* 2017; 17: 68. <https://doi.org/10.1186/s12877-017-0458-8>.
28. Stevens SS. Issues in psychophysical measurement. *Psychol Rev* 1971; 78: 426–50.

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