

# Beyond the Operating Room: Exploring Gender Bias in Leadership Positions in German Plastic Surgery

Rakan Saadoun, MD\*†‡

Jameel Soqia, MD§

Jamal Ataya, MD¶

Katharina S. Fischer, MD||\*\*

Carolyn De La Cruz, MD\*

Abdallah Kamal, MD††

Leonard Knoedler, BS†‡

Eva-Maria Risse, MD, BSc, MSt,

MSc||

**Background:** Despite efforts to promote gender equity in medicine, gender disparities persist in various medical specialties, including plastic surgery. This study aimed to investigate the representation of female physicians in leadership positions in German plastic surgery departments.

**Methods:** This cross-sectional study collected data about the physician workforce in the German plastic surgery field. The primary outcome was the proportion of female physicians in plastic surgery departments. Data were collected from 94 departments. The physician workforce was stratified based on gender and leadership.

**Results:** We included 812 physicians working in different German plastic surgery departments. Of those, 76.8% were in leadership positions, and 35.1% were women. There was a significant association between being male sex and holding a leadership position ( $n = 158/188$ , 84% versus  $n = 30/188$ , 16%,  $P < 0.0001$ ). This association persisted even after accounting for the academic grade of each physician in a multivariable regression model (OR 2.565; 95% confidence interval, 1.628–4.041).

**Conclusions:** Women are significantly underrepresented in leadership positions in German plastic surgery, with only 16% of female physicians holding such positions. Furthermore, being male sex was significantly associated with holding a leadership position, even after adjusting for the academic grade. These findings emphasize the existence of gender bias in the selection process for leadership positions in plastic surgery. (*Plast Reconstr Surg Glob Open* 2023; 11:e5370; doi: 10.1097/GOX.0000000000005370; Published online 3 November 2023.)

## INTRODUCTION

Germany has been recognized as a leader in gender equity policies. Since 2021, a new law requires companies

with over 2000 employees to have at least 30% of their executive boards composed of women. This law applies to both private and public service organizations.<sup>1-3</sup>

From the \*Department of Plastic Surgery, University of Pittsburgh, Pittsburgh, Pa.; † Faculty of Medicine Mannheim, Ruprecht Karls University of Heidelberg, Mannheim, Germany; ‡Department of Otorhinolaryngology, Head and Neck Surgery, University Medical Centre Mannheim, Mannheim, Germany; §Faculty of Medicine, Damascus University, Damascus, Syrian Arab Republic; ¶Faculty of Medicine, University of Aleppo, Aleppo, Syrian Arab Republic; ||Department of Hand, Plastic and Reconstructive Surgery, Burn Center, BG Trauma Center Ludwigshafen, Plastic- and Hand Surgery, University of Heidelberg, Ludwigshafen, Germany; \*\*Department of Surgery, University of Arizona, Tucson, Ariz.; ††Department of Neuroradiology, University of Pittsburgh Medical Center, Pittsburgh, Pa.; and ‡‡Division of Plastic and Reconstructive Surgery, Massachusetts General Hospital, Harvard Medical School, Boston, Mass.

Received for publication June 26, 2023; accepted September 11, 2023.

Copyright © 2023 The Authors. Published by Wolters Kluwer Health, Inc. on behalf of The American Society of Plastic Surgeons. This is an open-access article distributed under the terms of the [Creative Commons Attribution-Non Commercial-No Derivatives License 4.0 \(CCBY-NC-ND\)](https://creativecommons.org/licenses/by-nc-nd/4.0/), where it is permissible to download and share the work provided it is properly cited. The work cannot be changed in any way or used commercially without permission from the journal.

DOI: 10.1097/GOX.0000000000005370

Despite policies designed to promote gender equality, women in medicine are still significantly underrepresented in leadership positions, particularly in surgical specialties, where only 13%–16% of top roles are held by women.<sup>3-5</sup> This is commonly known as the glass ceiling, a phenomenon that is supposed to result from the lack of qualified women that can fill the pipeline.<sup>6,7</sup> However, the pipeline has been incrementally filled over the years. Data from the federal statistical office showed that female medical students outnumbered their male counterparts for the first time in 2011. This trend has continued over the years; so female medical students represented 67% of all medical students in 2022.<sup>8</sup>

Despite this progress, women still face challenges that cause them to leak out of the pipeline at a higher rate than men as they climb the hierarchical ladder. These challenges include gender bias, limited opportunities, and a lack of mentorship and role models. Consequently, the gender gap in leadership positions persists, and more efforts should be made to narrow it.<sup>3,9-13</sup>

Published data from North America showed this gap to be prominent in plastic surgery, suggesting that the lack of

Disclosure statements are at the end of this article, following the correspondence information.

family-supportive policies such as parental leave may be a contributing factor in this disparity.<sup>3,10,11,14,15</sup>

As far as we know, no published studies in Europe have explored the gender gap in leadership positions in plastic surgery. Nevertheless, it would be worthwhile to investigate whether the difference in family-friendly policies for female physicians in Germany would positively affect the percentage of women occupying leadership roles.

The objective of this study is to explore the gender composition of physicians in plastic surgery departments in Germany and determine if there are any differences between men and women in leadership positions while counting for their academic rank. We hypothesize that there will be no significant gender disparity in leadership roles.

## METHODS

This is a cross-sectional study to determine the distribution of female physicians throughout the hierarchical ladder from resident to leadership positions in all German plastic surgery departments. Leadership positions included managing attending physicians, chief attending physicians, vice-directors, and chair of departments. Nonleadership positions consist of residents, specialists, and attending physicians.

