

Equal pay for equal work: Disparities in compensation in vascular surgery

Judith C. Lin, MD, MBA,^a Kathryn E. Bowser, MD,^b Laura M. Drudi, MD,^c Kathryn L. DiLosa, MD,^d and Jeniann Yi, MD, MSCS,^e East Lansing, Mich; Newark, Del; Montreal, Quebec, Canada; Sacramento, Calif; and Denver, Colo

ABSTRACT

Physician compensation varies by specialty, gender, race, years in practice, type of practice, location, and individual productivity. We reviewed the disparities in compensation regarding the variation between medical and surgical specialties, between academic and private practice, between gender, race, and rank, and by practice location. The physician personal debt perspective was also considered to quantify the effect of disparities in compensation. Strategies toward eliminating the pay gap include salary transparency, pay equity audit, paid parental leave, mentoring, sponsorship, leadership, and promotion pathways. Pay parity is important because paying women less than men contributes to the gender pay gap, lowers pension contributions, and results in higher relative poverty in retirement. Pay parity will also affect motivation and relationships at work, ultimately contributing to a diverse workforce and business success. Rewarding all employees fairly is the right thing to do. As surgeons and leaders in medicine, establishing pay equity is a matter of ethical principle and integrity to further elevate our profession. (J Vasc Surg 2021;74:21S-28S.)

Keywords: Equal pay; Pay equity; Pay gap; Salary gap

Pay inequity for women and minorities relative to men has continued to be pervasive in medicine, including early-career physicians, researchers, and specialists. Despite having the same education, training, and specialty, gender earning disparities among vascular surgeons have persisted and widened. Given that women composed one half of the admitted medical students, pay equity is important for recruitment of both genders and all races to create a diverse workforce in vascular surgery. We have addressed the history of pay equity, disparities in compensation, personal debt perspective, and strategies toward eliminating the pay gap.

METHODS

Through the use of common resource databases, searches were completed to identify the available data on the subject of disparities in compensation. We have provided a brief history of events along the road toward

From the Division of Vascular Surgery, Department of Surgery, Michigan State University College of Human Medicine, East Lansing^a; the Division of Vascular Surgery, Christiana Care Health Services, Newark^b; the Division of Vascular Surgery, Centre Hospitalier de l'Université de Montréal, Montreal^c; the Division of Vascular Surgery, University of California, Davis, Sacramento^d; and the Division of Vascular Surgery, University of Colorado, Denver.^e

Author conflict of interest: none.

Correspondence: Judith C. Lin, MD, MBA, Division of Vascular Surgery, Department of Surgery, Michigan State University College of Human Medicine, 4660 S Hagadorn Rd, Ste 600, East Lansing, MI 48823 (e-mail: linjudit@msu.edu)

The editors and reviewers of this article have no relevant financial relationships to disclose per the JVS policy that requires reviewers to decline review of any manuscript for which they may have a conflict of interest.

0741-5214

Copyright © 2021 by the Society for Vascular Surgery. Published by Elsevier Inc. https://doi.org/10.1016/j.jvs.2021.03.052 pay equality, followed by a thorough exploration of the current landscape as a narrative review. In searching the extent data, we strived to include materials that were most representative of the studies available. Our review of the data was not exhaustive, although we were able to adequately and accurately portray the contemporary disparities in physician compensation. To formulate our recommendations to address these disparities, we aggregated and organized the available data to identify trends and demonstrate gaps in the available data.

History of pay equity

At the turn of the 20th century, "marriage bars" were the policies of school districts, firms, governments, and other institutions, which discouraged the hiring of married women and suggested firing single women on their marriage. These policies were continued and expanded throughout the Great Depression to ration employment. In the Second World War, involvement of women in the labor force and in jobs normally performed by men changed the perception of women and their role in society.² This was a watershed event that radically transformed women and society.³ The ratio of female to male hourly wages continued to increase until 1948, with industries beginning to overcome discrimination and stereotypes of women in the labor force and efforts made to prevent women from leaving the workforce.4 The participation of women in the labor force was 34% in 1950, with women earning on average ~60% of men's wages.5

Further social reform resulted from the Equal Pay Act of 1963. This legislation was a federal labor law signed by President John F. Kennedy that prohibited sex-based wage discrimination of individuals who perform jobs of

equal skill, effort, and responsibility in the United States.⁶ Subsequently, a dramatic change occurred in the societal inequalities in the last half century, including gender inequalities. Social scientists have named this the "gender revolution," noting great initial progress toward gender equality between 1970 and 2018.⁷ However, since then, these changes have slowed and stalled.⁷ In 2020, women only earned \$0.80 for every \$1.00 earned by men in the United States.⁸ This pay gap increases for women with advanced degrees; medicine and surgery, in particular, have been identified as occupations with some of the largest gender pay gaps. Moreover, the gender pay gap, which presents early in a woman's career, continues to widen over time.⁹ Thus, significant challenges remain to overcome this discrepancy.

