A questionnaire on the perception of social and academic discrimination against female general surgeons in Türkiye

🝺 Hilmi Bozkurt, 🝺 Tahsin Çolak, 🝺 Simge Tuna, 🝺 Cumhur Özcan, 🝺 Enver Reyhan

Department of General Surgey, Mersin University Faculty of Medicine, Mersin, Türkiye

ABSTRACT

Objective: The purpose of this research was to identify the specific prejudices that women in general surgery in Türkiye have to face in their workplace and academic careers. This was achieved by gathering the opinions of both genders on these issues and raising awareness of gender bias to promote a more inclusive environment for future generations of surgeons.

Material and Methods: A total of 202 people, 99 male and 103 female surgeons, participated in the survey. The questionnaire was distributed to people working in general surgery clinics via e-mail and WhatsApp groups of the Turkish Surgical Association and the Turkish Colorectal Association.

Results: The mean age of the participants was 37.65 ± 11.55 years (ranging from 24 to 74 years). Among the partipiciants, 40.4% agreed that surgery is more suitable for males, while 89.3% of women disagreed (p<0.001). 88.3% of the women stated that women are negatively influenced in choosing general surgery because of the male-dominated environment, and 52.5% of men agreed, while 40.4% of men disagreed (p<0.001). 66.7% of men and 65% of women believed that women do not prefer to work in general surgery because it is difficult to balance with family responsibilities (p=0.890). Women are more subjected to humiliating behaviors, while 53.4% of women agree. 85.4% of the women stated that it is important to have a female lecturer as a role model in the institution where they work.

Conclusion: This study shows different views on gender prejudice among male and female surgeons in general surgery. Female respondents, including male and female surgeons, indicated experiencing bias and underrepresentation in academic disciplines, although they had differing perspectives on discrimination. Both genders agreed on the difficulty of work-life balance, with a similar percentage of individuals identifying family responsibilities as an obstacle.

Keywords: Discrimination, gender, women, survey

INTRODUCTION

Gender disparities in medicine have raised concerns over the past century, especially in surgical specialties where the number of female surgeons are notably lower than their male counterparts (1). Despite the significantly increasing number of women in surgery in recent years, female surgeons may still encounter obstacles that can affect their career development, such as lack of support, harassment, and unequal opportunities (2). At the beginning of their careers, women may feel discouraged from pursuing surgery because of the societal norms on family and career balance (3). Additionally, unconscious biases may also affect the evaluation of performance, which may unfairly judging women and limit access to leadership positions, contributing to the so-called "pipeline effect" (4).

The data provided by the Ministry of Health in Türkiye indicate that the percentage of female specialist surgeons is 8.78%, while the percentage of female residents rises to 24% (5). Despite the growing number of women in general surgery, there hasn't been enough research on the challenges faced by women in this traditionally male-dominated field in Türkiye (5).

The purpose of this research is to increase awareness of gender prejudice and create a more inclusive environment for the next generation of surgeons by collecting and evaluating the opinions of both male and female surgeons.

Cite this article as: Bozkurt H, Çolak T, Tuna S, Özcan C, Reyhan E. A questionnaire on the perception of social and academic discrimination against female general surgeons in Türkiye. *Turk J Surg.* 2025;41(1):69-77

Corresponding Author Hilmi Bozkurt

E-mail: hilmibozkurt27@gmail.com ORCID ID: orcid.org/0000-0003-0389-0523

Received: 10.09.2024 Accepted: 04.02.2025 Publication Date: 27.02.2025

DOI: 10.47717/turkjsurg.2025.6578

Available at www.turkjsurg.com

Copyright[®] 2025 The Author. Published by Galenos Publishing House on behalf of Turkish Surgical Society. This is an open access article under the Creative Commons AttributionNonCommercial 4.0 International (CC BY-NC 4.0) License.

MATERIAL and METHODS

Study Design

After conducting a comprehensive review of the literature, a 32item questionnaire was created. The questionnaire was created with Google Forms, a widely used and highly secure online survey platform. The questionnaire was subjected to review and revisions by a panel consisting of eight experts, including four male and three female general surgeons, along with one biostatistics faculty member from Mersin University.