The academic rank in the German medical education system is independent of the departmental hierarchies. This rank commences with the physician devoid of the academic title who finished medical school with no thesis or research endeavor; then, it ascends to a physician with a PhD achieved through the completion of the dissertation and research. A tiny fraction of those with a PhD degree will be selected for academic appointments, where they continue research besides the clinical duties and become university lecturers. The top of the academic rank is to obtain a full professorship. Of note is that the construction of a German PhD is entirely different from the Anglo-Saxon model. Conventionally, it would be expected that those who hold leadership positions have correspondingly higher academic ranks.

## DATA COLLECTION

The data were collected from 94 departments that were listed on the online resource ([www.kliniken.de](http://www.kliniken.de)). This website represents the biggest indexed portal for health-care facilities in Germany, with more than 3500 hospitals listed.<sup>16</sup> Only those departments that demonstrate an unequivocally defined hierarchical ladder were included in the study.

Obtaining a list of all the departments from the German Society of Plastic and Reconstructive Surgery was not feasible because the society maintains only a register of physicians and not their hierarchical rank in their departments.<sup>17</sup>

Gender information, hospital type, the position of medical staff, and geographic location were collected from the public website of the institution. Genderize.io API (Application Programming Interface) and public photographs were used to make gender assumption,<sup>18</sup>

## Takeaways

**Question:** This study aimed to investigate the representation of female physicians in leadership positions in German plastic surgery departments.

**Findings:** The study showed that women comprised only 35.1% of the total physician workforce and 16% of the leadership positions in German plastic surgery. Furthermore, being male sex was significantly associated with holding a leadership position, even after adjusting for the academic grade of each physician.

**Meaning:** This article reveals the existence and magnitude of gender bias in the selection process for leadership positions in German plastic surgery, and calls for organizational interventions to address this challenge and advance women's careers in this field.

which was used in many previous studies to predict sex based on the first name.<sup>3,19</sup> We do acknowledge that gender can be nonbinary, but creating assumptions beyond the binary stratification would be challenging considering the limitation of the publicly available data. Hospital geographic localization was used to determine if it belonged to the territories of the ex-German democratic republic (GDR). GDR (also known as East Germany) united with West Germany in 1990. This study was built with the Strengthening the Reporting of Observational Studies in Epidemiology (STROBE) guidelines. Institutional review approval was optional, as the data used are publicly available.

## DATA ANALYSIS

Variables were described using absolute (n), relative (%) frequencies, and percentile values. The chi-square test of independence assessed the relationship between gender and leadership positions in different groups, with a predetermined significance level of *P* less than or equal to 0.05. A multivariable logistic regression model was created using the manual enter variable method. In this model, occupying a leadership position was the dependent variable, whereas the gender and academic rank of the physician were introduced as potential confounding factors. The results were reported as odds ratios supplemented by 95% confidence intervals.

## RESULTS

Among the 101 listed departments on the online portal, data from only 94 (93.1%) were extracted. The remaining seven departments were excluded for the absence of a defined hierarchical structure.

This investigation included 812 physicians working in different German plastic surgery departments. Of those 812 physicians, 188 (23.2%) were in leadership positions. Women represent 35.1% ( $n = 285/812$ ) of the entire cohort. Male representation in the physician working force remained predominately constant throughout the hierarchical spectrum. This proportion manifested its utmost dominance at the chair of the department level (Fig. 1).

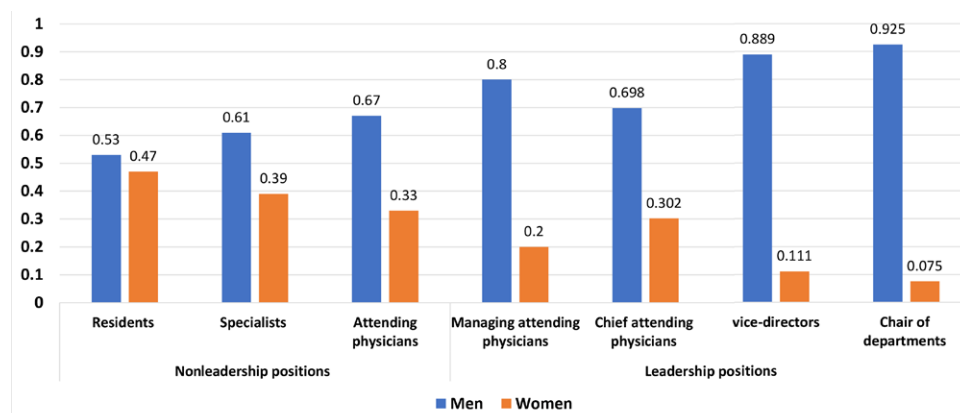


Fig. 1. Distribution of gender through the hierarchical rank.

Female physicians represent 16% of the total leading positions. Men occupy significantly more leadership positions than their female counterparts ( $n = 158/188$ , 84% versus  $n = 30/188$ , 16%,  $P < 0.0001$ ), suggesting a gap in leadership between the two genders. This disparity persisted regardless of the geographic location of the hospital and its type (Table 1).

Taking the location of the hospital into account, the difference between women and men in leadership positions showed statistical significance in urban and suburban hospitals. Within the rural hospitals, the percentage of male surgeons in leadership positions was higher than their female counterparts. However, this difference did not reach statistical significance. Comparable patterns of distribution were evident in nonleadership positions (Fig. 2). Subsequently, we determined the differences within the kind of hospital. We evaluated university hospitals, community hospitals, private hospitals, charity hospitals, and occupational hospitals. Hereby, men were significantly more represented in leading positions than women across all types of these hospitals (Fig. 3).