Disparities in compensation

The gender pay gap is defined as the female/male ratio of the median or average annual earnings among fulltime workers.¹⁰ Physician compensation varies by specialty, gender, race, years in practice, type of practice, practice location, and individual productivity. To evaluate productivity, physicians employed in a hospital or academic setting use the work relative value units (RVUs) produced within a certain period. For nonemployed physicians, the revenues and expenses will affect their annual compensation. In the most comprehensive research undertaken, which included 36,000 licensed physicians from 48 specialties, Doximity found significant gaps in compensation for U.S. doctors, with the largest wage gap in the vascular surgery specialty. 11 Female vascular surgeons earned 20% or \$88,800 less than the earnings of the male vascular surgeons.¹²

Race and ethnicity are also related to differences in compensation. According to a 2017 Medscape survey, white physicians reported earning \$303,000 annually, followed by Asian physicians at \$283,000, Hispanic or Latino physicians at \$271,000, and black physicians at \$262,000.¹³ This is consistent with a generalized wage gap based on racial and ethnic background across most sectors of the U.S. labor market.

Variation between medical and surgical specialties.

According to the Urban Institute and Sullivan Cotter, an analysis of physician compensation and productivity stratified by specialty in terms of total cash compensation, work RVUs, and compensation per work RVUs revealed that the current physician compensation methods might undervalue primary care physicians and office-based procedures. Furthermore, the report found that the total median cash compensation (TCC) had increased 16.1% from 2013 to 2017. However, the variation was greater for certain specialties over time. Among 1801 "other surgical specialists" in 199 organizations, the median TCC was \$475,000, the median work RVUs was 7183, and the median TCC per work RVU was \$66.63, with a comparison ratio of 1.32 for primary

care physicians. Their study standardized physician compensation to the rate of primary care physician per work RVU, which could lead to significant decreases in the total cash compensation for some surgical and proceduralist specialties and reduce the disparities in physician compensation relative to primary care. 15 Regarding variations within the same specialty, compensation varies greatly depending on the total number of hours worked and the type of case mix within the specialty.

Previous attempts to explain the gender pay gap pointed to differences in specialty, flexible scheduling, and personal choice. Women have often gravitated toward lower paying specialties such as pediatrics (63% women), and men often gravitate toward higher paying specialties such as orthopedic surgery (95% men). This might result from the prioritization of flexible schedules, optimal collegiality, and control of time instead of higher pay. Some women might also decrease their work hours to care for children or loved ones. However, despite these factors, the gender pay gap and inequity in medicine is difficult to explain completely. Disparities in pay and treatment extend well beyond negotiation and specialty choice and have persisted even within the same specialty.

Variation between academic and private practice.

Compensation by practice type is an important factor considered during job selection. A retrospective comparison of vascular surgeon salaries found that early career surgeons in academic practice earned \$54,500 less than those in private practice in 2003. This difference had increased further to \$110,500 in 2012. Furthermore, the investigators found that 59.09% of assistant professors of vascular surgery were dissatisfied and would relinquish their academic appointment if their compensation increased by 41.67%. To improve faculty satisfaction and retention, academic leadership has been forced to use nonacademic compensation benchmarks to improve the recruitment and retention of vascular surgeons in academic practice.

A survey-based study found that although the hours worked did not vary by gender in academic or private practice among general surgeons, women reported greater income potential in private practice compared with academia.¹⁸ However, women were less likely to be in private practice compared with men (72% vs 83%; P < .001), which might have been influenced by the benefits available outside of compensation. Thus, 72% of academic surgeons confirmed the availability of formal maternity leave in their practice compared with 34% of private surgeons (P < .001). Such factors result in low career satisfaction and the high attrition of vascular surgery assistant professors, with an amplified effect on women who chose an academic career for its benefits and accepting the overall lower income earning potential.

23S

Variation between gender, race, and rank. A National Science Foundation study determined that for any doctorate employed in a scientific field, the median salary for men was 24% higher than that for women.¹⁹ In a study of 16,000 graduating seniors who had just completed their residency training during 1999 to 2017 in New York state, the mean starting compensation was \$235,044 for men and \$198,426 for women.²⁰ For newly graduated physicians, the average starting salary for male residents was >\$36,000 greater than the starting salary for female residents. This salary difference could not be entirely explained by specialty choice or other obvious factors.

