

Selected Papers from the Editorial Board

Gender-Related Disparities Among Vascular Surgeons in Italy: Results from a Cross-Sectional Survey

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Background: To assess the presence, quality and impact of gender-related discrepancies in academic vascular surgery at a national level.

Methods: This was an anonymous national structured nonvalidated cross-sectional survey on gender disparity perceptions, named "I love it when you call me Señorita", distributed to 645 participants from academic Italian vascular centers. Endpoints were related to job-related characteristics, satisfaction, and sexual harassment.

Results: The survey yielded a 27% response rate ($n = 174$, 78 males and 96 females). Significant differences between male and female responders were found in terms of job satisfaction (83.3% vs. 53.1%, $P < 0.001$), perception of career opportunities (91.7% vs. 67.9%, $P < 0.001$), surgical activity in the operating theater (34.6% vs. 7.3%, $P < 0.001$), involvement in scientific activities (contribution in peer-reviewed articles: 37.2% vs. 9.4%, $P < 0.001$; scientific meeting attendance/year: 42.3% vs. 20.8%, $P = 0.002$), and perception of lower peer support at work (2.6% vs. 22.9%, $P < 0.001$). In addition, female physicians more frequently suffered sexual harassment from male peers/colleagues (10% vs. 34%, $P < 0.001$), male health-care workers (7% vs. 26%, $P = 0.001$), or patients/caregivers independently from their sex (6% vs. 38.5%, $P < 0.001$ for males and 5% vs. 22%, $P = 0.001$ for females).

Conclusions: A significant number of the female vascular surgeons in Italian academic vascular centers responding to the survey have experienced workplace inequality and sexual harassment. Substantial efforts and ongoing initiatives are still required to address gender disparities, emphasizing the need for the promotion of specific guidelines within scientific societies.

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INTRODUCTION

The discussion of gender diversity and equity in medicine has gained prominence in recent decades. Despite various strategies being implemented to address and reduce gender disparities in the field, this issue continues to manifest in various aspects of daily work practices. These gender-related disparities can impact crucial professional domains, including autonomy, training, position, pay, and publishing.¹ Such disparities often emerge early, during residency,² and persist throughout a career,³ potentially affecting personal well-being, social relationships,⁴ and, in some instances, escalating into outright harassment.

Unfortunately, surgical subspecialties have traditionally been regarded as prone to gender-related discrimination. Female physicians have been described as shouldering most of the weight of domestic responsibilities, while still making less money for similar job roles than their male counterparts.⁵ Moreover, despite increasing rates of women entering virtually all (sub)fields of medicine, they represent only a small proportion of the workforce in academic activities at various levels.^{6,7}

To address and overcome gender discrepancies, it is crucial to identify and report these issues, actively seeking opportunities to achieve equity in the medical profession. This proactive approach not only fosters satisfaction in the workplace, creating a safer and more collegial environment, but it also contributes to a healthier subspecialty. A commitment to gender equity is likely to enhance the ability to recruit and retain high-caliber and well-motivated physicians.⁸ For all the above reasons, we sought to assess the presence, quality and impact of gender-related discrepancies in academic vascular surgery at a national level through a qualitative cross-sectional survey.

METHODS

Academic Italian vascular centers were invited to participate in an anonymous survey on gender disparity perceptions. In these centers work together academic physicians (faculty members: research fellows, assistant, associate or full professors, and trainees in vascular surgery) and nonacademic physicians of the National Health System. The survey, named "I love it when you call me Señorita", consisted of 28 questions as detailed in [Supplementary Table I](#). The survey was written by a panel of authors following the Strengthening the reporting of observational studies in Epidemiology Guidelines for cross-sectional studies.⁹ Questions regarding sexual harassment included gender harassment (verbal and nonverbal behaviors that convey hostility, objectification, exclusion, or second-class status about members of one gender) or unwanted sexual attention (verbal or physical unwelcome sexual advances, which can include assault).¹⁰ A dedicated link to the survey was emailed through Google Forms to a mailing list extracted from the Italian Society of Vascular and Endovascular Surgery and reminders were automatically sent for a total of 4 weeks to no respondents, before stopping data collection (645 overall invited participants). The link was a "one-shot" tool, allowing protection against multiple entries.