Examining the gap in leadership representation between the two genders in hospitals in previous East Germany versus those in West Germany, there was a significantly higher percentage of men in leadership positions within hospitals in West Germany (Fig. 4). However, in hospitals situated in East Germany, a higher fraction of men in leadership positions failed to achieve statistical significance.

Both genders expressed increases in leadership, with an advancing academic rank (Fig. 5). However, the gap in leadership increased incrementally with higher academic rank, implying inequity between the male and female physicians who achieved equivalent academic rank through continuous research and academic work. Interestingly, all women who achieved full professorship secured a leadership position, which made the comparison with male professors impossible (6.1% versus 93.9%,  $P = 1.000$ ) (Table 1 and Fig. 5).

In a multivariable logistic regression model that counted for the academic grade of each physician, there was a notable association between having a higher academic grade and holding a leadership position (Table 2). However, the model revealed that men had almost

1.5 times higher chances to be in those positions than their female peers (OR 2.565, 95% confidence interval: 1.628–4.041).

## DISCUSSION

In Germany, there has been a growing acknowledgment of gender-based inequity in leadership positions, which has resulted in prompting initiatives to address this issue and reduce the gap. Various interventions have been taken in recent times to achieve greater gender balance in leadership roles.<sup>1,2</sup>

However, the present study revealed a gender gap in leadership positions, particularly pronounced at more senior levels, where women are profoundly underrepresented.

In 1958, Ursula Schmidt-Tintemann, a female surgeon from Germany, founded the first autonomous plastic surgery department in Munich. Nevertheless, even after over half a century, the representation of women in departmental chairs remains only 7.5%.<sup>20</sup>

Despite constituting almost 50% of all residents, women hold only 7.5% of chair positions. This percentage is slightly behind that reported for German otolaryngologists by our team, where women occupied 55% and 8.5% of chair positions, respectively.<sup>3</sup> However, these figures are slightly better than the numbers reported for German neurosurgery, where female surgeons accounted for 35% of residents and 6.3% of chair positions.<sup>5</sup>

The data derived from our investigation showed that women make up a higher percentage (47%) of the resident population compared with their counterparts in the United States (39%), as reported by Moak et al.<sup>11</sup> Nevertheless, the figures for chair positions were similar for both groups, with women holding almost 8% of the positions, which could implicate a slower response in the German pipeline of female surgeons' leadership.<sup>11,14,21–23</sup> The studies mentioned highlighting the fact that women hold less than 10% of all chair positions across every surgical specialty regardless of national affiliation, which is a noteworthy observation.<sup>3,5,14,20–23</sup> This emphasizes that recruiting more women is insufficient without further measures.

**Table 1. Female and Male Distributions and Charismatics of Plastic Surgery Physicians in Germany**

	Nonleadership, n (%)	Leadership, n (%)	<i>P</i>
All	624	188	
Men	369 (59.1)	158 (84)	0.0001
Women	255 (40.9)	30 (16)	
<b>Kind of hospital</b>			
University hospital	202	36	
Men	123 (60.9)	31 (86.1)	0.0035
Women	79 (39.1)	5 (13.9)	
Community hospital	114	50	
Men	73 (64)	42 (84)	0.0101
Women	41 (36)	8 (16)	
Private hospital	97	45	
Men	52 (53.6)	36 (80)	0.0026
Women	45 (46.4)	9 (20)	
Charity hospital	103	37	
Men	60 (58.3)	33 (89.2)	0.0006
Women	43 (41.8)	4 (10.8)	
Occupational hospital	108	20	
Men	61 (56.5)	16 (80)	0.048
Women	47 (43.5)	4 (20)	
<b>Location of the hospital</b>			
Urban	521	126	
Men	312 (59.9)	108 (85.7)	< 0.0001
Women	209 (40.1)	18 (14.3)	
Suburban	65	39	
Men	35 (53.9)	34 (87.2)	0.0005
Women	30 (46.2)	5 (12.8)	
Rural	38	23	
Men	22 (57.9)	16 (69.6)	0.362
Women	16 (42.1)	7 (30.4)	
<b>Hospital location within the previous East Germany</b>			
West Germany	560	170	
Men	329 (58.8)	143 (84.1)	< 0.0001
Women	231 (41.3)	27 (15.9)	
East Germany	64	18	
Men	40 (62.5)	15 (83.3)	0.0966
Women	24 (37.5)	3 (16.7)	
<b>Academic rank of the physician</b>			
Physician without title	224	13	
Men	126 (56.3)	9 (69.2)	0.3581
Women	98 (43.8)	4 (30.8)	
Physician with PhD	380	106	
Men	228 (60)	85 (80.2)	0.0001
Women	152 (40)	21 (19.8)	
University lecturer	13	20	
Men	8 (61.5)	18 (90)	0.0507
Women	5 (38.5)	2 (10)	
Full professor	7	49	
Men	7 (100)	46 (93.9)	1.000
Women	0 (0)	3 (6.1)	

Our study underscored that men occupy a significantly higher proportion of leadership positions, holding 84% of roles, whereas women hold only 16%. This gender disproportion in leadership roles persists across various classes of hospitals, geographic locations, and academic ranks of physicians. Notably, our results are consistent with those reported for German otolaryngologists, where men hold 84.3% of leadership positions and women are only represented in 15.7% of those positions.<sup>3</sup> Furthermore,

these results align with studies conducted in North America in various surgical specialties, including plastic surgery.<sup>10,11,14,15,23–26</sup>

Within the sphere of university hospitals, female surgeons hold only 13.9% of leadership positions, whereas their counterparts in otolaryngology make up 21.7% of these positions.<sup>3</sup> However, this figure is slightly higher than their American peers, who hold almost 10% of leadership positions in academic settings.<sup>3,23</sup>