When female surgeons begin their initial job offer with a lower starting salary than the male surgeons, these inequities will persist for the duration of their careers. A 2016 analysis of 10,241 physicians across 24 medical schools in the United States demonstrated that the annual salaries of female physicians was, on average, 8% lower than that of their male physician counterparts (an absolute lower annual pay gap of \$51,310), with these differences persisting across specialties and institutions.²¹ Even after adjusting for potential confounding factors such as age, years in rank, and specialty, the annual disparity was \$19,878. Furthermore, that study also found that women in surgical specialties earned, on average, \$44,000 less than did their male counterparts after adjusting for variables affecting salary.²¹ The adjusted salaries of female full professors were comparable to those of male associate professors. Thus, significant sex differences in salary exist after accounting for age, experience, specialty, faculty rank, and measures of research productivity and clinical revenue.

Factors affecting the pay gap in medicine go beyond simple clinical productivity. Industry involvement, with its associated financial benefit, also appears to reflect gender bias. One study identified that the top 10% of vascular surgeons received higher median payment amounts, totaling 81% of all industry payments. Industry payments made publicly available according to the Sunshine Act for 2018 showed that female vascular surgeons received an average of \$2155.28 compared with their male counterparts, who had received almost four times as much at \$8452.43 (P < .001).²²

Among 177 female faculty (18.6%) and 774 male faculty (81.4%), 41 female surgeons (23.2%) held leadership positions within their institutions compared with 254 male surgeons (32.9%; P = .009).²³ More women held the rank of assistant professor compared with the men (50.3% vs 33.9%; P < .001). Fewer women held the full professor rank than did men (10.7% vs 26.2%; P < .001).²³ Women held leadership positions less often than did men, including division chief (6.8% vs 13.7%; P < .012) and vice chair of surgery (0% vs 2.2%; P < .047), although certain exceptions were found in which women held leadership roles (vice dean of surgery, 0.6% vs 0%; P < .037; chief executive officer, 0.6% vs 0%; P < .037).²³ Although more female than male vascular surgeons had received National Institutes of Health grants (9.6% vs 4.0%; P = .017), the female vascular surgeons had had fewer publications compared with the male vascular surgeons (42.3 vs 64.8; P < .001) and were cited at less than one half the frequency of their male counterparts (655.2 vs 1387 citations; P < .001).²³ The average H-index was lower for female vascular surgeons than for male vascular surgeons (9.5 vs 13.7; P < .001).²³ These measures would suggest less academic performance by women; however, when corrected for the number of years since initial board certification, women had had a higher H-index per year in practice $(1.32 \text{ vs } 1.02; P = .005).^{23}$

Significant underrepresentation of racial and ethnic minorities also exists in academic leadership. Among U.S. academic institutions, white physicians accounted for 84.76% of professors, 88.26% of chairpersons, and 91.28% of deans. In contrast, Asian physicians represented 6.66% of professors, black physicians represented 1.25% of professors, and Hispanic physicians represented 2.76% of professors.²⁴ At the promotional rate observed during the study period, the investigators projected that it would require nearly 1000 years for the proportion of black physicians to reflect their proportion of the general population.²⁴

Although female representation in vascular surgery has improved over several decades, inequity has persisted in lower industry payments, fewer leadership positions, fewer publications, and fewer citations compared with their male counterparts. To begin addressing this inequity, Drs Melina Kibbe and Julie Freischlag, the current and former editor-in-chief of JAMA Surgery, respectively, issued a call to action for all surgery journal editors to pledge to commit to diversity, equity, and inclusion through editorial leadership and the peer review process. They noted that only 6.7% of the 252 editors at these surgery journals are women.²⁵ This editorial was especially salient, given the lack of diversity in the editorial review process that was highlighted by the #MedBikini social media campaian.

Variation due to practice location. Despite the national gender pay gap, several markets are making progress in narrowing the gap. Compensation continues to vary greatly among metropolitan statistical areas (MSAs) as influenced by the local healthcare markets. In general, less populated areas still tend to have greater average compensation compared with larger cities. According to Doximity's third annual physician compensation report, male physicians earn an average of \$1.25 for every \$1 earned by female physicians across all MSAs.¹¹ Although the gender wage gap ratio within medical specialties was less stark than that within MSAs, female specialties still earned less than their male counterparts. In 2017, the physician gender gap was at 27.7%, with female physicians earning \$105,000 less than their male physician counterparts. In 2018, the gender pay gap had decreased to 25.2%, or \$90,490 less than the average male doctor.¹¹ In 2019, the medical specialties that require more advanced training had continued to have higher salaries, including neurosurgery, thoracic surgery, orthopedic surgery, radiation oncology, and vascular surgery. 11 As more physicians join larger medical groups and health care systems, this wage gap has remained elusive. When examining compensation stratified by employment status, the greatest gender pay parity was found among independent contractors, with the largest among employed physicians. The gender wage gap persists at 21.2% for an owner/partner, 15.5% for an independent contractor, and 22.6% for an employee of a health care system. Significant career opportunities for physicians across the United States exist owing to physician shortage and in smaller MSAs.