Sex and gender were self-reported by participants. Since the anonymous nature of the survey, an exemption was received by the institutional review board.

Descriptive and univariate analyses were performed using contingency tables with Fisher exact test and for categorical data and a paired *t*-test with for continuous data. A *P* value of <0.05 was considered statistically significant. Multivariate logistic regression was performed to evaluate independent associations with job satisfaction and results were expressed as hazard ratio with 95% confidence interval. Analyses were performed using SPSS software (version 25; IBM Corporation, Armonk, NY, USA).

RESULTS

The survey yielded a 27% ($n = 174$, 78 males and 96 females) response rate. Males were on average older than females (mean age 37 vs. 32 years, $P < 0.001$) and more often had children (32.1% vs. 13.5%, $P = 0.003$). A higher proportion of faculty members (research fellows, assistant, associate or full professors) respondents were males (4.2% vs. 23.1%, $P = 0.0008$), whereas no difference was found for nonacademic role (22.9% vs. 23.1%, $P = 0.98$). On the other hand, a higher proportion of female respondents was also found among trainees (53.8% vs. 72.9%, $P = 0.009$). Further details regarding demographic characteristics of respondents are provided in [Table I](#).

As detailed in [Table II](#), significant differences were found in job-related characteristics between males and females. For instance, a significantly lower proportion of male respondents spent more than 50% of their job time in the ward as compared with female counterparts (26.9% vs. 53.1%, $P < 0.001$), but were more likely to spend the same amount of time in the operating theater (28.2% vs. 13.5%, $P = 0.01$). Additionally, males were significantly more involved in scientific activity with having been coauthors in more than 5 peer-reviewed articles in the preceding 5 years (37.2% vs. 9.4%, $P < 0.001$) and having attended at least 1 scientific meeting/year in the preceding 5 years (42.3% vs. 20.8%, $P = 0.002$).

Males were more likely to be highly satisfied by their job (83.3% vs. 53.1%, $P < 0.001$), although no significant differences were found in the level of satisfaction with vascular surgery as specialty (93.6% vs. 87.5%, $P = 0.17$). Furthermore, both genders would suggest vascular specialty to males (94.9% vs. 94.8%, $P = 0.98$) but not to females

Table I. Baseline demographics of respondents stratified by gender

Variables	Males (<i>N</i> = 78)	Females (<i>N</i> = 96)	<i>P</i> value
Age (mean, standard deviation)	37 (12)	32 (7)	<0.001
Marital status	<ul style="list-style-type: none"> • Single: 19 (24.4%) • Accompanied: 30 (38.5%) • Married: 23 (29.5%) • Divorced/widower: 3 (3.8%) 	<ul style="list-style-type: none"> • Single: 33 (34.4%) • Accompanied: 48 (50.0%) • Married: 14 (14.6%) • Divorced/widower: 0 (0%) 	0.15
Children	25 (32.1%)	13 (13.5%)	0.003
Physicians' role	<ul style="list-style-type: none"> • Trainees: 42 (53.8%) • Academic: 18 (23.1%)* • Nonacademic: 18 (23.1%) 	<ul style="list-style-type: none"> • Trainees: 70 (72.9%) • Academic: 4 (4.2%) • Nonacademic: 22 (22.9%) 	0.0008
>5 Years from medical degree	41 (52.6%)	40 (41.7%)	0.15