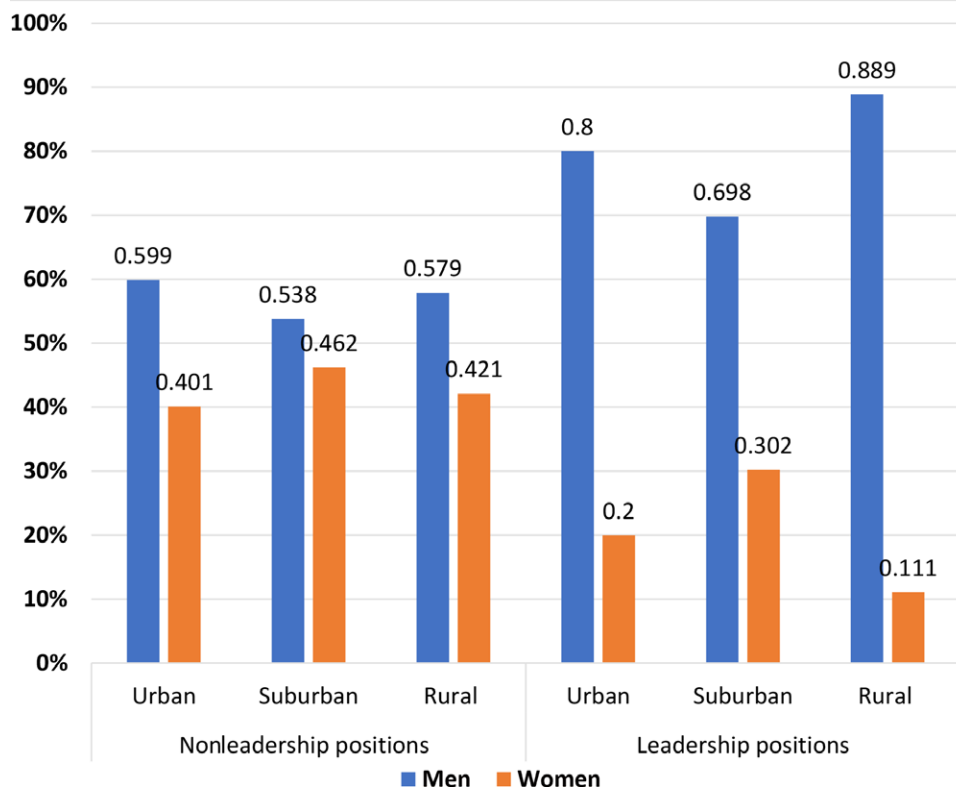


Fig. 2. Distribution of leadership positions by gender and location of the hospital.

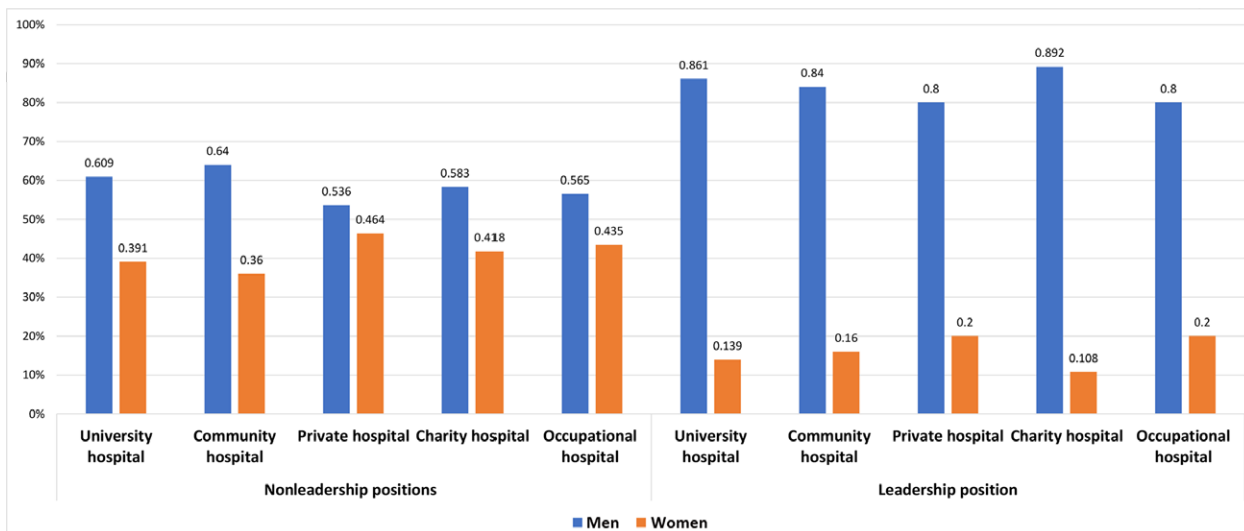


Fig. 3. Distribution of leadership positions by gender and kind of hospital.

