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Original Contributions

QUALIFICATION DISCREPANCIES BETWEEN URBAN AND RURAL EMERGENCY DEPARTMENT PHYSICIANS

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□ **Abstract—The purpose of this study was to describe and compare the residency training and board certification credentials of physicians staffing rural and urban emergency departments (EDs) in the predominately rural states of the upper Midwest. EDs in Nebraska, North Dakota, and South Dakota with annual patient volumes greater than 10,000 met inclusion criteria for the study. ED administrators responded to surveys via mail, addressing physician training and board certification status and ED descriptive statistics. Thirty-four EDs met the inclusion criteria for the study with 26 responding (76%). ED physicians reported 50.6% American Board of Emergency Medicine (ABEM) certification and 33.1% residency training in Emergency Medicine (EM). Physicians staffing urban (metropolitan statistical area, MSA) EDs reported ABEM certification and residency training more frequently than those working in rural (non-MSA) EDs (65.2% vs. 30.8% and 48.3% vs. 12.3%, respectively). The results of this study reveal significant discrepancies between urban and rural EDs in physician board certification and residency training.** © 2005 Elsevier Inc.

□ **Keywords—rural; emergency department; board certification; residency**

INTRODUCTION

Rural hospital Emergency Departments (EDs) require staff physicians to evaluate and treat patients with a wide spectrum of health problems and acuities while providing limited access to healthcare technology, diagnostics, and subspecialty consultation services. The assumption that all rural ED patient volumes are inadequate to provide for the physician staffing needs of a typical urban ED may serve to limit consideration of potential solutions to this dilemma. Prior studies describing physician staffing in smaller, rural EDs with average annual patient volumes of less than 10,000 reveal an understandable lack of board certification and residency training (1). The EDs examined in these studies, however, may not provide an adequate clinical environment to support an Emergency Medicine (EM) group, and alternative staffing schemes have been proposed. Reliable information describing the qualifications of physicians staffing rural EDs with patient volumes greater than 10,000 is currently unavailable.

Nebraska, South Dakota, and North Dakota are the 16th, 17th, and 19th states in terms of land area, but rank 38th, 46th, and 47th in population. The corresponding population densities of these upper Midwestern states of 22.3, 9.9, and 9.3 persons per square mile fall well below the average for the United States of 79.6 persons per square mile, making them ideal subject states for the study of rural EM issues (2).

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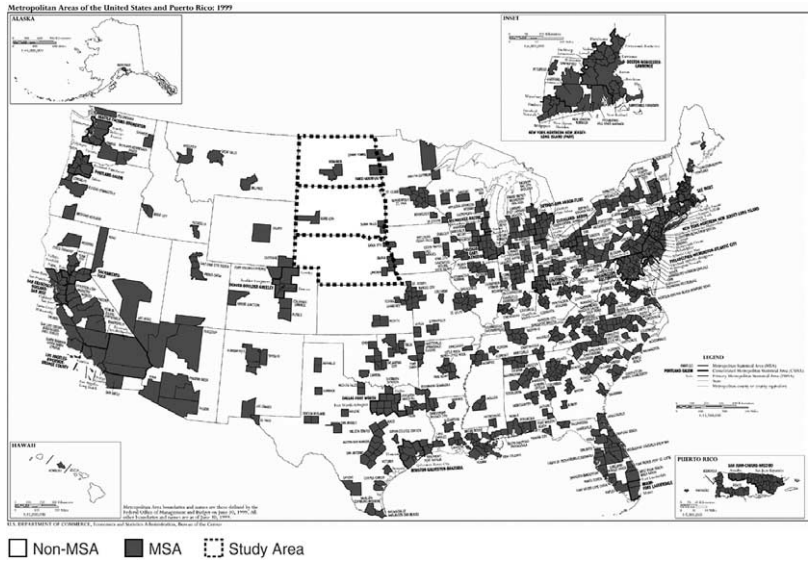

Figure 1. "Urban" and "rural" areas of the United States based on metropolitan statistical area (MSA) designation by the U.S. Census Bureau Census 2000 report. Study area is outlined.

MATERIALS AND METHODS

Hospitals with EDs in the states of Nebraska, North Dakota, and South Dakota were identified through the Hospital Blue Book 2000 (3). EDs with annual census 10,000 or greater and at least 24-hour per day, 7-day per week ED physician staffing met the inclusion criteria for the study. EDs were classified as "urban" or "rural" based on metropolitan statistical area (MSA) designation by the U.S. Census Bureau Census 2000 report (Figure 1) (2). A MSA contains a population nucleus of 50,000 or greater or a U.S. Census Bureau defined urbanized area and a total population of at least 100,000. The area of a MSA is defined by one or more counties and may also include one or more outlying counties with close economic or social ties to the central counties.

ED administrators received a printed multiple choice survey describing physician staffing hours, contract type, post-graduate training, board certification status, and the administrator's opinion as to the feasibility of staffing their ED with a fully board-certified EM group. The survey also included questions addressing ED annual patient volume and measures of patient acuity such as admission rate and intensive care unit (ICU) admission rate. Non-responders to the initial mailing received two follow-up telephone contacts requesting the survey information by return mail or by telephone at the time of the contact.

Data obtained from the survey was entered on an Excel spread sheet and statistical means and inter-quartile ranges were calculated for annual ED census, admissions, and intensive care unit (ICU) admissions. Admission and ICU admission rates were compared using z-tests.

RESULTS

Thirty-four EDs met the inclusion criteria for the study with 26 ED administrators completing the survey, for a 76% response rate. Any ED within an area not defined as a MSA by the U.S. Census Bureau met the criteria for rural ED designation, whereas EDs located within an MSA were categorized as urban. The annual census for urban EDs ranged from 14,000 to 34,000 visits per year (mean = 25,043, IQR = 19,940–30,000), whereas rural EDs reported 10,000 to 20,000 ED visits annually (mean = 14,246, IQR = 11,500–17,400). Urban EDs reported a mean admission rate of 18% and ICU admission rate of 6%, whereas rural EDs admitted 19% to floor beds and 5% to the ICU. Comparison by z-test revealed no statistically significant differences between urban and rural admission rates and ICU admission rates ($p = 0.660$, $p = 0.454$, respectively). All hospitals responding to the survey provided at least 24 hours of physician staffing daily.

The majority of ED physicians were hospital employees (73.1%), whereas the remaining physicians were employed through single hospital contracts with local groups (19.2%), multiple hospital local groups (3.8%), and multiple hospital national groups (3.8%). Of the 154 physicians staffing the EDs included in this study, 50.6% were American Board of Emergency Medicine (ABEM) certified and 33.1% residency trained in EM. Physicians staffing urban (MSA) EDs reported ABEM certification and residency training more frequently than those working in rural (non-MSA) EDs (65.2% vs. 30.8% and 48.3% vs. 12.3%, respectively). ED administrators in urban areas believed their hospital could attract and