The survey was designed to collect demographic information including gender, age, academic rank, years of experience, current working institution, marital status, parental status, and age of first parenthood. In addition, the survey aimed to collect participants' perspectives on three main subjects: Societal bias against female surgeons, gender-related disparities in the workplace, and prejudice against women in academic professions. Participants were given the opportunity to indicate their level of agreement, disagreement, or uncertainty for each statement. Tables 1-4 provide a comprehensive list of all the questions.

Ethical Approval

The Mersin University Clinical Research Ethics Committee approved this study, dated February 21, 2024, and numbered 2024/193.

Data Collection

The questionnaire was tested online by the authors to ensure its clarity before being distributed. It was sent out to general surgeons in February 2024 via WhatsApp groups and email addresses, connected to the Turkish Surgical Association and Turkish Colorectal Association. Before starting the survey, participants received an introduction letter that included the goal, substance, and target audience of the survey. Consent to participate in the study was implied by completing the survey. One week after the initial distribution, reminders were sent out, and three weeks later, the survey was closed to responses. Every response was anonymous and voluntary. Both male and female general surgeons participated in the study. A total of 202 surgeons participated, including 99 males and 103 females.

| Characteristics | Men (n=99) | Women (n=103) | p-value 0.002 | |
|--|---|--|-----------------|--|
| Age | 40.22±12.96 (25-74) | 35.18±9.43 (24-64) | | |
| Academic rank | | | | |
| Research assistant Specialist Lecturers Assistant professors Associate professors Professors | 44 (4.1%) 23 (23.2%) 1 (1.0%) 2 (2%) 12 (12.1%) 12 (17.2%) | 54 (52.4%) 36 (35%) 0 (0.0%) 2 (2.9%) 5 (4.9%) 6 (5.8%) | 0.024 | |
| Years of experience | | | | |
| 0-5 5-10 10-20 20+ | 42 (42.4%) 16 (16.2%) 16 (16.2%) 25 (25.2%) | 57 (55.3%) 17 (16.5%) 11 (10.7%) 18 (17.5%) | 0.232 | |
| Current working institution University hospital Training and research hospital State hospital Private clinic Other | 52 (58.6%) 22 (22.2%) 8 (8.1%) 10 (10.1%) 1 (1%) | 34 (33.0%) 45 (43.7%) 14 (13.6%) 6 (5.8%) 4 (3.9%) | 0.001 | |
| Marital status Married Single | 79 (79.8%)* 20 (20.2%) | 42 (40.8%) 61 (59.2%)* | <0.001 | |
| Parental status Has children No children | 56 (56.6%) 43 (43.4%) | 27 (26.2%) 76 (73.8%) | <0.001 | |
| Age of first parenthood | 29.80±3.80 (20-42) | 31.72±4.00 (25-46) | 0.037 | |
| I do not currently or have never worked with female doctors in the general surgery | 3 (3%) | 4 (3.9%) | 1.00 | |