Three common misconceptions surround the wage gap. The first is that specialty choice is the driving cause. However, the wage of male specialists is 25% to 36% greater than that of female specialists in the same specialty. Second, that the wage gap results from hours worked and experience. However, as published in JAMA Internal Medicine, a study of U.S. public medical schools showed significant sex difference in salary, even after accounting for age, experience, specialty, faculty rank, and measures of research productivity and clinical revenue. The final misconception is that men take on more tasks to garner greater pay. However, Dr Arora reported that among hospitalists, women were more likely to be working night shifts, despite receiving lower salaries. One possible conclusion from these three misconceptions is that the compensation processes are not transparent and lead to implicit bias.

Vascular surgeon personal debt perspective

When considering the effects of disparities on compensation, it is vital to recognize the financial burden experienced by providers. The Association of American Medical Colleges (AAMC) has noted a continual and dramatic increase in the cost of medical education, which continues to outstrip inflation because most graduate with significant debt. Within a matter of two decades, the average debt incurred by graduating physicians had more than tripled, increasing from a mean of \$50,00 to >\$170,000 from 1992 to 2012. In its recent report of "Physician Education Debt and the Cost to Attend Medical School," the AAMC revealed that among all physicians, the median debt incurred as of 2019 was \$200,000, with 73% of graduates reporting student debt at graduation. 26

Closer evaluation revealed that minimal differences were present in the median overall debt incurred from medical schools between the genders, although variance was seen among different races and ethnicities. When comparing the debt experience by race and ethnicity, 91% and 84% of black (non-Hispanic) and Hispanic

graduates had student debt, with a median debt of \$230,000 and \$190,000, respectively.²⁷ Additionally, a significantly greater proportion of black, Hispanic, and Native American or Alaskan Native graduates reported premedical debt compared with their white, non-Hispanic counterparts at 7% to 27%.²⁷ Although the overall number of graduates with debt had decreased from 86% to 73% since 2012, the debt incurred by female, racially, and ethnically diverse graduates has remained on par with, or greater than, that of white, non-Hispanic, and male graduates.²⁷

The 2020 AAMC report demonstrated that the increased debt has not deterred graduates from pursuing diverse specialties. However, those graduates with increased debt were more likely to include consideration of their debt and earning potential when choosing a specialty. Despite recent changes to the federal loan repayment system and the increasing availability of grants and loans, approximately three quarters of graduates have student debt, with an average repayment period of 10 to 20 years. Because of the increasing student debt burden, efforts have been directed toward evaluating its effects on physicians. Medical student debt has been found to be associated with increased levels of burnout, poor academic performance, and poor overall mental health among trainees. 28,29

In its worst iterations, the increased level of burnout and stress experienced by physicians is associated with alcohol and substance abuse, depression, and suicidal ideation. In its 2019 update, the Society for Vascular Surgery (SVS) Wellness Task Force study demonstrated that 41% of vascular surgeons met the criteria for burnout, 36% reported depression, and 8% reported thoughts of suicide in the previous month. Although the SVS Wellness Task Force did not report an association between compensation or debt and burnout, it is reasonable to conclude that as the diversity within the field increases, the effects of debt and disparities in compensation will become more pronounced.

Strategies toward eliminating the pay gap

If vascular surgery aims to attract the entire pool of talented applicants, we must advocate for pay equity and the inclusion of all physicians. Given that most current medical students are women, gender parity will attract more women to a male-dominated specialty. Although eliminating the pay gap between gender, race, and ethnicity has remained elusive, we have outlined several strategies to consider for establishing salary equity. Because implicit bias could play a role in hiring, promotion, and salary negotiation, frequent training regarding unconscious bias will help acknowledge and address these biases. Furthermore, outside consultants who specialize in economics, implicit bias, diversity, and employment law can help to pinpoint why inequities exist at a specific institution and provide strategies to

address existing pay gaps and help prevent inequity in the future. All employers and vascular surgeons should pledge to address inequity as an ethical principle in business practice. Hospital and practice structures that vary in their salary formula and overall wage budgets will add to the challenge. Despite these pitfalls, we have highlighted several essential actions to address pay inequity in vascular surgery.

Salary transparency. Improved salary transparency is a necessary change that should be implemented as a part of any efforts toward addressing the gender pay gap. We encourage department and institutions to promote transparency in defining the criteria for the initial and subsequent physician salaries. By identifying policies, procedures, and culture that promote equity, we will be able to determine the best practices and remedy the pay disparities in surgery.