Table II. Job-related characteristics of respondents stratified by gender

Variables	Males (<i>N</i> = 78)	Females (<i>N</i> = 96)	<i>P</i> value
Ward (>50% of job time)	21 (26.9%)	51 (53.1%)	<0.001
Outpatient clinic (>50% of job time)	8 (10.3%)	17 (17.7%)	0.16
Operating theater (>50% of job time)	22 (28.2%)	13 (13.5%)	0.01
Research/administrative (>50% of job time)	7 (9.0%)	3 (3.1%)	0.09
Main domain/area of professional activity	<ul style="list-style-type: none"> • Clinic/vascular ultrasound: 1 (1.3%) • Endovascular arterial surgery: 28 (35.9%) • Open arterial surgery: 35 (44.9%) • Venous surgery/Wound care: 6 (7.7%) • Research: 8 (10.3%) 	<ul style="list-style-type: none"> • Clinic/vascular ultrasound: 9 (9.4%) • Endovascular arterial surgery: 28 (29.2%) • Open arterial surgery: 55 (57.3%) • Venous surgery/Wound care: 2 (2.1%) • Research: 2 (2.1%) 	0.15
First surgeon (>50% of attended cases)	27 (34.6%)	7 (7.3%)	<0.001
Coauthor on >5 peer-reviewed articles in the last 5 years	29 (37.2%)	9 (9.4%)	<0.001
Attendance ≥1 scientific meetings/year	33 (42.3%)	20 (20.8%)	0.002
Member of scientific societies	58 (74.4%)	70 (72.9%)	0.83
Reviewer for medical journals	22 (28.2%)	6 (6.2%)	<0.001
Editorial board for medical journals	17 (21.8%)	2 (2.1%)	<0.001

(85.9% vs. 74%, $P = 0.04$). This result is supported by perception of career opportunities preferentially given to male surgeons (91.7% vs. 67.9%, $P < 0.001$). As detailed further in [Table III](#), significant differences were also found in the levels of peer support at work, with less males reporting that had low support as compared with females (2.6% vs. 22.9%, $P < 0.001$). Using multivariable logistic regression, female gender was the only factor that showed independent association with low

job satisfaction (OR 3.5, 95% confidence interval 1.6–7.5, $P < 0.001$; [Supplementary Table II](#)).

Questions related to different types of sexual harassment were stratified for the analysis by gender and subjects involved. [Figures 1 and 2](#) show bar graphs of responses to the following questions: i) "Did you ever perceive a different attitude/behavior during your job-related tasks because of gender?" and ii) "Did you ever receive any verbal or nonverbal sexual harassment at work?". Males

Table III. Level of satisfaction of respondents stratified by gender

Variables	Males (N = 78)	Females (N = 96)	P value
Satisfaction with job (very much/to some extent)	65 (83.3%)	51 (53.1%)	<0.001
Satisfaction with specialty (very much/to some extent)	73 (93.6%)	84 (87.5%)	0.17
Would suggest same specialty to males (very much/to some extent)	74 (94.9%)	91 (94.8%)	0.98
Would suggest same specialty to females (very much/to some extent)	67 (85.9%)	71 (74.0%)	0.04
Influence of job/specialty on personal life (very much/to some extent)	14 (17.9%)	30 (31.3%)	0.04
Career opportunities are preferentially given to males (very much/to some extent)	53 (67.9%)	88 (91.7%)	<0.001
Level of peer support at work	<ul style="list-style-type: none"> • Preferentially from males: 5 (6.4%) • Preferentially from females: 12 (15.4%) • Independently from gender: 59 (75.6%) • Low support: 2 (2.6%) 	<ul style="list-style-type: none"> • Preferentially from males: 12 (12.5%) • Preferentially from females: 15 (15.6%) • Independently from gender: 47 (49.0%) • Low support: 22 (22.9%) 	<0.001

reported significantly lower rates of discrimination in question (i); moreover, female physicians reported they had been more often abused through words or through actions than males, especially from male peers/colleagues (10% vs. 34%, $P < 0.001$), male health-care workers (7% vs. 26%, $P = 0.001$), male patients/caregivers (6% vs. 38.5%, $P < 0.001$), and female patients/caregivers (5% vs. 22%, $P = 0.001$).