| Table 2. Social prejudice in general surgery | | | | |
|---|----------|-------------|---------------|---------|
| Question | Respont | Men (n=99) | Women (n=103) | p-value |
| I think surgery is more suitable for the male gender. | Agree | 40 (40.4%)* | 9 (8.7%) | <0.001 |
| | Disagree | 46 (46.5%) | 92 (89.3%)* | |
| | Not sure | 13 (13.1%)* | 2 (1.9%) | |
| I think women should not choose general surgery because they are physically weaker. | Agree | 22 (22.2%)* | 2 (1.9%) | <0.001 |
| | Disagree | 68 (68.7%) | 101 (98.1%)* | |
| | Not sure | 9 (9.1%) | 0 (0%) | |
| I think that women do not prefer to work in general surgery because it is difficult to balance with family responsibilities. | Agree | 66 (66.7%) | 67 (65%) | 0.890 |
| | Disagree | 27 (27.3%) | 28 (27.2%) | |
| | Not sure | 6 (6.1%) | 8 (7.8%) | |
| I think general surgery is more suitable for men due to long- working hours. | Agree | 48 (48.5%)* | 6 (5.8%) | <0.001 |
| | Disagree | 46 (46.5%) | 91 (88.3%)* | |
| | Not sure | 5 (5.1%) | 6 (5.8%) | |
| | Agree | 58 (58.6%)* | 38 (36.9%) | 0.008 |
| I think the stress and psychological aspects of general surgery affect women more. | Disagree | 35 (35.4%) | 53 (51.5%)* | |
| anect women mole. | Not sure | 6 (6.1%) | 12 (11.7%) | |
| I think that women who want to work in general surgery are negatively influenced by people due to the male-dominated working area in the general surgery. | Agree | 52 (52.5%) | 91 (88.3%)* | <0.001 |
| | Disagree | 40 (40.4%)* | 10 (9.7%) | |
| | Not sure | 7 (7.1%) | 2 (1.9%) | |
| I think that female surgeons who are new to a clinic are prejudiced against by their colleagues and other health workers. | Agree | 38 (38.4%) | 81 (78.6%)* | <0.001 |
| | Disagree | 54 (54.5%)* | 18 (17.5%) | |
| | Not sure | 7 (7.1%) | 4 (3.9%) | |

| Table 3. Gender bias in workplace | | | | |
|---|----------|-------------|---------------|---------|
| Question | Respont | Men (n=99) | Women (n=103) | p-value |
| I think there is positive discrimination against female general surgeons. | Agree | 40 (40.4%)* | 10 (9.7%) | |
| | Disagree | 47 (47.5%) | 88 (85.4%)* | <0.001 |
| | Not sure | 12 (12.1%) | 5 (4.9%) | |
| I consider it unfair to their colleagues taking maternity leave of female general surgeons | Agree | 19 (19.2%)* | 6 (5.8%) | |
| | Disagree | 73 (73.7%) | 92 (89.3%)* | 0.010 |
| | Not sure | 7 (7.1%) | 5 (4.9%) | |
| I think there should be separate rest rooms for male and female residents in general surgery clinics. | Agree | 59 (59.6%) | 54 (52.4%) | |
| | Disagree | 32 (32.3%) | 46 (44.7%) | 0.085 |
| | Not sure | 8 (8.1%) | 3 (2.9%) | |
| l think that the opportunities (training, attendance to congresses, presentations, etc.) given to individuals in the institution where I work are regardless of gender. | Agree | 76 (76.8%)* | 63 (61.2%) | |
| | Disagree | 16 (16.2%) | 37 (35.9%)* | 0.004 |
| | Not sure | 7 (7.1%) | 3 (2.9%) | |
| l think patients trust male surgeons more than female surgeons. | Agree | 52 (52.5%) | 57 (55.3%) | |
| | Disagree | 34 (34.3%) | 36 (35.0%) | 0.741 |
| | Not sure | 13 (13.1%) | 10 (9.7%) | |
| I think that female general surgeons are more frequently criticized by their colleagues about their appearance. | Agree | 27 (27.3%) | 68 (66.0%)* | |
| | Disagree | 65 (65.7%)* | 30 (29.1%) | <0.001 |
| | Not sure | 7 (7.1%) | 5 (4.9%) | |

| Table 3. Continued | | | | |
|---|----------|-------------|---------------|---------|
| Question | Respont | Men (n=99) | Women (n=103) | p-value |
| I think the clothes that female general surgeons wear in the hospital should look more masculine. | Agree | 11 (11.4%) | 4 (3.9%) | |
| | Disagree | 83 (83.8%) | 96 (93.2%) | 0.099 |
| | Not sure | 5 (5%) | 3 (2.9%) | |
| I think that female general surgeons are given fewer cases and responsibilities. | Agree | 14 (14.1%) | 47 (45.6%)* | |
| | Disagree | 76 (76.8%)* | 48 (46.6%) | <0.001 |
| | Not sure | 9 (9.1%) | 8 (7.8%) | |
| I think that female general surgeons are more often subjected to humiliating behaviors. | Agree | 15 (15.2%) | 55 (53.4%)* | |
| | Disagree | 78 (78.8%)* | 40 (38.8%) | <0.001 |
| | Not sure | 6 (6.1%) | 8 (7.8%) | |
| I think that female general surgeons are more exposed to verbal/physical harassment. | Agree | 17 (17.2%) | 59 (57.3%)* | |
| | Disagree | 73 (73.7%)* | 33 (33.0%) | <0.001 |
| | Not sure | 9 (9.1%) | 10 (9.7%) | |

