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ORIGINAL ARTICLE

The Role of Training Environment Care Intensity in US Physician Cost Consciousness

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Abstract

Objective: To examine a potential relationship between training environment and physician views about cost consciousness.

Participants and Methods: This was a cross-sectional study of US physicians who responded to the Physicians, Health Care Costs, and Society survey conducted between May 30, 2012, and September 30, 2012, for whom information was available about the care intensity environment of their residency training hospital. The exposure of interest was a measure of the health care utilization environment during residency from the Dartmouth Atlas of Health Care Hospital Care Intensity (HCI) index of primary training hospitals. The main outcome measure was agreement with an 11-point cost-consciousness scale. The generalized estimating equations method was used to measure the association between exposure and outcome.

Results: Of the 2556 physicians who responded to the survey, 2424 had a valid HCI index (95%), representing 649 residency programs. The mean ± SD cost-consciousness score among physicians trained at hospitals in the lowest quartile of care intensity (31.8±5.0) was higher than that for physicians trained at hospitals in the top quartile of care intensity (30.7±5.1; $P<.001$). Adjusting for other physician and practice characteristics, a population of physicians trained in hospitals with a 1.0-point higher HCI index would score approximately 0.83 points lower on the cost-consciousness scale (beta coefficient = −0.83; 95% CI, −1.60 to −0.05; $P=.04$).

Conclusion: The intensity of the health care utilization environment during training may play a role in shaping physician cost consciousness later in their careers.

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Persistently high health care costs in the United States have led to efforts to identify and reduce overuse of diagnostic tests and treatments, which a 2011 report estimated costing $158 billion to $226 billion annually.[1] Efforts to reduce overuse include the Choosing Wisely campaign, which stimulates consumer and professional discussion about waste in health care.[2] National professional organizations and those charged with overseeing medical training programs have also focused increased attention on incorporating cost-effective care into graduate medical training.[3,4] The Accreditation Council for Graduate Medical Education reporting milestones for internal medicine residency programs now include the practice of cost-effective care.[5] The American College of Physicians, in collaboration with the Alliance for Academic Internal Medicine, developed the High Value Care curriculum for educators, residents, and students.[6] A 2012 survey of internal medicine residency programs found that only 15% had a formal curriculum on cost-conscious care, although another 50% were currently working on one.[7]

Currently, US physicians report somewhat conflicted views about their role in reducing overuse and stemming high health care costs. In general, physicians acknowledge that health care waste exists and accept some responsibility to curb overuse but assign responsibility to others as well. For example, a 2009 survey of US primary care physicians found that 42% believed that their patients were getting too much care and suggested inadequate visit length, malpractice, and financial concerns as possible causes.[8] A 2012 survey of US physicians across specialties reported that only 36% believed that practicing physicians have major responsibility for reducing health care costs.[9] Physician views on overuse have been

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associated with practice setting, compensation type, attitudes toward clinical uncertainty, and malpractice concerns, although few consistent patterns have been identified.[10-14]

Despite the increased emphasis on cost-consciousness in medical practice and graduate medical education in particular, the effect of training institution environment on physician attitudes in this area has not been well studied. It is plausible to postulate that how resources are used during one's training can have sustained effects in one's mentality toward intensity of resource use throughout a career. The objectives of this study were to evaluate how the health care utilization environment of the training institution during residency may be associated with physicians' views about cost consciousness later in their careers.

METHODS

Study Design and Participants

We conducted a secondary analysis of data from the Physicians, Health Care Costs, and Society survey mailed between May 30, 2012, and September 30, 2012, to 3897 US physicians randomly selected from the American Medical Association (AMA) masterfile.[9,10] Survey design and data collection methods for this survey have been previously described.[9] For each physician in the sample, the residency training institution code provided in the AMA masterfile was linked to the residency program name. The residency institution code was then used to identify the primary hospital associated with the respondent training program, which was linked to the Dartmouth Atlas of Health Care Hospital Care Intensity (HCI) index of that hospital. We used the American Association for Public Opinion Research RR2 to measure the response rate.[15]

Dependent Measure

The outcome variable of interest was a physician's score on the cost-consciousness scale. Cost consciousness was defined as "the extent to which physicians pay attention to and feel an obligation to address health care cost in their practice,"[9,p381] and it was measured using an 11-item scale that was developed post hoc using standard methods of exploratory factor analysis and has reasonable psychometric properties.[9] The scale was computed by assigning a point value from 1 to 4 for each question, so that higher point values indicated a more cost-conscious response (ie, agreement with a cost-conscious attitude or disagreement with a statement opposing cost consciousness), and summing the points for all 11 scale questions.[9]

Independent Measures

The main independent measure of interest was the HCI index of the primary training site where the physician completed residency training. We used the 2010 HCI index calculated by the Dartmouth Atlas group[16] to characterize the intensity of care environment of each participant's primary training hospital. The HCI index is a composite measure of hospital days and inpatient physician visits by Medicare recipients in the past 2 years of life, and it has been used as a measure of variation in the utilization of hospital and physician services at the hospital level.[16]

Because many residency programs are affiliated with multiple hospitals, we used a systematic iterative process to identify the primary training hospital's HCI index in the Dartmouth Atlas database.[17] The first round consisted of searching the Dartmouth Atlas database using the name of the training institution from the AMA masterfile. Next, a zip code search was used. Small differences in names, such as "hospital" instead of "medical center," were disregarded as long as the addresses matched. Last, programs that could not be matched using exact name match or similar name plus exact zip code match were researched individually using FREIDA Online and residency program websites. When a residency program seemed to operate in more than 1 hospital with none specified as primary, the hospital with the largest number of beds was considered the primary training hospital.

The 3897 US physicians sampled from the AMA masterfile trained at 784 unique residency programs, of which 538 (69%) were linked to Dartmouth Atlas data directly and 111 (14%) were imputed (see later in the "Methods" section). Of the 246 training sites that could not be linked to Dartmouth Atlas data, 93 (38%) could not be matched reliably via the previously mentioned process, 39 (16%) were military or Veterans Affairs facilities, 37 (15%) did not have an HCI index calculated, 26 (11%) had closed, 25 (10%) were children's hospitals, 15 (6%) were located

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