



Analysis of dual degree, gender, and specialty on obtaining leadership positions in academic settings: a multi-institutional study

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Background: Disparities in advanced degrees, gender, and specialty for medical leadership in academia have not been described.

Methods: In this cross-sectional multi-institutional study, the authors used the University of California (UC) employee database and organization charts to compile the physicians and medical leaders at 6 academic centers. Chi-square testing was used to identify factors associated with leadership positions.

Results: Among physicians in leadership 34.6% had dual degrees compared to 25.3% without leadership roles ($P < 0.001$). The PhD, MPH, and MBA were the only degrees overrepresented in leadership. Female physicians were underrepresented in general compared to males (42.8% vs. 57.2%; $P < 0.001$), and even more so in leadership roles (28.0% vs. 72.0%; $P < 0.001$). While Internal Medicine (24.6%) was the most common specialty in leadership, the only specialties overrepresented in leadership were Psychiatry ($P = 0.003$) and Neurosurgery ($P = 0.019$).

Conclusions: This study uniquely characterizes the distribution of advanced degrees, gender, and specialties in six academic institutions. The MBA, MPH, and PhD degrees, along with Neurosurgery and Psychiatry specialties, were strongly associated with physicians in leadership, while females were largely underrepresented in leadership. Understanding the current state of healthcare management in academic hospitals sheds light upon the disparities in leadership in order to achieve equal representation.

Keywords: Healthcare management; dual degrees; gender disparities; medical specialties; health system reform

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Introduction

To address the leadership challenges of the modern healthcare landscape, many United States medical schools have offered a variety of dual degree programs (1). Pursuing

a specific degree may be driven by a desire to gain the skills to perform research at the highest level, improve leadership skills, or enhance policy-making abilities. Additionally, these degrees could serve as tools to augment a physician's sphere

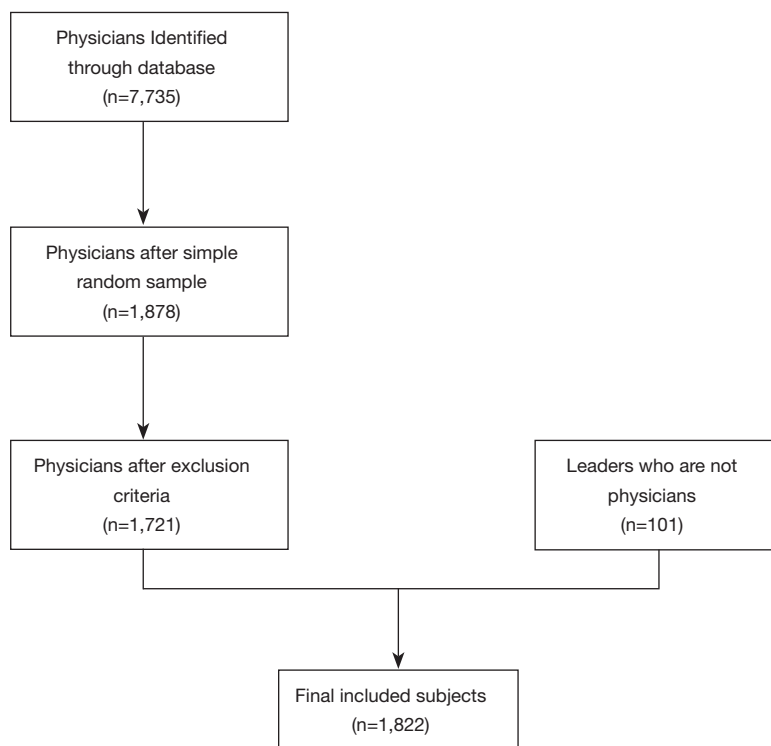


Figure 1 Flow diagram.

of influence in the academic setting.

Currently, little is known about whether dual degrees are more prominent amongst physicians in leadership roles. This study sought to evaluate the present state of medical leadership by investigating the prevalence of advanced degrees in medical leadership, while also examining the gender equality and specialty distribution among those in leadership. We present the following article in accordance with the STROBE reporting checklist (available at <https://jhmhp.amegroups.com/article/view/10.21037/jhmhp-21-91/rc>).

Methods

In this cross-sectional study, the physicians from six University of California (UC) hospitals and medical schools were compiled from the UC database for employee pay (<https://ucannualwage.ucop.edu/wage>) for the most recently released year at the time of research (2018): UC Davis, UC San Francisco, UC Riverside, UC Los Angeles, UC Irvine, and UC San Diego. After 7,735 subjects were identified, simple random sampling of 360 subjects from each of the 6 universities and exclusion of non-physicians or non-

practicing physicians resulted in 1,721 physicians included for final study (*Figure 1*). Physicians were designated most commonly by the titles of “PROF OF CLIN-HCOMP” (Professor of Clinical-Health Sciences Compensation Plan) or “PROF-HCOMP,” (Professorial-Tenure-Health Sciences Compensation Plan) in the UC database for employee pay, with any unclear cases being confirmed through searches on official university websites.