| Table 4. Discirimination in academic career | | | | |
|---|----------|-------------|---------------|---------|
| Question | Respont | Men (n=99) | Women (n=103) | p-value |
| It is important for me to have a female surgeon in the institution where I will work. | Agree | 55 (55.6%) | 64 (62.1%) | |
| | Disagree | 26 (26.3%) | 29 (28.2%) | 0.217 |
| | Not sure | 18 (18.2%) | 10 (9.7%) | |
| I think it is important for female residents to have a female lecturer as a role model in the institution where they work. | Agree | 58 (58.6%) | 88 (85.4%)* | |
| | Disagree | 34 (34.3%)* | 9 (8.7%) | <0.001 |
| | Not sure | 7 (7.1%) | 6 (5.8%) | |
| I think female lecturers are more successful in training students and residents. | Agree | 19 (19.2%) | 58 (56.3%)* | |
| | Disagree | 68 (68.7%)* | 23 (22.3%) | <0.001 |
| | Not sure | 12 (12.1%) | 22 (21.4%) | |
| I think women are rejected more often when applying for a lecturer position. | Agree | 22 (22.2%) | 64 (62.1%)* | |
| | Disagree | 66 (66.7%)* | 23 (22.3%) | <0.001 |
| | Not sure | 11 (11.1%) | 16 (15.5%) | |
| I think female surgeons can be more successful in the field of breast-endocrine. | Agree | 30 (30.3%) | 24 (23.3%) | |
| | Disagree | 58 (58.6%) | 70 (68.0%) | 0.384 |
| | Not sure | 11 (11.1%) | 9 (8.7%) | |
| I think that female surgeons are less self-developed in the field of perianal area diseases. | Agree | 26 (26.3%) | 29 (28.2%) | |
| | Disagree | 62 (62.6%) | 62 (60.2%) | 0.938 |
| | Not sure | 11 (11.1%) | 12 (11.7%) | |

Statistical Analysis

In the evaluation of the survey questions, the normality of continuous variables was evaluated with the Shapiro-Wilk test. Since the data conformed to the normal distribution, independent means t-test was used for comparisons according to gender. In the analysis of categorical data, the chi-Square test and the Fisher's exact test were used if more than 20% of the expected values were less than 5. A Z-test (comparison of two ratios) was applied to assess statistical significance in tables larger than 2x2. Data analysis was performed in the TIBCO Statistica program.

RESULTS

Demographic Data

Table 1 presents the demographic characteristics of the study participants. A total of 202 people, 99 male and 103 female doctors, participated in the survey. The mean age of the participants was 37.65±11.55 years (range from 24 to 74). There were no significant differences between male and female surgeons regarding age, academic rank, years of experience, working institution, or age of first parenthood. The duration of experience in general surgery varied from less than 5 years

73

to over 20 years. Among participants, 48.5% were residents, 29.2% were specialists, 0.5% were lecturers, 2% were assistant professors, 8.4% were associate professors, and 11.4% were professors (Figure 1). The distribution of workplaces was as follows: 10.9% worked in public hospitals, 33.2% in training and research hospitals, 45.5% in university hospitals, and 7.9% in private clinics.

The marriage rate among female participants was 40.8%, and the rate of having children was 26.2%, whereas the marriage rate among male participants was 79.8%, and the rate of having children was 56.6% (Figure 2). The average age of first childbirth for female participants was 31.72 ± 4.00 (25-46), while the average age of first parenthood for male participants was 29.80 ±3.80 (20-42) (p=0.037). 3% of the males and 3.9% of the female participants had never worked with a female doctor in a general surgery.