Multiple studies have shown that gender pay gaps shrink when companies are required to disclose them. Gender pay transparency leads to an increased number of women being hired by expanding the supply pool of female employees; an increased number of female employees being promoted from the bottom of the hierarchy to more senior positions; and decreased overall wage bills by slowing the growth of male wages.³² Previously, companies have used this strategy to identify discrepancies in compensation and successfully change the corporate culture toward more equitable pay.³³ This strategy has also been implemented in the public sector. In Canada, the public disclosure of faculty salaries above a certain threshold has resulted in the reduction of the gender pay gap by 30%, mostly owing to increased female salaries.³⁴ Additional consideration for factors that might affect compensation outside of clinical care include unpaid committee appointments, educational commitments, and quality improvements projects-valuable efforts that are unpaid and less directly translatable toward promotion. Transparency might eliminate one barrier to equal pay, in that women and minorities are less likely to negotiate for a higher salary. With increased data available regarding the expected salaries, candidates can better advocate for compensation that appropriately reflects their position's worth.³⁵

Additionally, transparent salary data can be used to construct a fair compensation model. A study of 44 eligible surgeons (33 men and 11 women) found that the male surgeon salaries were significantly higher than were the female surgeon salaries (56% [8-213] vs 26% [1-64]; P < .00001] despite similar RVU production (men, 8725 \pm 831; vs women, 7818 \pm 911; P = .454). The institution of a new compensation plan did not significantly change the male surgeon salaries (56% [8-213]; vs 58% [26-159]; P = .552) but did significantly increase the salaries of the female surgeons (26% [1-64] vs 42% [10-80]; P = .026). A structured compensation plan can

improve the gender pay gap within a short period. More transparency in the surgical compensation model is essential to understand the most equitable method to compensate all surgeons.

Leaders of professional organizations, including the SVS, should recommend salary transparency for the medical profession. To operationalize this goal in vascular surgery, academic medical centers should make the AAMC salary report readily accessible, along with the specific data from their own institution, department, and division.³⁷ Nonacademic practices should grant physicians access to the Medical Group Management Association's salary compendium, along with their own de-identified physician compensation data.

Pay equity audit. Salary transparency is helpful but will not be enough to rectify the pay gap. A pay equity audit (PEA) is performed by human resource professionals with consulting firms in an attempt to gather and update accurate data about employees such that work experience, credentials, length of service, job performance, titles, outcomes, patient reviews, productivity, and demographics can all be considered when looking for potential pay discrepancies mathematically. After such discrepancies have been identified, specific remediation can be recommended as pay adjustments are made on a go-forward basis. The PEA programs empower women to understand their worth and negotiate appropriately. According to 2019 studies by Bennedsen et al,³² PEAs can result in 5% of employees receiving a salary increase of ~5% to 6%, which comprises 0.1% to 0.3% of the budget. When performed correctly, a PEA will be conducted every few years and checked annually.

Potential employers should refrain from asking a candidate's salary history and instead should offer a salary commensurate to the physician's role within the organizational compensation structure.³⁸ Using the candidate's salary history as a starting point for negotiations rather than the available salary data for the specialty in that region leads to a disadvantage point for those who started with lower salaries. Recently, 14 states have banned employers from asking job applicants about their salary history. Therefore, health care systems, academic institutions, and surgical practice groups should follow this ethical principle.

The performance of a root cause analysis of the operational gap that led to the salary discrepancy is the final step. Implicit bias training should be provided for all involved in the recruitment and promotion process to increase awareness of the subtle differences in the evaluations of male and female physicians that can lead to fair compensation and career advancement.31 The routine assessment of gender equity in pay and performance reviews for all surgeons will ensure fair compensation according to transparent and predetermined metrics. Oversight of compensation models, metrics, and accrual of total compensation for all employed physicians, with 265

annual internal publication of the summary data by rank, years of employment, and gender will foster transparency and trust within the organization.³⁹

Eradicating the pay gap in academic medicine. Recruitment of qualified women and underrepresented minorities should address organizational diversity. Recognition of the pay gap has prompted leaders in academic medicine to address salary inequities. For the past 20 years, women at academic medical centers across the United States have consistently received less pay than their male counterparts, even in the same specialty. According to Dr John Prescott, Chief Academic Officer of the AAMC, "achieving salary equity in academic medicine is the right thing to do and the smart thing to do." To this end, the annual AAMC Faculty Salary Report was analyzed by gender and presented institutional case studies from academic medical centers in developing salary-equity initiatives.⁴⁰ To change the tide, an increasing number of academic medical institutions across the United States have developed policies and procedures to ensure pay equity from the start. With more women than men entering medical schoolmen, the time is now for leaders in academic medicine to lead the way in salary equity. An increasing number of leaders are committed to closing the salary gap by forming institutional efforts. Specific reports within surgery have shown that an objective compensation plan, including transparent salary reporting and pay equity audits, has significantly reduced the pay gaps in these institutions. 36,41