Simultaneously, 315 medical leadership roles were identified through reviews of institutional websites and publicly available organization charts. These roles were classified into three categories: hospital leadership, medical education leadership, and department leadership. Hospital leadership included roles such as Chief Executive Officer, Chief Financial Officer, Chief Medical Officer. Medical Education Leadership included positions such as Dean, Vice Dean, Associate Dean, and Assistant Dean positions. Department Leadership included positions such as Chair of the Department. All leaders, regardless of whether or not they were medical physicians, were included in this study. Advanced degrees were defined as any degree, in addition to an MD, that required schooling beyond an undergraduate degree (i.e., master’s or doctoral degree). The specific

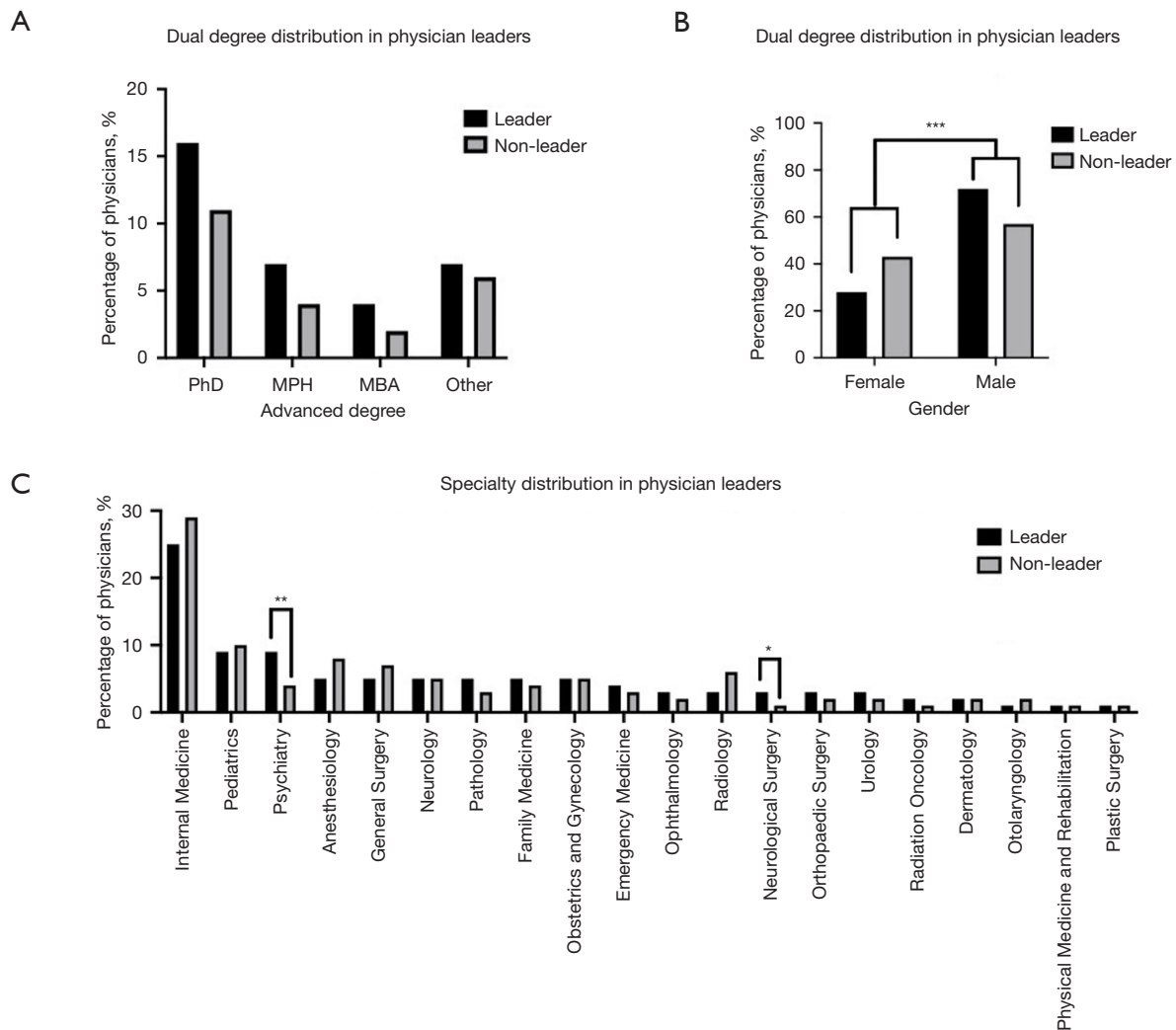


Figure 2 Distribution of dual degree, gender, and specialty in physicians in leadership roles. Data for the most recently published year at the time of research (2018) were used to analyze the representation of advanced degrees (A), gender (B), and specialty (C) in physicians with and without leadership positions. P values were obtained from Pearson’s chi-squared test for difference of proportions. *, P<0.05; **, P<0.001; ***, P<0.001.

degrees were recorded, as well as those who possessed multiple advanced degrees. The study was conducted in accordance with the Declaration of Helsinki (as revised in 2013). Institutional review board approval and informed consent were not required as the present study conducted a retrospective review of publicly available data.