To evaluate gender influence in professional life, responses to the following question iii) “Did you ever feel that your gender could influence your professional life?” were classified in terms of work activities and career progression (Fig. 3). As stated before, females also reported gender-influenced responses to that question.

DISCUSSION

In spite of the consistent rise in the number of women in various medical and surgical fields in the past decade, female surgeons still face underrepresentation.¹ Additionally, a distinct gender gap persists in several facets of professional practice, with gender-related mistreatment and harassment

posing a significant challenge that requires targeted intervention strategies.^{2–7}

Data from this contemporary national survey, carried out at several Italian academic hospitals, showed a clear gender gap in the field of vascular surgery as well as different perceptions of career opportunities between male and female surgeons, along with alarming rates of harassing behaviors preferentially targeted at women. Indeed, our findings were aligned with prior studies^{11–15} in identifying how female physicians more often reported significant differences in job activities, academic involvement, and general satisfaction with their work environment.

Data from our cross-sectional survey showed that female surgeons were significantly less involved in research activities. For instance, only about 9% of them were authors or coauthors of scientific papers and just about 6% were reviewers for scientific journals. Moreover, only 20% of the female responders had taken part in at least 1 scientific meeting over the previous 2 years, while the corresponding figures for male surgeons were much and significantly higher. Such findings are well-consistent with those in the literature. In a systematic review and meta-analysis pointing out at the gender differences

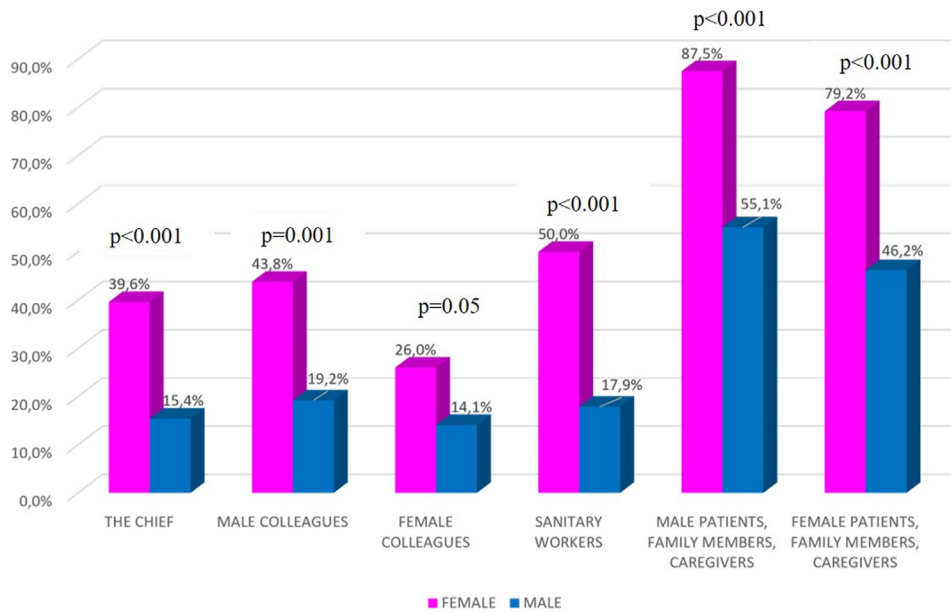


Fig. 1. Bar graphs of responses to the question “Did you ever perceive a different attitude/behavior during your job-related tasks because of gender?” stratified by gender. The responses were given on a 4-point Likert-

type scale and analyzed as binary variable (yes = very much/to some extent; no = only sporadically/not at all). The bars show the percentage of “yes” responses with *P* values after univariate comparison.

