



Diversity in Medicine: Disparities in General Cardiology from FRIEDA™ 2022-2023

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Abstract

Introduction

Diversity is an essential aspect of healthcare that falls short of its reported goals and advocacy toward change. A diverse workforce is more equipped to understand the needs of patients from varying backgrounds. We wished to observe current data on general cardiology to understand how females, DOs and Non-US graduates compared to their male, MD, and US-graduated peers.

Methods

We obtained data about accredited cardiology fellowship programs from FRIEDA™, the American Medical Association's residency and fellowship database for the 2022-2023 academic year. For each field male vs female, DO vs MD, US vs Non-US graduate, we ran a binomial test of proportions to determine statistical significance which was defined as deviated from 50% ($p < 0.05$). We used SAS Studio 3.8, version 9.4 (SAS Institute, Inc, Cary, NC) for statistical analysis. Confidence intervals utilized Wilson score interval.

Results

General cardiology fellowships showed disparity for all fields with female gender frequency 749 (27.3%) ($p < 0.0001$) (CI 26, 29), DO frequency 276 (10.1%) ($p < 0.0001$) (CI 9, 11), and non-US graduate frequency 888 (32.5%) ($p < 0.0001$) (CI 31, 34).

Conclusion

There remains a lack of representation for females, DOs and Non-US graduates in general cardiology. We suspect that systemic barriers prevent underrepresented groups from access and opportunities in career and leadership at all stages of training and practice. Increasing diversity in cardiology can promote cultural competence and empathy, improve communication, and allow inclusive patient care. We propose steps for attracting diverse individuals to medicine and maintain them within medicine and to competitive careers from early stages of education.

Keywords: General Cardiology; FRIEDA

Introduction

Diversity within the healthcare system is critical, as it improves patient care quality, career advancement opportunities, and the national financial burden of healthcare [1]. With the press for diversity in incoming medical students, there is disparity seen early in career with females composing a slight majority of medical students, but only 48.6% of those boarded and practicing being females [2]. This disparity increases through training with a notably large disparity in cardiology fellowships. For

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example, females represented 44.3% of internal medicine residents in 2021, while only 20.4% of interventional cardiology fellows were female [3].

The underrepresentation of females in cardiology programs is well-known and a persistent issue in the medical field. This problem directly impacts the quality of care that a patient receives. Patients tend to have a positive view of healthcare providers who share similar physical characteristics or backgrounds [4-5]. As well, it is noteworthy that 86% of cardiovascular disease program directors have acknowledged that diversity needs to be improved in the cardiology field [6]. We should care, then, that changes are implemented toward goals in diversity.

Apart from gender, there is an obligation to observe objective data for positive or negative trends in diversity. We elected to investigate cardiology-related general medical and surgical fields for 1) bimodal gender male and female, 2) allopathic medical doctor (MD) versus doctor of osteopathy (DO), and 3) US graduate versus Non-US graduate which may include Caribbean and other varieties of Non-US training for residency. These three diversity characteristics are rarely examined together for cardiology-related fields and may further elucidate areas of improvement. Demographics of the US patient population continue to diversify and physician representation should provide better service to the communities we serve [7]. Our central hypothesis was that cardiology-related programs would demonstrate a predominance toward more male MDs trained in US graduate programs.

Methods

Accredited cardiology fellowship program data was obtained through the American Medical Association’s (AMA) residency and fellowship database (FRIEDA™) [8]. Our search included Cardiovascular Disease among other internal medicine and surgical-based cardiology-related fellowship training programs that will be discussed and published apart. Specific fellow demographic information was obtained from the respective program’s official website for the 2022-2023 academic year including female/male gender, MD/DO degree type, and US/non-US graduate education. We excluded newly accredited programs due to the paucity of fellow information which would skew our data.

The goal of the study was to define the proportion of fellows in each of the demographic categories and whether they differ from 0.5 (e.g., are the majority of fellows male vs female, MD vs DO trained, US vs non-US graduates), and to create confidence intervals related to these variables and outcomes. For each variable, a binomial test of proportions was run to determine whether any of the percentages were significantly different from 50% (p-values less than $\alpha = 0.05$). Statistical analyses were performed using SAS Studio 3.8, version 9.4 (SAS Institute, Inc., Cary, NC) and confidence intervals were calculated via the Wilson score interval procedure [9].

Results

General cardiology fellowship showed demographic disparity with female gender frequency 749 (27.3%) (p<0.0001) (CI 26, 29), DO frequency 276 (10.1%) (p<0.0001) (CI 9,11), and non-US graduate frequency 888 (32.5%) (p<0.0001) (CI 31,34). It is notable that there were disparities for all topics of diversity in general cardiology fellowship programs (Table 1)

Table 1: Diversity by topic in general cardiology.