Statistical analysis

Descriptive statistics and Pearson’s chi-square test were used with a 5% level of significance to determine the influence of

degree, gender, or specialty in medical leadership.

Results

Of 315 identified medical leadership roles, 214 (67.9%) were held by physicians. Among physicians in leadership roles, 74 (34.6%) had dual degrees compared to 436 (25.3%) without leadership roles (P<0.001) (Figure 2A). The most popular advanced degrees amongst physician in leadership roles included the PhD (34, 24.8%), MPH (16, 11.7%), and MBA (8, 5.8%) (Table 1). Although 30 physicians (1.74%) in

Table 1 Significance of degree, gender, and specialty in medical leadership

Variable	Comparison	P value
Dual degree		
MD/Any ^a	MD only	<0.001***
MD/PhD	MD only	0.019*
MD/MPH	MD only	0.009**
MD/MBA	MD only	0.042*
MD/Other ^b	MD only	0.157
MD/PhD	MD/MBA	0.462
MD/PhD	MD/MPH	0.443
MD/MBA	MD/MPH	0.894
Gender		
Female	Male	<0.001***
Specialty		
Internal Medicine	All other specialties	0.197
Pediatrics	All other specialties	0.668
Psychiatry	All other specialties	0.003**
Anesthesiology	All other specialties	0.191
General Surgery	All other specialties	0.433
Neurology	All other specialties	0.882
Pathology	All other specialties	0.179
Family Medicine	All other specialties	0.832
Obstetrics and Gynecology	All other specialties	0.900
Emergency Medicine	All other specialties	0.213
Ophthalmology	All other specialties	0.465
Radiology	All other specialties	0.158
Neurological Surgery	All other specialties	0.019*
Orthopaedic Surgery	All other specialties	0.391
Urology	All other specialties	0.391
Radiation Oncology	All other specialties	0.184
Dermatology	All other specialties	0.686
Otolaryngology	All other specialties	0.826
Physical Medicine and Rehabilitation	All other specialties	0.879
Plastic Surgery	All other specialties	0.797

*, P<0.05; **, P<0.01; ***, P<0.001. ^a, any advanced degree; ^b, other advanced degrees besides PhD, MPH, or MBA.

this dataset possessed a DO degree, no DO physicians held leadership roles.

Females held significantly fewer leadership roles than males (28.0% *vs.* 72.0%; P<0.001). While the baseline of physicians not in leadership also contained less females than males overall (42.8% *vs.* 57.2%; P<0.001), females were still significantly underrepresented in leadership when compared to this baseline proportion of females not in leadership (28.0% *vs.* 42.8%; P<0.001) (*Figure 2B*). When comparing those with and without advanced degrees, there was no difference in the representation of females (40.1% *vs.* 41.2%; P=0.684).

The three most common specialties overall included Internal Medicine (497, 28.9%), Pediatrics (172, 10.0%), and Anesthesia (119, 7.7%) (*Figure 2C*). The three most common specialties amongst physician in leadership roles were Internal Medicine (53, 24.6%), Pediatrics and Psychiatry (both with 19, 9.0%). Neurosurgery (2.8% *vs.* 1.0%; P=0.019) and Psychiatry (9.0% *vs.* 4.4%; P=0.003) had a significantly higher percentage of physicians in leadership roles compared to physicians not in leadership roles within their specialty.

Discussion

This study found significant associations between physicians in leadership roles and having a PhD, MBA, and MPH, though there was no statistical significance between these degrees. Despite equal gender representation amongst physicians with advanced degrees, females were significantly underrepresented in leadership. Internal Medicine physicians held the highest percentage of leadership roles, but this could be attributed to a larger number of internists within these data. Two-thirds of medical leadership roles were held by physicians, reinforcing conclusions from previous studies that having a clinical background is a crucial component of becoming an effective medical leader (2-4).

As early as medical school, physicians and physicians-in-training are exposed to the organizational burdens of healthcare. Regardless of specialty, doctors play a leading role in the healthcare team and are often the final responsible entity for the overall outcome of patient care (5-7). Navigating this responsibility requires a comprehensive understanding of the political, economic, social, and technological drivers of healthcare, an understanding that often comes from pursuing an additional degree. Obtaining

an MBA degree has often been cited as a competitive advantage for physicians in leadership positions (both for obtaining and succeeding in particular roles) (8,9), but our study also reveals the potential utility of the PhD and MPH for similar purposes (10,11).