Social Prejudice

Table 2 shows the agreement of our participants with some social prejudices against female surgeons. Among the 99 male respondents, 40.4% agreed that surgery is more suitable for males, 46.5% disagreed, and 13.1% were unsure (Figure 3). In contrast, only 8.7% of the 103 female respondents agreed with this statement, while 89.3% disagreed and 1.9% were unsure

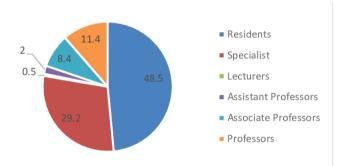


Figure 1. Academic titles of the participants.

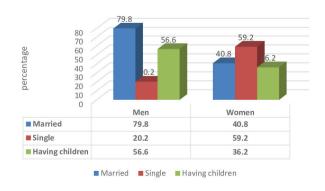


Figure 2. Percentage of marriage and having children among genders.

(p<0.001). Regarding the belief that "women should not choose general surgery because they are physically weaker," 22.2% of men agreed compared to just 1.9% of women (p<0.001). Both male (66.7%) and female (65%) respondents commonly agreed that women do not prefer general surgery due to difficulties in balancing family responsibilities with the demands of a surgical career (p=0.890). Furthermore, 48.5% of men believed that general surgery is more suitable for men because of long working hours, whereas only 5.8% of women agreed (p<0.001). Regarding stress and psychological aspects, 58.6% of men and 36.9% of women felt that these factors affect women more (p=0.008). While 88.3% of women believed that the maledominated environment negatively influences women's choice to pursue general surgery, only 52.5% of men agreed, with 40.4% disagreeing (p<0.001). Perceptions of prejudice towards female surgeons new to clinics differed significantly, with 54.5% of men disagreeing compared to 78.6% of women (p<0.001).

Gender Bias in Workplace

Table 3 shows a notable gender gap in recognizing disadvantages faced by female surgeons. While 40.4% of male participants agreed that there is positive discrimination towards female general surgeons, 85.4% of female participants disagreed (p<0.001). Additionally, 66% of the women stated that female surgeons are frequently criticized by their colleagues about their appearance, while 65.7% of men disagreed (p<0.001). Regarding case and responsibility distribution, 45.6% of women agreed that female surgeons receive fewer cases and responsibilities, whereas 76.8% of men disagreed. Furthermore, 53.4% of women felt female surgeons were subjected to humiliating behaviors, in contrast to 78.8% of men who disagreed (p<0.001). Similarly, 73.7% of men disagreed that female surgeons face verbal or physical harassment, while 57.3% of women believed they do (p<0.001). Opinions on maternity leave, separate rest rooms, and equal opportunities were more aligned than other issues, with no significant differences noted between genders. Specifically, 73.7% of men and 89.3% of women agreed that maternity leave

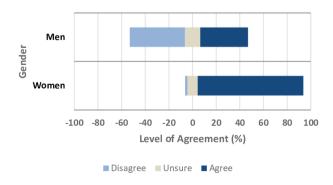


Figure 3. Rurvey respondents' answer to the question "I think surgery is more suitable fort he male gender".

74

is not unfair to colleagues (p=0.010). Regarding separate rest rooms, 59.6% of men and 52.4% of women supported having similar facilities for both genders (p=0.085). Additionally, 76.8% of men versus 61.2% of women agreed that opportunities are equally given to both genders (p=0.004). Both genders also agreed that patients trust male surgeons more, with 52.5% of men and 55.3% of women expressing this view (p=0.741).

Discirimination in Academic Career

The survey also investigated attitudes towards gender roles and perceptions in academic careers, highlighting varying perspectives between male and female respondents (Table 4). Regarding the importance of having a female surgeon in their institution, 55.6% of men and 62.1% of women agreed, with no statistically significant difference found (p=0.217). Additionally, 85.4% of female participants emphasized the importance of having a female faculty member as a role model.

