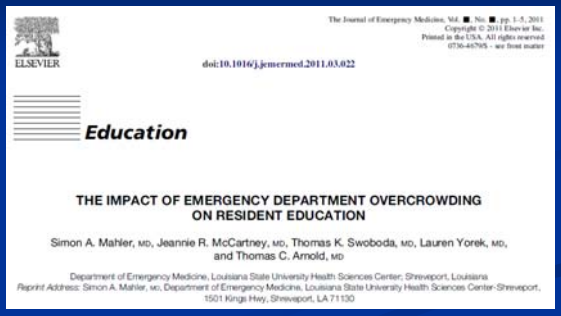
Journal Meeting

時間：2011年06月25日
指導醫師：主治醫師 蔡同堯
報告醫師：PGY 黃仁華



The Journal of Emergency Medicine, Vol. ■, No. ■, pp. 1–5, 2011
Copyright © 2011 Elsevier Inc.
Printed in the USA. All rights reserved
0736-4679/$ - see front matter

ELSEVIER

doi:10.1016/j.jemermed.2011.03.022

Education

THE IMPACT OF EMERGENCY DEPARTMENT OVERCROWDING ON RESIDENT EDUCATION

Simon A. Mahler, MD, Jeannie R. McCartney, MD, Thomas K. Swoboda, MD, Lauren Yorek, MD, and Thomas C. Arnold, MD

Department of Emergency Medicine, Louisiana State University Health Sciences Center, Shreveport, Louisiana
Reprint Address: Simon A. Mahler, MD, Department of Emergency Medicine, Louisiana State University Health Sciences Center-Shreveport, 1501 Kings Hwy, Shreveport, LA 71130

Introduction

- Emergency Department (ED) overcrowding has been called a crisis in Emergency Medicine (EM).
- Symptoms of ED overcrowding：
  1. boarding admitted patients,
  2. diverting ambulances,
  3. caring for patients on stretchers in hallways.
- 90% of EDs are affected.
- Most severe in academic centers and urban hospitals.

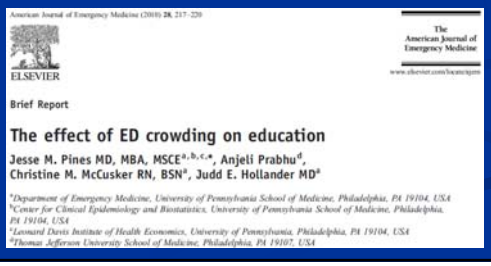
Introduction

- Several studies have demonstrated that ED overcrowding is associated with increased morbidity and mortality (4–13).
- Hypothesis：
  ↑ ED attendings' clinical and administrative workload,
  ↓ quality and time available for teaching.

ED overcrowding → ? → EM resident education

Introduction

- At present, only one published peer-reviewed study assessing the relationship between overcrowding and EM resident education exists.



American Journal of Emergency Medicine (2010) 28, 217–220

The American Journal of Emergency Medicine

www.elsevier.com/locate/ajem

ELSEVIER

Brief Report

The effect of ED crowding on education

Jesse M. Pines MD, MBA, MSCE[a,b,c,*], Anjeli Prabhu[d], Christine M. McCusker RN, BSN[a], Judd E. Hollander MD[a]

[a]Department of Emergency Medicine, University of Pennsylvania School of Medicine, Philadelphia, PA 19104, USA
[b]Center for Clinical Epidemiology and Biostatistics, University of Pennsylvania School of Medicine, Philadelphia, PA 19104, USA
[c]Leonard Davis Institute of Health Economics, University of Pennsylvania, Philadelphia, PA 19104, USA
[d]Thomas Jefferson University School of Medicine, Philadelphia, PA 19107, USA

Materials and Methods

- A prospective cross-sectional study.
- March to May 2009 at Louisiana State University Health Sciences Center Shreveport (LSUHSC-S).
- LSUHSC-S is a tertiary care, level I trauma center, and an academic center.
- The ED has an annual volume of 60,000 pts/year.
- It is also home to a 1- to 3-year EM residency program with 7 residents per year.

Materials and Methods

- 2nd- and 3rd-year EM residents, blinded to the research objectives, completed a questionnaire at the end of each shift.

1. the quality of supervision and instruction during procedures,
2. quality of teaching from the faculty during the shift,
3. the overall educational value of each shift.

- The number of patients cared for and procedures completed for each shift were recorded by self-report on the questionnaire.