Paid parental leave. Another important point to acknowledge is that surgeons of any gender could decide to take parental leave for life events, such as pregnancy or adoption. Depending on the pay structure of the institution, parental leave can result in pay disparities. Some practices might not have a formal parental leave policy. Typically, parental leave is a time of decreased productivity and could inappropriately affect RVU minimums when the physician is considered for salary or promotion. Also, responsibility for the overhead should not be expected during this leave time. Paid parental leave can also be used as an attractive recruitment and retention point for young surgeons. Paternity leave benefits men and women by creating more equal divisions of labor at home; it also normalizes and destigmatizes such leaves of absence during one's career. 42 An unintended consequence of California's 2004 Paid Family Leave Act was that women were more likely to take paid leave compared with men, which resulted in greater pay disparities in the long term. Allowing both men and women to take paid leave would result in less pay disparity; as such, parental leave policies must be implemented in a way that does not increase the gender division.⁴³

Mentorship, sponsorship, leadership, and promotion pathways. One simple solution to pay inequity is to strictly follow meritocracy. However, pay inequity can persist in these settings, because women and minorities often start at a disadvantage with respect to promotion and leadership positions. A lack of mentorship can hinder career advancement. A study of female medical school faculty members found that 34% had no current mentor and 13% had never identified a mentor.⁴⁴ The problematic underrepresentation of women and minorities in leadership can be further compounded by limited recruitment and higher attrition, because diverse candidates seeking to identify mentors with similar backgrounds are unable to do so.45 This lack of mentorship is not only a reflection of the mentee's underrepresented status but also of the implicit bias by the potential mentors. In a study examining university science faculty members' responses to identical job applications with male vs female names, the female applicants were less likely to be viewed as competent, hirable, and worthy of mentorship.⁴⁶

Sponsorship is a separate workplace relationship that can also reduce pay gaps. Although mentorship creates a pathway for shared knowledge, a sponsor is an individual in power who will use that power to another's advantage. A sponsor's involvement can range from providing strategy, creating critical connections, offering highvisibility opportunities, to open advocacy for promotion. As discussed, the same mentorship pitfalls due to underrepresentation of women and minorities in leadership also affects the sponsorship of diverse junior candidates into greater opportunities. Although no differences were found in leadership aspirations between women and men, women were significantly less likely to be asked to serve as leaders.⁴⁷ Thus, coordinated efforts to promote women into senior leadership positions are also necessary.48

CONCLUSIONS

Pay structures determined using objective, genderneutral criteria, promoting greater transparency in compensation, and addressing gender pay disparity will promote equality in medicine. Diversity in the workforce will add value by combining unique skill sets, perspectives, and approaches to promote creativity and innovation. However, the current evidence has shown that gender, race, and ethnicity negatively affect compensation and create barriers against these underrepresented minorities in leadership positions. Multiple factors contribute to this pay inequity, including differential rates of promotion, productivity, and compensation for equal work. Even more complex are the intangible aspects that perpetuate inequity, such as a lack of mentorship, sponsorship, and visibility. Organizations should commit to auditing, reporting, and correcting gender and racial disparities to establish equal pay for equal work. Institutional efforts must be instated to ensure equitable promotion for individuals of all genders, races, and ethnicities. Career development programs

al 27S

that focus on equal pay and objective criteria for promotion tracks can help combat a culture entrenched in implicit bias. As surgeons and leaders in medicine, establishing pay equity is a matter of ethical principle and integrity. We must continue to advocate for equality among all vascular surgeons to further elevate our profession.

AUTHOR CONTRIBUTIONS

Conception and design: JL
Analysis and interpretation: JL, KB, LD, KD, JY
Data collection: JL, KB, LD, KD, JY
Writing the article: JL, KB, LD, KD, JY
Critical revision of the article: JL, KB, LD, KD, JY
Final approval of the article: JL, KB, LD, KD, JY
Statistical analysis: Not applicable
Obtained funding: Not applicable
Overall responsibility: JL