There was a clear disparity in views on the success of female lecturers. While 56.3% of female respondents stated that female lecturers are more successful in training surgical residents and students, 68.7% of male respondents disagreed (p<0.001). Similarly, 62.1% of the female respondents also expressed that women are more frequently rejected for lecturer positions, while 66.7% of men disagreed (p<0.001). Opinions on the success of female surgeons within specialized fields, such as breast-endocrine and perianal area diseases, were more aligned, with no significant differences between genders.

DISCUSSION

There are several factors contributing to women's lesser inclination to pursue a career in surgery. Female medical students and residents describe numerous barriers when considering a career in surgery, including gender prejudices, the lack of female role models, and concerns about achieving worklife balance (6,7). These issues are directly related to genderbased expectations and instances of bias, which eventually affect women's professional choices. However, gender bias often manifests in subtle and indirect ways, making it challenging to address and rectify. Creating safe spaces for open conversations remains essential, even after recognizing gender prejudice. Women in this predominantly male field consciously avoid addressing gender-related matters in order to avoid being "marked" (8). Because of their fear of being remembered as victims of discrimination, they cannot raise their voices against discrimination so as not to be labeled as "sensitive" or "complaining".

Although the number of female doctors graduating from medical schools in Türkiye has increased by approximately 50% in recent years (9), general surgery has historically been a maledominated medical specialty, as in other countries. Only 20.6% of surgical physicians in the U.S. are women, compared to 12% in the U.K. and 8.9% in South Korea (10). According to data from the Turkish Ministry of Health, as of January 1, 2024, 8.78% of general surgery specialists (410 out of 4.665) and 24% of general surgery residents (385 out of 1.604) are women (5).

This study takes the first step to explore gender discrimination in general surgery in Türkiye and focuses on the perception of gender bias by both genders throughout the careers of general surgeons. Our study shows that almost half of male surgeons think that surgery is more suitable for men and that women have more difficulty in general surgery because women are both physically weaker and more vulnerable to stress, but a strong majority of women disagree with that statement. This view may be related to gender stereotypes. In contrast to men, who are traditionally more independent, detached, and hierarchical, people perceive women as more sensitive and compassionate (11). Berg (12) explained that positive student evaluations and departmental acceptance reward traditionally feminine behavior but label stronger assertiveness as "pushy" or "bitchy". However, when male colleagues display these same assertive qualities, people view them as signs of high standards and academic rigor (12). According to Bernardi et al. (13), female surgeons revealed that the evaluation process might undervalue their contributions, attributing their success to chance rather than hard work and virtue.

Due to the male-dominated nature of general surgery, the majority of female participants (88.8%) report experiencing negative pressure from their social circles. Being in a maledominated field alone presents some challenges for female surgeons (14). Bellini et al. (15) revealed that gendered language is a contentious issue in surgery and that the most common recommendation to deal with this issue is to speak out against inappropriate language. The same study shows that women feel restricted by the surgical environment embedded in masculine discourses and make efforts to adapt to it.

Male participants in our study for the most part did not believe that female general surgeons received fewer cases, while female participants disagreed with them on this point. Even after accounting for subspecialties and seniority, Chen et al. (16) found that female surgeons receive fewer complex cases than their male colleagues. Despite performing a lower volume of cases, female surgeons have similar postoperative outcomes or slightly better ones postoperative outcomes compared to male surgeons, according to Wallis et al. (17). Vasey and Mitchell (18) stated that one of the challenges women face in the operating room is that operating equipment such as laparoscopic staplers or colonoscopes are designed for large hands and come in only one size, which might lead to difficulties for female surgeons with smaller hands. In our survey, more than half of the female respondents stated that female general surgeons are more exposed to humiliating behavior and verbal or physical harassment, while interestingly, the majority of male respondents disagreed. Other studies also support the finding that women are more likely to experience harassment. Schlick et al. (19) stated that common forms of harassment include crude, demeaning comments, unwanted sexual attention, offensive body language, and gender harassment. According to their study, the most common source of verbal harassment experienced by female residents was patients and patient relatives, while the most common source of sexual harassment was co-residents or fellows. Some studies reported that harassment is associated with severe burnout, depression, and suicidal thoughts among female surgeons (20,21). Our study showed that, despite the high prevalence of harassment, unfortunately male participants are not aware of this issue. The reason for the low visibility rate is the inadequacy of reporting due to fears of repercussions, beliefs that nothing positive will come from reporting, and discomfort in identifying as a target, phenomena mentioned in other studies (21-23). These studies suggested that the solution involves better institutional support, including formal condemnation of harassing behavior and the establishment of support groups.