Materials and Methods

- ED overcrowding
  Def.：>2 h of ambulance diversion during a shift.
- Ambulance diversion has been previously validated as a reliable measure of ED overcrowding.
- Questionnaire responses answered on a Likert scale were compared using Mann–Whitney U tests.
- Number of patients seen and procedures performed were compared using unpaired t-tests.

Results

- During the 3-month study period, R2 and R3 worked a total of 236 shifts.
- A response rate of 53% (125/236).

Table 1. Questionnaire Response Rates by Second- and Third-Year Residents for Overcrowding and Non-overcrowding Shifts

	Overcrowding	Non-overcrowding	Total
Second-year residents	31 (41%)	44 (59%)	75
Third-year residents	23 (46%)	27 (54%)	50
All residents	54 (43%)	71 (57%)	125

Results

Table 2. Ambulance Diversion Time: Questionnaire Responses, Number of Patients Seen, and Number of Procedures Completed for Overcrowding and Non-overcrowding Shifts

	Overcrowding	Non-overcrowding	*p* Value
Ambulance diversion time (h/shift)			
Median (IQR)	5 (3–7)	0 (0)	<0.001
Teaching quality			
Median (IQR)	8 (7–10)	8 (7–10)	0.63
Instruction during procedures			
Median (IQR)	10 (8–10)	10 (8–10)	0.72
Overall educational value			
Median (IQR)	8 (7–10)	8 (8–10)	0.24
Patients seen			
Mean (95% CI)	12.3 (11.4–13.2)	13.9 (12.7–15)	0.034
Procedures completed			
Mean (95% CI)	0.9 (0.6–1.2)	1.3 (1–1.6)	0.047

IQR = interquartile range; CI = confidence interval.

Discussion

- Several authors have hypothesized that overcrowding decreases the quality and time available for teaching in the ED.
- In this study, the residents' perception of the overall educational value of each shift did not differ significantly based on overcrowding.
- It is clear that they received less experience in patient care and procedures.
- It is possible that resident perception may not correlate with the "true" educational value of a shift.

Discussion

- It is unclear why residents would find shifts to be of equal educational value despite caring for fewer patients and performing fewer procedures.

more time for
1. Teaching,
2. Reading,
3. Other downtime activities.

Discussion

- Adequate patient volume is required to hone the skills of multitasking essential to the community practice of EM.
- Adequate procedural experience is required for procedural competency.
- The cumulative effects of overcrowding could be highly detrimental.

Discussion

- The results of this study agree with previously published studies.
  Pines JM, Prabhu A, McCusker CM, et al. The effect of ED crowding on education. Am J Emerg Med 2010;28:217–20.
- Another study, published in abstract form only, also failed to find a relationship between overcrowding and educational value.
  Hoxhaj S, Mosely MG, Fisher A, et al. Resident education does not correlate with the degree of emergency department crowding. Ann Emerg Med 2004;44:S77.

Discussion

- A third study, by Kelly et al., although not focused on overcrowding, failed to show a relationship between resident perception of educational value and times of high or low clinical work load in the ED.
  Kelly SP, Shapiro N, Woodruff M, et al. The effects of clinical workload on teaching in the emergency department. Acad Emerg Med 2007;14:526–31.

Discussion

- All of these studies used teaching scores and surveys to measure resident perception of educational value without measuring the number of patients cared for or number of procedures completed.
- The Pines et al. study also included EM residents, non-EM residents, and medical students.

Limitations

- This study is limited by
  1. small sample size,
  2. survey response rate <60%,
  3. single-center design.
- Although residents were assured that completion of their questionnaires was anonymous and confidential, it is possible that residents feared giving low scores.

Limitations

- Self-reporting of data can lead to unintentional and intentional reporting bias/recall bias.
- Although the questionnaires were anonymous, residents may have intentionally over-counted patients or procedures, because being "highly productive" is often equated with excellence in EM residencies.
- In addition, resident perception, which was measured in this study and prior studies, may not correlate with the "true" educational value of a shift.

Conclusions

- During shifts with ED overcrowding, EM residents saw fewer patients and performed fewer procedures.
- Residents' opinion of the educational value of shifts did not differ significantly based on overcrowding.
- The long-term effects of overcrowding on EM resident education remain unknown.

Conclusions

- Future studies should assess educational value, number of patients cared for, and number of procedures completed over a longer time period.
- In addition, future studies should measure educational value objectively, rather than relying on resident opinion.

Thanks for your listening.