REFERENCES

- Goldin C. Marriage Bars: Discrimination Against Married Women Workers. NBER Working Paper No. w2747. Cambridge, MA: National Bureau of Economic Research; 1988.
- Goldin C. The role of World War II in the rise of women's work. NBER Working Paper No. 3203. Cambridge, MA: National Bureau of Economic Research; 1989.
- Chafe WH. The American Woman: Her Changing Social, Economic, and Political Roles, 1920-1970. London: Oxford University Press: 1974.
- Campbell DA. Women at War With America: Private Lives in a Patriotic Era. Cambridge. MA: Harvard University Press: 1984.
- Toosi M. A century of change: the U.S. labor force, 1950-2050. Monthly Labor Rev 2002;125:15-28.
- U.S. Equal Employment Opportunity Commission. The equal pay act of 1963. Equal pay for equal work: federal equal pay law of 1963 [summary, analysis, legislative history and text, with summaries of applicable state laws]. Arlington, VA: Bureau of National Affairs; 1963.
- England P, Levine A, Mishel E. Progress toward gender equality in the United States has slowed or stalled. Proc Natl Acad Sci U S A 2020:117:6990-7.
- PayScale. The state of the gender pay gap 2020. Available at: https:// www.payscale.com/data/gender-pay-gap. Accessed November 12, 2020.
- Bowles HR, Babcock L, McGinn KL. Constraints and triggers: situational mechanics of gender in negotiation. J Pers Soc Psychol 2005;89:951-65.
- Gould E, Schieder J, Geier K. What is the Gender Pay Gap and Is It Real?. Washington, DC: Economic Policy Institute; 2016.
- Doximity. Physician Compensation Report. Available at: https://blog. doximity.com/articles/doximity-2019-physician-compensation-report-d0ca91d1-3cf1-4cbb-b403-a49b9ffa849f 2019. Accessed November 13, 2020.
- Rupp S. Study Finds Significant Gaps in Compensation for U.S. Doctors. NueMD: AdvancedMD, Inc. Available at: https://nuemd.com/news/2017/05/08/study-finds-significant-gaps-compensation-u-s-doctors 2017. Accessed November 3, 2020.
- Grisham S. Medscape Physical Compensation Report 2017. WebMD LLC; 2017. Available at: https://www.medscape.com/slideshow/compensation-2017-overview-6008547. Accessed November 12, 2020.
- Zuckerman S, Shartzer A, Berenson R, Marks K, Das S, Brandt C. Analysis of Disparities in Physician Compensation: A Report by the Urban Institute and Sullivan Cotter for the Medicare Payment Advisory Commission. Washington, DC: Urban Institute; 2019.
- Association of American Medical Colleges. 2018 Physician Specialty Data Report. Washington, DC: AAMC; 2018. Available at: https://www.aamc.org/data-reports/workforce/interactive-data/2018-physician-specialty-report-data-highlights. Accessed November 12, 2020.