In contrast to hospitals located in West Germany, male plastic surgeons in hospitals situated in the former GDR did not occupy significantly higher leading positions compared with their female colleagues. This variation may be attributed to the socioeconomic environment and the accessible facilities in the former GDR. For instance, the former East German system offered all-day childcare facilities for children under 3 years of age. In contrast,

west Germany commenced the inception of such comprehensive childcare after the German reunification in 1990, since the standard socioeconomic model was the male breadwinner back then, leaving women to choose between having a career or staying home to take care of the children, whereas the Eastern approach was more equitable, favoring both men and women sharing equal financial responsibility for the family.<sup>27,28</sup>



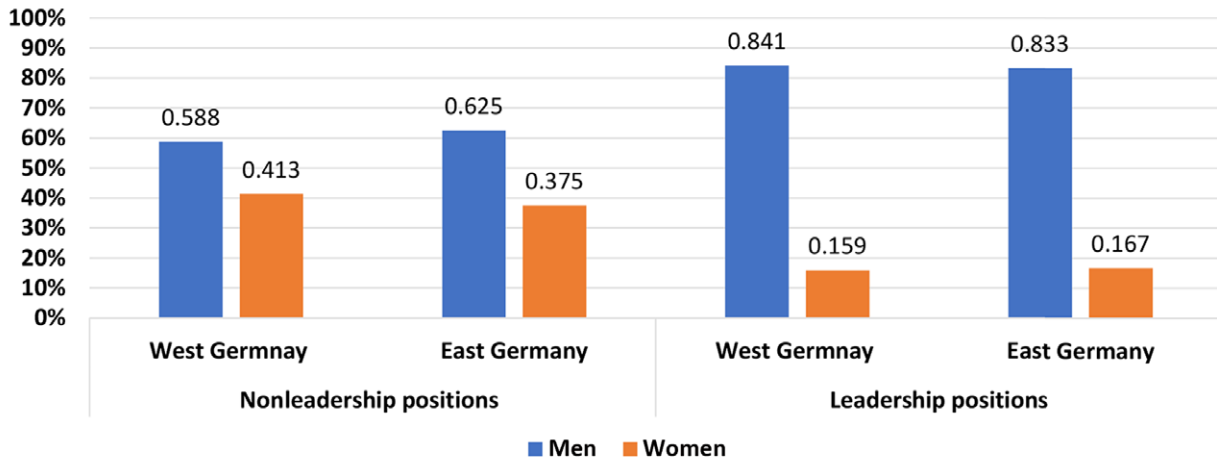


Fig. 4. Distribution of leadership positions by gender and if the hospital location belongs to previous East Germany and West Germany.

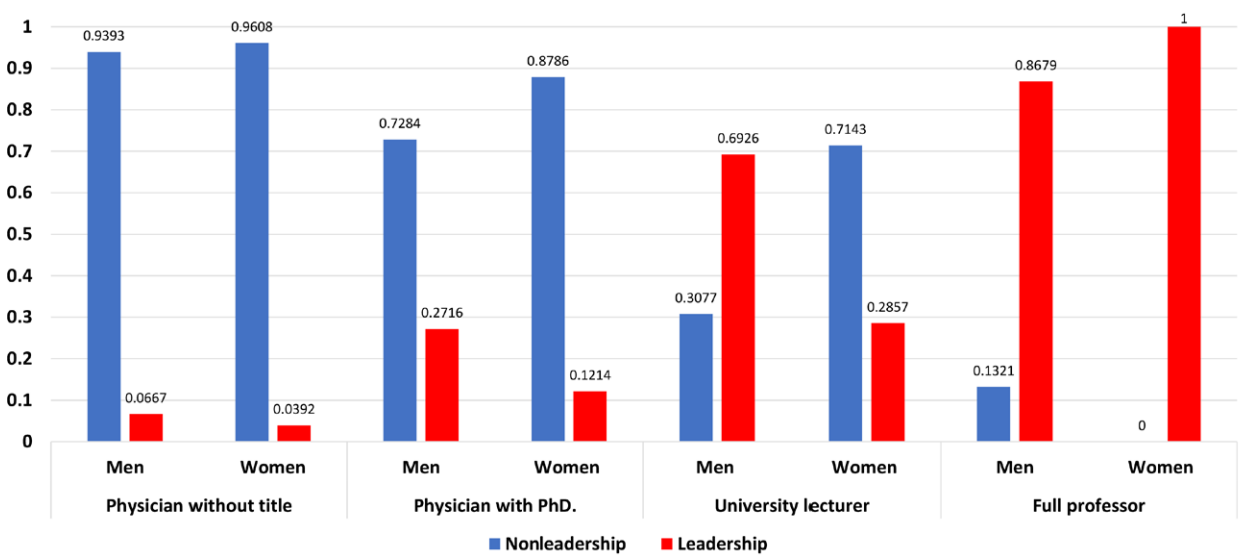


Fig. 5. Gender differences between leadership and nonleadership positions in titles.

Table 2. Multivariable Logistic Regression for Holding a Leadership Position

Variable	Adjusted Odds Ratio (95% CI)
<b>Gender</b>	
Feminine	Reference
Masculine	2.565 (1.628–4.041)
<b>Academic rank</b>	
Physician without title	Reference
Physician with PhD	4.637 (2.538–8.472)
University lecturer	23.874 (9.643–59.106)
Full professor	94.399 (35.566–250.552)

This study’s underrepresentation of women in leadership positions could potentially be attributed to fewer women entering the field of plastic surgery in prior years. For instance, the percentage of total female physicians in plastic surgery who worked in hospitals was 23%

in 2016 and 26% in 2018, indicating a slow but gradual increase in the representation of women.<sup>29,30</sup> Female clinicians entering this field may necessitate time to accumulate clinical and academic experience to qualify for leadership positions. However, it is also possible that this disparity indicates the presence of a glass ceiling effect that inhibits women from advancing to leadership positions. The underrepresentation of women in plastic surgery leadership positions has been well documented and attributed to the leaky pipeline phenomenon, which is multifactorial. The reasons for this phenomenon are not limited to traditional gender congruity, confidence gap, family demands, discrimination, bias, lack of role models, pregnancy, and weak recruitment of medical students into plastic surgery.<sup>10,14,23,31–33</sup>