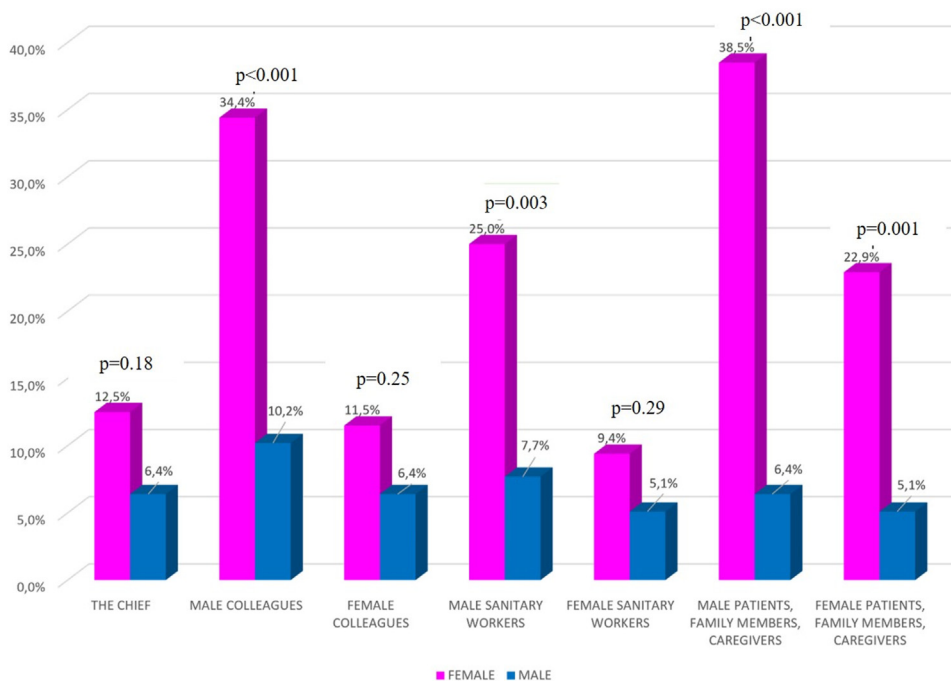


Fig. 2. Bar graphs of responses to the question “Did you ever receive any verbal or nonverbal abuse at work?” stratified by gender. The responses were given on a 4-point Likert-type scale and analyzed as binary variable

(yes = very much/to some extent; no = only sporadically/not at all). The bars show the percentage of “yes” responses with *P* values after univariate comparison.

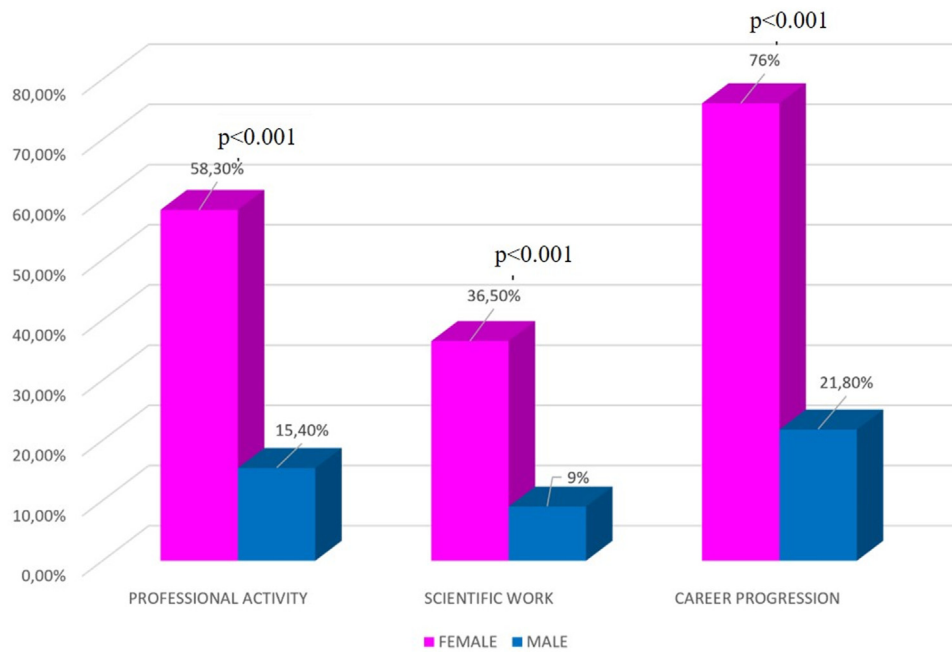


Fig. 3. Bar graphs of responses to the question “Did you ever feel that your gender could influence your professional life?” stratified by gender. The responses were given on a 4-point Likert-type scale and analyzed as

binary variable (yes = very much/to some extent; no = only sporadically/not at all). The bars show the percentage of “yes” responses with *P* values after univariate comparison.