Diversity topic	Frequency (%)	95% CI (%)	p-value
Female gender	749 (27.3)	(26,29)	<0.0001
DO specialty	276 (10.1)	(9,11)	<0.0001
Non-US graduate	888 (32.5)	(31,34)	<0.0001

Abbreviations: CI=confidence interval. DO=doctor of osteopathy. US=United States.

We also collected further information regarding regional data for general cardiology that we will publish apart. The same is true for other internal medicine and surgical cardiology-related specialties.

Discussion

In this study we found that there was a statistically significant disparity of females, osteopaths, and Non-US graduates. It is concerning that discussions toward diversity improvement are not supported by current statistics and trends. While there is an upward trend of female applicants to cardiology-oriented specialties, the numbers remain lower than expected but it did support our hypothesis. Between 2014 to 2016 there was a small increase in female cardiology trainees, from 21.2% to 24.6%, but fell notably short of the steady 40-45% of females within internal medicine [10].

Diversity representation, namely gender, matters for communication and patient satisfaction as well as health outcomes. Of significance, patient-to-caregiver interactions are timely and crucial in high-intensity situations. When both genders presented with acute myocardial infarctions (MI), female patients experienced higher post-MI mortality rates with male providers compared to their female peers [11]. Female physicians also tended to provide more preventive-focused care and created higher patient satisfaction, where patients felt that communication involved them in the process of their care [12-13]. Essentially, without sufficient female representation, patients are shown to lack some of these vital components in medical care that they deserve.

Osteopaths (DOs) are poorly represented in general cardiology compared to allopaths (MDs). Match rates appear to favor MD candidates for competitive specialties so that DOs, though competitively trained, have to show more effort than their MD peers which involves twice the cost and hours toward exams and credentialing [14]. A recent change involves USMLE/COMLEX level 1 exam transitioning to a Pass/Fail reporting system for residency applicants. This places greater emphasis on the USMLE/COMLEX 2 CK score. While the likely intention was to alleviate stress over the didactic-heavy primary exam and lead to increased clinical goals, some students may conversely experience increased anxiety at an earlier stage in their credentialing. DOs remain at a disadvantage with the encouraged election to study for both tests simultaneously without further protected time for preparation [15]. There ought be strides toward equal and fair chances for medical school applicants from both disciplines at this early stage in career to allow similar opportunities for competitive fellowships, such as cardiology.

When observing statistics for US compared to non-US graduates, general cardiology carries disparity. Consider numerous obstacles for the non-US graduate such as political and healthcare policies, immigration regulations, cost, licensing regulations, and concerns about lower acceptance rates compared to US graduates with the same qualifications [16-18]. Conversations about incorporating non-US graduates should happen at all levels of healthcare and training to understand the challenges and increase inclusivity.

With an overwhelming face of faculty and staff that are male, MD, and US graduated, it can be daunting for females, DOs, and non-US graduates (as well as any combination of these minorities) to achieve similar career leadership and successes. There should be equal accessibility and opportunities for candidates based on merit and effort so that individuals can reach their full potential without feeling as though they started without ever having a chance at their chosen career and calling, to treat and serve patients. Patients deserve better. Dye and Lantz propose actions toward these aims including incorporating outreach programs in high school to attract diverse students to a career in medicine. In medical school, programs should work on appearing welcoming and providing equal opportunity diverse staff. At all levels, there should be sufficient wellness programs and timely opportunities to participate in wellness events as well as to lead them and provide feedback. Microaggressions and discriminations should be acknowledged and the perpetrators of words and violating touch, including patients, staff, faculty, and

peers – be educated or disciplined about a culture that does not support such behaviors [19].

More research should be repeated on FRIEDA™ data in the future to ensure that gaps in representation are moving in a forward direction. If there is an absence toward positive trends, advocacy would be encouraged toward equal rights for the sake of patients as well as for those dedicated to the unique career and calling of medicine and healthcare.

Conclusion

Despite attention given to diversity in healthcare in recent news and literature, there appears to be a disconnect toward progress based on our study. Gender, osteopaths and Non-US graduates remain underrepresented in medicine despite a diversifying patient population. When diversity is implemented, patient outcomes and career opportunities take strides forward instead of remaining unchanged or regressing. Diversity improves patient-physician interactions and reduces barriers to healthcare, as diversity creates its own advocacy. By increasing representation of gender, background training, and country of origin of providers in medicine, we can provide an impartial healthcare system that offers equal care to anyone regardless of their face value but instead by merit.

Conflict of Interest and Disclosure Statement

The authors have declared that no financial support was received from any organization for the submitted work. The authors have declared that there are no financial relationships at present or within the previous three years with any organizations that might have an interest in the submitted work. The authors have declared that there are no other relationships or activities that could appear to have influenced the submitted work.

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