Germany has made efforts to alleviate the burden of childbearing on women by implementing policies such as mandatory maternity leave of 12 weeks before and

after childbirth and generous paternal leave of up to 24 months, during which an 80% salary is maintained.<sup>3,34</sup> This regulation is considered more accommodating compared with the 6 weeks of maternity leave during residency training in the United States.<sup>14,23</sup> Nonetheless, it is essential to note that female clinicians in Germany may continue to confront challenges, such as being dismissed from surgical duties in the operating room, reduced contributions to their retirement plans during maternity leave, decreased academic productivity, and the political debate about cutting social benefits for individuals with higher wages that include physicians.<sup>3,35–37</sup> Moreover, the ascendancy of German women, in general, is challenged by the rise of political factions promoting a paradigm favoring male-centric leadership.<sup>38</sup>

In the process of recruiting female residents for plastic surgery, a clear and positive trend is shown by the gradual increase in the proportion of female resident physicians.<sup>29,30</sup>

Although some may criticize that the regulations have not had a significant impact on increasing the number of women in leadership positions, it is imperative to recognize the multifaceted nature of this issue that necessitates a well-rounded approach. The gender disparity in leadership positions is still evident despite the implementation of these measures, underscoring the need for stakeholders to take additional steps to address the inadequacy.

An extensively documented factor is the need to enhance the confidence of female professionals in their ability to attain leadership positions. There is a widely held perception among female clinicians that their promotions are limited due to traditional gender role expectations that associate men with leadership.<sup>3,11,14,39–41</sup>

Constructive mentorship can help overcome this barrier by positively impacting women's confidence, not only by serving as role models but also through proactive support of their personal and professional growth and development.<sup>10,11,14,41</sup>

Institutions should implement inherently effective antidiscrimination policies, including transparent and gender-neutral screening processes during recruitment, training on detecting and eliminating biases, and advocating for junior colleagues by those in more senior positions. Ensuring all employees have equal opportunities to succeed and are not held back due to discrimination is essential.<sup>11,14</sup> Acknowledging and being open about this deficiency in the current practice is the first step to addressing the gender disparity.<sup>42,43</sup>

The plastic surgery field is predominantly led by male surgeons occupying superior positions who have significant influence in promoting gender disparity. Nevertheless, male colleagues have also played a crucial role in increasing the representation of women in plastic surgery by recognizing the importance of gender diversity and providing opportunities for female colleagues to become part of the plastic surgery community.<sup>11,14</sup> One crucial factor in reducing gender disparity in plastic surgery is the provision of robust male mentorship to female mentees, an endeavor that can be facilitated by highly ranked mentors. Such mentorship is frequently perceived

as a form of career sponsorship, which can lead to significant career advancement opportunities for female surgeons.<sup>11,44,45</sup> Furthermore, such mentorship can help boost women's confidence and endow them with the requisites that are necessary to achieve their career aspirations. Research in psychology has shown that women tend to perform better on tests when their self-confidence is promoted.<sup>11,14,46</sup>

Decision-makers in various institutions must not view gender disparity solely as an abstract ethical issue in their pursuit of fairness, but also as a valuable asset for the institution. This viewpoint is supported by published economic data, demonstrating that enterprises with more diverse teams exhibit higher sales, revenue, innovation, creativity, employee retention, and satisfaction.<sup>14,47–49</sup> Further reinforcement stems from academia, suggesting that research papers authored by diverse groups tend to have higher citation rates and impact factors than those produced by more homogenous groups.<sup>14,50,51</sup>

A concluding point to consider is that among female patients seeking plastic surgery, those with a gender preference tend to favor female surgeons.<sup>52,53</sup> Therefore, addressing gender disparity in leadership is a moral obligation and a necessity for institutions to thrive and perform better.

Future research, such as exploratory surveys, should identify the factors hindering women from succeeding in leadership roles and how decision-makers can effectively address them. This can help institutions address gender disparity more precisely and create an environment that fosters the success of all individuals, regardless of their gender.

### Limitations

Although our study has several strengths, some limitations cannot be avoided. For instance, the data were obtained from hospital websites, a source that may not always be entirely accurate or up to date, particularly in small programs, due to a lack of resources. Nevertheless, given patients' increasing use of hospital websites, it is reasonable to expect that most program websites display accurate and relevant information. Additionally, specific departments may choose to keep their residents private while reporting their faculty, reducing the representation of residents and specialists. However, we believe the sample of residents and specialists remains sufficiently large to provide a general idea of gender distribution in those two categories. Furthermore, assumptions about gender were formulated based on available pictures and names rather than individual self-identification. Finally, the lack of previously published data on this topic in Germany made it impractical to compare gender equity over time.

## CONCLUSIONS

In German plastic surgery departments, there is a noticeable underrepresentation of women, particularly in higher-level positions. This gender disparity creates a leadership gap that needs to be addressed with compensatory actions.

**Jameel Soqia, MD**  
 Faculty of Medicine  
 Damascus University  
 Damascus, Syria  
 E-mail: jameelsoqia@gmail.com

## DISCLOSURE

The authors have no financial interest to declare in relation to the content of this article.