among academic physicians, Li et al.¹⁶ found that men published 17.2 more papers with an H-index that was 5.97 higher than females, and this was confirmed after adjustment for different specialty. Looking more specifically at the field of vascular surgery, Otoy et al.¹³ found that females had less podium presentations and less publications than their male counterparts in a regional vascular meeting in the USA. Taken altogether, these observations seem to point at the presence of a clear imbalance between males and females in terms of academic representation and scientific involvement as compared with male physicians.

In the current survey, female respondents, despite expressing satisfaction with their professional choices, reported less contentment with their day-to-day jobs compared to their male counterparts. Interpreting these findings accurately, which highlight a less positive sentiment among female vascular surgeons regarding their career paths, poses a challenging task. Interestingly, when comparing these results with data from previous studies involving various medical specialties, a generally high level of satisfaction among vascular surgeons is evident. In fact, Pompili et al.¹⁷ in their survey involving cardiothoracic surgeons confirmed

that males were more satisfied than females in their career, but the percentage of satisfaction was clearly lower than in our results (31% for male cardiothoracic surgeons and 17% for female cardiothoracic surgeons). Overall, these findings may predominantly stem from the perception that males would have more (and better) career opportunities, as already stated in several prior studies, thereby leading to such gender-based differences in work perception.¹² Moreover, it appears that this issue is somehow recognized also by the male participants to our survey. A thoughtful awareness from both genders about the presence of mistreatment between sexes could serve as an optimal initial stride toward future endeavors aimed at fostering more balanced workplaces. As for career opportunities, discrimination and gender influence in vascular surgery trainees have already been explored by McDonald et al.¹⁸ with a higher percentage of females that experienced discrimination. Similarly, female participants in this survey, both faculty and trainees alike, felt that their gender could influence their professional life. In particular, we found that female surgeons believed that gender can influence different aspects of their professional life. These findings were similar to those reported by Smeds

et al.,¹⁴ who showed that vascular surgeons believed that the physicians' gender influences hiring, promotion and compensation. Therefore, the consistent nature of these associations between different countries and health-care systems should be recognized as an important driver for discrimination in the workplace among health-care professionals and call out for proper corrective actions.

Finally, our survey underscored the presence of concerning attitudes toward harassment. While these incidents were, fortunately, overall rare, they were notably more prevalent among females. However, these findings may not be surprising when juxtaposed with previous studies. A report by the US National Academies of Sciences, Engineering, and Medicine revealed that sexual harassment was frequently observed in scientific fields, with the medical field experiencing some of the highest rates.¹⁰ Similarly, this may also occur in the vascular surgery field: 41% of the physicians interviewed by Smeds et al.¹⁴ reported having experienced sexual harassment at their workplace, with a 2-fold higher proportion of females reporting such episodes to have occurred. Clearly, it has been recently highlighted that harassment is not only sexual but also consists in different ways such as mansplaining, ignoring, and interruption.¹⁹ In our current study, we investigated various instances of sexual harassment among Italian physicians in teaching hospitals. The observed harassment behaviors were 3 to 6 times more prevalent among females compared to males, underscoring the necessity for targeted laws addressing harassment and discrimination in the medical field or the establishment of academic guidelines. Interestingly, a notable aspect is that a substantial portion of these abuses originated from patients, their family members, or caregivers, irrespective of gender. These findings potentially support previous studies suggesting that the gender of physicians may impact the levels of respect they receive from patients.