Looking towards the future, medical education pathways have already begun to integrate leadership and management training into their curricula, with models being adapted for attending physicians as well (5,12,13). Programs that have been most successful have integrated leadership training not only longitudinally, but also by using areas of training that overlap with existing curricular content (9,14). Available evidence has suggested that physicians who do pursue a PhD, MBA, or MPH experience a greater level of professional advancement whether measured by leadership positions, publications, grant funding, or reimbursement (15). As healthcare continues to evolve in the 21st century, well-designed and well-evaluated leadership curricula are necessary.

To achieve this, it is important to understand the varied motivations behind pursuing different advanced degrees. Business-oriented skills provided by MBA training, such as finance and organizational management, are major considerations for medical trainees to pursue an MD/MBA (8). Moreover, as an MBA is recognized as one of the most suitable management degrees by and for physicians (16), those who recognize deficiencies in their management skills while navigating the complexity of modern healthcare may opt to receive MBA training during their post-residency career. With regards to an MPH, pre-medical students with an interest in public health and disease and medical students with intentions to enter academic practice were more likely to complete an MD/MPH (17). Physicians who chose to pursue an MPH after medical school commonly identified research training as one of the most powerful attractions towards public health curricula (18). Similarly, surveys of MD/PhD students at the University of Pennsylvania suggested that most students intend to enter academic medicine with a focus on research (19), and a survey study in Canada identified that physicians who received PhD training after medical school had a stronger focus on research compared to physicians who completed MD/PhD program or PhD before medical school matriculation (20). Together, literature provides preliminary evidence into when and why certain dual degrees are pursued by healthcare professionals, but further research is needed to effectively integrate advanced degree interests and leadership training to cultivate future

generations of physician executives.

Along with our dual-degree investigations, we identified a clear gender disparity among physician leaders. Although the baseline representation of dual-degree individuals was similar among males and female physicians, females were underrepresented in leadership overall. This result is in line with previous studies demonstrating underrepresentation of women in leadership (21,22). Despite the significant association between possessing dual degrees and leadership positions overall, the added benefit of additional training among female physicians does not seem to confer the same advantages as it does for their male counterparts. Further study is needed to delineate potentially systemic barriers preventing equally qualified women from obtaining leadership roles.

There is a paucity of literature describing the distribution of medical specialty in physician leadership. We herein report the specialty characteristics of physician leadership in academic medical institutions within the University of California Health, with the observation that psychiatrists and neurosurgeons were overrepresented in clinical leadership. In a 2016 article, Goodall concluded that psychiatric leaders may enhance organizational performance in part through setting proper goals and establishing a supportive environment (23), and a study conducted by Fares *et al.* reported that the strict medical standards and management skills occupied by academic neurosurgeons makes them strong leadership candidates (24). Despite the literature support for our findings, more studies analyzing other academic institutions and different institution types are needed to assess whether psychiatry and neurological surgery are associated with stronger leadership representation and a better understanding of the mechanism is needed. By identifying these qualities that may bestow a greater prediction for and competency in leadership positions, targeted training programs to future physician administrators can be applied across any specialty.

Overall, as this study can only identify characteristics of those in leadership based on the publicly available data, further study is required to determine causation, i.e., whether these characteristics provide an advantage for obtaining a leadership role. Additionally, further study is required to determine whether bias or local or system-wide barriers had an impact on the differences seen amongst characteristics such as gender (25).

Conclusions

Disparities in advanced degrees, gender, and specialty for

medical leadership in academia have not been previously described. Our study explored the current disparities in healthcare management by analyzing whether various advanced degrees, specialties, or gender were associated with physicians in leadership in order to achieve equal representation and diversity. The MBA, MPH, and PhD degrees, along with Neurosurgery and Psychiatry specialties, were strongly associated with physicians in leadership, while females were largely underrepresented in leadership. These insights may be applied to address gaps in equity in other healthcare leadership settings to build more diverse administrative teams.

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Footnote

Reporting Checklist: The authors have completed the STROBE reporting checklist. Available at <https://jhmhp.amegroups.com/article/view/10.21037/jhmhp-21-91/rc>

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Conflicts of Interest: All authors have completed the ICMJE uniform disclosure form (available at <https://jhmhp.amegroups.com/article/view/10.21037/jhmhp-21-91/coif>). The authors have no conflicts of interest to declare.

Ethical Statement: The authors are accountable for all aspects of the work in ensuring that questions related to the accuracy or integrity of any part of the work are appropriately investigated and resolved. The study was conducted in accordance with the Declaration of Helsinki (as revised in 2013). Institutional review board approval and informed consent were not required as the present study conducted a retrospective review of publicly available data.

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