## REFERENCES

- (Bundestag), G. f. p. Gesetz für die gleichberechtigte Teilhabe von Frauen und Männern an Führungspositionen in der Privatwirtschaft und im öffentlichen Dienst. Available at [https://www.bgbl.de/xaver/bgbl/text.xav?SID=&tf=xaver.component.Text\\_0&toctf=&qmf=&hlf=xaver.component.Hitlist\\_0&bk=bgbl&st art=%2F%2F\\*%5B%40node\\_id%3D%27944614%27%5D&skin=pdf&level=2&nohist=1&sinst=7376D178](https://www.bgbl.de/xaver/bgbl/text.xav?SID=&tf=xaver.component.Text_0&toctf=&qmf=&hlf=xaver.component.Hitlist_0&bk=bgbl&st art=%2F%2F*%5B%40node_id%3D%27944614%27%5D&skin=pdf&level=2&nohist=1&sinst=7376D178). Accessed May 22, 2022.
- (Bundestag), G. f. p. Das Gesetz zur Ergänzung und Änderung der Regelungen für die gleichberechtigte Teilhabe von Frauen und Männern an Führungspositionen in der Privatwirtschaft und im öffentlichen Diens. Available at [https://www.bgbl.de/xaver/bgbl/text.xav?SID=&tf=xaver.component.Text\\_0&toctf=&qmf=&hlf=xaver.component.Hitlist\\_0&bk=bgbl&st art=%2F%2F\\*%5B%40node\\_id%3D%271033567%27%5D&skin=pdf&level=2&nohist=1&sinst=7376D178](https://www.bgbl.de/xaver/bgbl/text.xav?SID=&tf=xaver.component.Text_0&toctf=&qmf=&hlf=xaver.component.Hitlist_0&bk=bgbl&st art=%2F%2F*%5B%40node_id%3D%271033567%27%5D&skin=pdf&level=2&nohist=1&sinst=7376D178). Accessed May 22, 2022.
- Saadoun R, Risse E-M, Sadoun L, et al. Gender distribution and women leadership in German otolaryngology, head and neck surgery. *Laryngoscope Investig Otolaryngol*. 2023;8:426–434. .
- Saadoun R, Risse EM, Sadoun L, et al. The pathway to residency in Germany: a survey study to identify factors that impact an international medical graduate from Syria. *BMC Med Educ*. 2022;22:513.
- Forster MT, Behrens M, Lawson McLean AC, et al. Gender disparity in German neurosurgery. *J Neurosurg*. 2021;136:1141–1146.
- Carnes M, Morrissey C, Geller SE. Women's health and women's leadership in academic medicine: hitting the same glass ceiling? *J Womens Health (Larchmt)*. 2008;17:1453–1462.
- Zhuge Y, Kaufman J, Simeone DM, et al. Is there still a glass ceiling for women in academic surgery? *Ann Surg*. 2011;253:637–643.
- Bundesamt S. Studierende an Hochschulen-Vorbericht. Available at [https://www.destatis.de/DE/Themen/Gesellschaft-Umwelt/Bildung-Forschung-Kultur/Hochschulen/\\_inhalt.html#\\_leaqqfenr](https://www.destatis.de/DE/Themen/Gesellschaft-Umwelt/Bildung-Forschung-Kultur/Hochschulen/_inhalt.html#_leaqqfenr). Accessed March 29, 2023.
- Surawicz CM. Women in leadership: why so few and what to do about it. *J Am Coll Radiol*. 2016;13:1433–1437.
- Danko D, Cheng A, Losken A. Gender diversity in plastic surgery: is the pipeline leaky or plugged? *Plast Reconstr Surg*. 2021;147:1480–1485.
- Moak TN, Cress PE, Tenenbaum M, et al. The leaky pipeline of women in plastic surgery: embracing diversity to close the gender disparity gap. *Aesthet Surg J*. 2020;40:1241–1248.
- Snyder RA, Bills JL, Phillips SE, et al. Specific interventions to increase women's interest in surgery. *J Am Coll Surg*. 2008;207:942–947, 947.e941–e948.
- Fitzgerald JE, Tang SW, Ravindra P, et al. Gender-related perceptions of careers in surgery among new medical graduates: results of a cross-sectional study. *Am J Surg*. 2013;206:112–119.
- Keane AM, Larson EL, Santosa KB, et al. Women in leadership and their influence on the gender diversity of academic plastic surgery programs. *Plast Reconstr Surg*. 2021;147:516–526.
- Bucknor A, Kamali P, Phillips N, et al. Gender inequality for women in plastic surgery: a systematic scoping review. *Plast Reconstr Surg*. 2018;141:1561–1577.
- Kliniken.de. Available at <https://www.kliniken.de/suche/fachabteilung?focus=1900&distanz=20km>. Accessed March 31, 2023.
- Deutsche Gesellschaft für Plastische, R. u. Ä. C. Available at <https://www.dgpraec.de/>. Accessed March 31, 2023.
- ApS, D. Determine the gender of a name. Available at <https://genderize.io/>. Accessed March 18, 2022.
- Elango M, Asaad M, Kotta PA, et al. Gender disparity in abstract presentation at plastic surgery meetings. *J Surg Res*. 2021;265:204–211.
- Deutsche Gesellschaft für Plastische, R. u. Ä. C. Erste Abteilung für Plastische Chirurgie. Available at <https://www.50-jahre-dgpraec.de/erste-abteilung-fuer-plastische-chirurgie/#:~:text=Ursula%20Schmidt%20Tintemann%20gr%C3%BCndete%201958,rechts%20der%20Isar%20in%20M%C3%BCnchen>. Accessed March 28, 2023.
- Weiss A, Lee KC, Tapia V, et al. Equity in surgical leadership for women: more work to do. *Am J Surg*. 2014;208:494–498.
- Wenzinger E, Weinstein B, Singh R, et al. Deconstructing a leader: an in-depth analysis of the commonalities between plastic surgery chiefs and chairmen. *Plast Reconstr Surg*. 2019;144:235–241.
- Chen W, Baron M, Bourne DA, et al. A report on the representation of women in academic plastic surgery leadership. *Plast Reconstr Surg*. 2020;145:844–852.
- Plana NM, Khouri KS, Motosko CC, et al. The evolving presence of women in academic plastic surgery: a study of the past 40 years. *Plast Reconstr Surg*. 2018;141:1304–1310.
- Grose E, Chen T, Siu J, et al. National trends in gender diversity among trainees and practicing physicians in otolaryngology-head and neck surgery in Canada. *JAMA Otolaryngol Head Neck Surg*. 2022;148:13–19.
- Choi, SS, Miller, RH. Women otolaryngologist representation in specialty society membership and leadership positions. *Laryngoscope* 2012;122:2428–2433.
- SED-DIKTATUR, B. Z. A. D. KINDERGÄRTEN. Available at <https://deutsche-einheit-1990.de/ministerien/mfbw/kiga/>. Accessed July 25, 2021.
- bildung, b. f. p. Kitas und Kindererziehung in Ost und West. Available at <https://www.bpb.de/themen/deutsche-einheit/lange-wege-der-deutschen-einheit/47313/kitas-und-kindererziehung-in-ost-und-west/#node-content-title-0>. Accessed July 25, 2023.
- Bundesärztekammer. Ergebnisse der Ärztestatistik zum 31.12.2016. Available at <https://www.bundesaerztekammer.de/baek/ueber-uns/aerztestatistik/aerztestatistik-2016>. Accessed April 1, 2023.
- Bundesärztekammer. Available at <https://www.bundesaerztekammer.de/baek/ueber-uns/aerztestatistik/aerztestatistik-2018>. Accessed April 1, 2023.
- Douglas NKO, Bustos VP, Moroni EA, et al. Who cares about diversity? Trends in gender and racial authorship and publications in plastic surgery over time. *Plast Reconstr Surg Glob Open*. 2022;10:e4590.
- Chen W, Schilling BK, Bourne DA, et al. A report of gender bias and sexual harassment in current plastic surgery training: a national survey. *Plast Reconstr Surg*. 2021;147:1454–1468.
- Bourne DA, Chen W, Schilling BK, et al. The impact of plastic surgery training on family planning and prenatal health. *Plast Reconstr Surg*. 2019;144:1227–1236.
- Bundestag. Gesetz zur Neuregelung des Mutterschutzrechts. 1228. Berlin: Bundesanzeiger Verlag; 2017.
- German Medical Women's Association—Deutscher Ärztinnenbund e.V. Betroffene bestätigen: Mutterschutzgesetz behindert Ärztinnen-Karrieren. *Erste bundesweite Umfrage unter schwangeren Ärztinnen und Medizinstudentinnen*. Berlin: German Medical Women's Association—Deutscher Ärztinnenbund e.V., 2021.
- Zagorsky JL. Divergent Trends in US maternity and paternity leave, 1994–2015. *Am J Public Health*. 2017;107:460–465.