Efforts to address and rectify these disparities should be prioritized, with a focus on promoting awareness and establishing mechanisms for reporting inappropriate behaviors without the fear of potential professional or personal repercussions. Various studies have discussed specific interventions implemented at different institutions and their outcomes, aiming to gauge their effectiveness in addressing disparities. It is crucial to recognize that the fear of consequences, coupled with the hierarchical structure of surgery and a lack of acknowledgment by surgeons themselves regarding harassing behaviors, may pose significant barriers to reporting and taking corrective actions. Moreover, the

existence of such inequities has the potential to adversely affect the quality of patient care and increase the risk of burnout, a recognized concern in vascular surgery due to the demanding nature of the job in terms of both physical and psychological requirements.²⁰ There is a well-acknowledged anticipation of a future shortage in the vascular surgery workforce. Efforts to address this issue will be crucial for increasing recruitment and retention. As recommended by others, it is only logical to invest efforts in researching and eliminating gender-based bias and harassment in the workplace. This approach is vital for ensuring higher recruitment rates and the sustained longevity of careers in vascular surgery. In this context, the significance of mentorship cannot be overstated. Positive mentorship is crucial for junior attending physicians, while the persistent observation of negative behaviors and sentiments could have adverse consequences for the future of our field.²¹

Study Limitations

The conclusions drawn from this study should be considered in light of its inherent limitations. Firstly, the survey utilized in this study was not a validated tool, a characteristic shared with similar recent studies.^{12,22} Nevertheless, it was created following accepted survey methodology, as outlined by the Strengthening the reporting of observational studies in Epidemiology Guidelines.

Secondly, the limitations of this analysis include the response rate and sample size, which might have restricted the identification of additional statistically significant risk factors with risk adjustment upon cohort stratification in a larger sample size. Additionally, there could be a response bias, as individuals experiencing psychological distress might have been more inclined to answer the survey questions, potentially leading to an overestimation of trends. It's essential to note that this survey provides only a "snapshot" of the status at a specific time, and a more extended, longitudinal sampling might offer further insights into the extent of the issue. Moreover, the responses in the survey couldn't be linked to more severe adverse outcomes, such as major depression or workforce attrition. Importantly, this study wasn't designed to establish causality; however, the observed associations are valuable, hypothesis-generating, and may guide future research on this topic. Finally, the limited number of responses did not allow for in-depth subgroup analysis and meaningful correlation with the responses to the questionnaire.

CONCLUSIONS

Among the responders to our survey, a notable proportion of female faculty members and trainees in Italian academic vascular surgery programs perceive instances of workplace inequality and harassment to a greater extent than their male counterparts. According to female vascular surgeons, there is a perception that gender plays a role in factors such as hiring, promotion, compensation, and assumptions about life goals. Additional efforts are needed to explore approaches for improving gender disparities in vascular surgery practice. There is still significant work to be undertaken to attain gender equality in this field. With this objective in mind, the current Study Group intends to submit a proposal document to the Italian Society, addressing this pressing issue.

CREDIT AUTHORSHIP CONTRIBUTION STATEMENT

Elena Giacomelli: Conceptualization, Investigation, Methodology, Supervision, Writing – review & editing. **Mario D’Oria:** Conceptualization, Methodology, Supervision, Writing – review & editing. **Sara Speziali:** Data curation, Formal analysis, Validation, Visualization. **Walter Dorigo:** Conceptualization, Formal analysis, Investigation, Writing – original draft, Writing – review & editing. **Claudia Pacciani:** Investigation, Supervision, Visualization. **Silvia Bassini:** Data curation, Formal analysis, Investigation. **Sandro Lepidi:** Conceptualization, Supervision, Writing – review & editing. **Raffaele Pulli:** Supervision, Writing – review & editing. **Aaron Thomas Farigioni:** Methodology, Supervision, Writing – review & editing.

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SUPPLEMENTARY DATA

Supplementary data related to this article can be found at <https://doi.org/10.1016/j.avsg.2024.01.003>.

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