- Satiani B, Prakash S. Low career satisfaction and compensation disparities may contribute to vascular surgery assistant professor attrition. J Vasc Med Surg 2017;5:1-4.
- Prakash S, Satiani B. Analysis of compensation disparities between junior academic and private practice vascular surgeons. Ann Vasc Surg 2017;39:236-41.
- Schroen AT, Brownstein MR, Sheldon GF. Comparison of private versus academic practice for general surgeons: a guide for medical students and residents. J Am Coll Surg 2003;197:1000-11.
- 19. Gender pay gap persists. Nature 2018;553:241.
- Lo Sasso AT, Armstrong D, Forte G, Gerber SE. Differences in starting pay for male and female physicians persist: explanations for the gender gap remain elusive. Health Aff (Millwood) 2020;39: 256.67
- Jena AB, Olenski AR, Blumenthal DM. Sex differences in physician salary in US public medical schools. JAMA Intern Med 2016;176: 1294-304.
- Cheng T, Boelitz K, Rybin D, Menard MT, Kalish J, Siracuse JJ, et al. Nationwide patterns in industry payments to academic vascular surgeons. J Vasc Surg 2021;73:675-81.
- Carnevale M, Phair J, Batarseh P, LaFontaine S, Koelling E, Koleilat I. Gender disparities in academic vascular surgeons. J Vasc Surg 2020;72:1445-50.
- 24. Yu PT, Parsa PV, Hassanein O, Rogers SO, Chang DC. Minorities struggle to advance in academic medicine: a 12-y review of diversity at the highest levels of America's teaching institutions. J Surg Res 2017-182-212-8
- Kibbe MR, Freischlag J. Call to action to all surgery journal editors for diversity in the editorial and peer review process. JAMA Surg 2020;155:1015-6.
- Youngclaus J, Fresne JA. Physician Education Debt and the Cost to Attend Medical School. Washington, DC: Association of American Medical Colleges; 2013.
- Pisaniello MS, Asahina AT, Bacchi S, Wagner M, Perry SW, Wong ML, et al. Effect of medical student debt on mental health, academic performance and specialty choice: a systematic review. BMJ Open 2019:9:e029980.
- Jackson ER, Shanafelt TD, Hasan O, Satele DV, Dyrbye LN. Burnout and alcohol abuse/dependence among U.S. medical students. Acad Med 2016:91:1251-6
- Oreskovich MR, Kaups KL, Balch CM, Hanks JB, Satele D, Sloan J, et al. Prevalence of alcohol use disorders among American surgeons. Arch Surg 2012;147:168-74.
- Coleman DM, Meltzer AJ, Wohlauer M, Drudi LM, Hallbeck MS, Shanafelt T, et al. Vascular surgeon burnout—a report from the Society for Vascular Surgery Wellness Task Force. J Vasc Surg 2019;69:E97.
- Marcelin JR, Siraj DS, Victor R, Kotadia S, Maldonado YA. The impact of unconscious bias in healthcare: how to recognize and mitigate it. J Infect Dis 2019;220(Suppl 2):S62-73.
- 32. Bennedsen M, Simintzi E, Tsoutsoura M, Wolfenzon D. Research: Gender Pay Gaps Shrink When Companies Are Required to Disclose Them. Harvard Business Review 2019. Available at: https://hbr.org/2019/01/research-gender-pay-gaps-shrink-when-companies-are-required-to-disclose-them. Accessed November 12, 2020.
- Barnard-Bahn A. How to Identify—and Fix—Pay Inequality at Your Company. Harvard Business Review 2020. Available at: https://hbr.or g/2020/11/how-to-identify-and-fix-pay-inequality-at-your-company. Accessed November 7, 2020.
- Baker M, Halberstam Y, Kroft K, Mas A, Messacar D. Pay Transparency and the Gender Gap. Working Paper No. 25834. Cambridge, MA: National Bureau of Economic Research; 2019.
- Chicha MT. A comparative analysis of promoting pay equity: models and impacts. Working Paper No. 49. Montreal, QC, Canada: University of Montreal; 2006.
- Morris M, Chen H, Heslin MJ, Krontiras H. A structured compensation plan improves but does not erase the sex pay gap in surgery. Ann Surg 2018;268:442-8.
- 37. Saunders MR, Turner BJ. Unequal pay for equal work: where are we now? Ann Intern Med 2018;169:654-5.
- 38. Warner AS, Lehmann LS. Gender wage disparities in medicine: time to close the gap. J Gen Intern Med 2019;34:1334-6.
- American College of Surgeons. Statement on Gender Salary Equity.
 Chicago, IL: American College of Surgeons; 2017. Available at:

- https://www.facs.org/about-acs/statements/101-gender-salary-equity. Accessed November 12, 2020.
- Dandar VM, Lautenberger DM, Garrison GE. Promising Practices for Understanding and Addressing Salary Equity at U.S. Medical Schools. Washington, DC: Association of American Medical Colleges; 2019.
- Hoops HE, Brasel KJ, Dewey E, Rodgers S, Merrill J, Hunter JG, et al. Analysis of gender-based differences in surgery faculty compensation, promotion, and retention: establishing equity. Ann Surg 2018;268:479-87
- 42. Gross EL. How Paid Paternity Leave Can Help Close The Gender Pay Gap. Forbes; 2019. Available at: https://www.forbes.com/sites/elana gross/2019/05/14/how-paid-paternity-leave-can-help-close-the-gend er-pay-gap/?sh=f0bd30c50c17. Accessed November 12, 2020.
- 43. Schmidt S. Do Paid Family Leave Policies Help Fix the Gender Pay Gap? This Study Found the Opposite. Washington Post, October 26, 2019. Available at: https://www.washingtonpost.com/dc-md-va/201 9/10/26/do-paid-family-leave-policies-help-fix-gender-pay-gap-this-study-found-opposite/. Accessed November 12, 2020.

- Carapinha R, Ortiz-Walters R, McCracken CM, Hill EV, Reede JY. Variability in women faculty's preferences regarding mentor similarity: a multi-institution study in academic medicine. Acad Med 2016;91:1108-18.
- 45. Shen H. Inequality quantified: mind the gender gap. Nature 2013;495: 22-4.
- Moss-Racusin CA, Dovidio JF, Brescoll VL, Graham MJ, Handelsman J. Science faculty's subtle gender biases favor male students. Proc Natl Acad Sci U S A 2012;109:16474-9.
- Wright AL, Schwindt LA, Bassford TL, Reyna VF, Shisslak CM, St Germain PA, et al. Gender differences in academic advancement: patterns, causes, and potential solutions in one US college of medicine. Acad Med 2003;78:500-8.
- 48. Arora VM. It is time for equal pay for equal work for physicians—paging Dr Ledbetter. JAMA Intern Med 2016;176:1305-6.

Submitted Nov 17, 2020; accepted Mar 14, 2021.