37. Jolly S, Griffith KA, DeCastro R, et al. Gender differences in time spent on parenting and domestic responsibilities by high-achieving young physician-researchers. *Ann Intern Med.* 2014;160:344–353.
38. Siri, J. Geschlechterpolitische Positionen der Partei Alternative für Deutschland. *Die Alternative für Deutschland: Programmatik, Entwicklung und politische Verortung* 2016:69–80.
39. Sexton KW, Hocking KM, Wise E, et al. Women in academic surgery: the pipeline is busted. *J Surg Educ.* 2012;69:84–90.
40. Johnson DJD. Gender inequality for women in plastic surgery: a systematic scoping review. *Plast Reconstr Surg.* 2018;141:1578–1579.
41. Barker JC, Rendon J, Janis JE. Medical student mentorship in plastic surgery: the mentee's perspective. *Plast Reconstr Surg.* 2016;137:1934–1942.
42. Chu CK. Commentary on: the leaky pipeline of women in plastic surgery: embracing diversity to close the gender disparity gap. *Aesthet Surg J.* 2020;40:1251–1252.
43. Wu C. Commentary on: The leaky pipeline of women in plastic surgery: embracing diversity to close the gender disparity gap. *Aesthet Surg J.* 2020;40:1249–1250.
44. Patton EW, Griffith KA, Jones RD, et al. Differences in mentor-mentee sponsorship in male vs female recipients of national institutes of health grants. *JAMA Intern Med.* 2017;177:580–582.
45. Numann PJ. Perspectives on career advancement for women. *Am Surg.* 2011;77:1435–1436.
46. Estes Z, Felker S. Confidence mediates the sex difference in mental rotation performance. *Arch Sex Behav.* 2012;41:557–570.
47. Hewlett SA. Off-ramps and on-ramps: keeping talented women on the road to success. *Human Resource Management International Digest.* 2008;16.
48. Hoogendoorn S, Oosterbeek H, Van Praag M. The impact of gender diversity on the performance of business teams: evidence from a field experiment. *Manage Sci.* 2013;59:1514–1528.
49. Sandberg, S. *Lean In-women, Work and the Will to Lead.* New Delhi, India: Sage India: 2015.
50. Freeman, RB, Huang, W. Collaboration: strength in diversity. *Nature.* 2014;513:305.
51. Asserson, DB, Janis, JE. Does diversity of authorship matter? An analysis of plastic surgery's top 100 articles. *Plast Reconstr Surg Glob Open.* 2022;10:e4214.
52. Huis In't Veld EA, Canales FL, Furnas HJ. The impact of a plastic surgeon's gender on patient choice. *Aesthet Surg J.* 2017;37:466–471.
53. Wall S, Jr, Wall H. Commentary on: the impact of a plastic surgeon's gender on patient choice. *Aesthet Surg J.* 2017;37:472–473.