In the questionnaire, 76.8% of male participants said that opportunities (training, congresses, presentations, etc.) given to individuals are gender-independent; 52.5% stated that patients trust male surgeons more; yet, 40% of male participants believed that women face positive discrimination.

This study's limitation lies in its inability to pinpoint specific areas where women face affirmative action advantages in their general surgery careers.

One of the biggest obstacles for women becoming general surgeons is the difficulty of balancing family life with a surgical career. The societal expectation that women should handle household chores doubles the workload for women in all fields of work. In our study, the marriage rate among female participants was 40.8%, and the childbearing rate was 26.2%, whereas the marriage rate among male participants was 79.8%, and the childbearing rate was 56.6%. According to Baptiste et al. (24), female surgeons are more likely to be responsible for household duties such as childcare, meal planning, and grocery shopping, which can impact their professional advancement and work-life balance. Female surgeons frequently have spouses who work full-time, which increases their family obligations and may impact their professional advancement. According to Bernardi et al. (13), male surgeons are more likely to request their spouses to make professional compromises in order to advance their own careers.

75

In this study, the average age of first childbirth for female participants was 31.72±4.00 (25-46), while the average age of first childbirth for male participants was 29.80±3.80 (20-42). In Türkiye, paternity leave is legally 10 working days, while maternity leave is 16 weeks. Additionally, the person giving birth has the right to request unpaid leave for childbirth, as long as they do not exceed the twenty-four-month period following the end date of maternity leave (25). Our study revealed an intriguing disparity regarding this issue. While a large majority of participants (73.7% of men and 89.3% of women) did not believe maternity leave for female general surgeons was unfair to colleagues, the average age of first childbirth differed significantly between sexes. Men typically have their first child during their residency, while women typically wait until after completing their residency. These findings are similar to those of another study on female otolaryngology surgeons in Türkiye. According to Eyigör et al. (26), 56.4% of female otolaryngology surgeons stated that they had their first child after their residency programs ended. In the same study, 64.9% of female surgeons had their first children after the age of 30. Baptiste et al. (24) showed that female surgeons tend to delay childbirth until completion of residency; thus, they have fewer children. The perception of pregnancy in surgical fields has a major impact on women's well-being. It was reported that female surgeons were negatively affected by male faculty members and male residents during pregnancy (27), that some female surgeons changed their fellowship preferences due to the difficulties of balancing surgery and childcare (28), and that pregnant surgical residents experienced high rates of obstetric complications and infertility (29,30).

In our study, 64% of the female participants stated that it was important for them to have a female surgeon in the institution where they worked, and 88% stated that it was important for female residents to have a female lecturer as a role model. Having a same-gender mentor creates a positive impact on female medical students and residents. These mentors have inspired them to pursue a career in surgery, encouraging them to do more research, which may even make it easier for them to rise to leadership positions later in their careers (31,32). Yorozuya et al. (33) conducted a survey among female members of the Japan Association of Women Surgeons, in which respondents stated that female mentors were easy to consult, aware of the difficulties women surgeons experience, and offered specific perspectives and role models who could provide guidance. Effective mentorship is critical for career advancement and for providing moral support to female surgeons. However, the underrepresentation of female surgeons in leadership positions restricts the availability of female role models and mentors (24,34,35). Zhuge et al. (7) suggests that the concept of the glass ceiling in surgery is a result of gender discrimination and a lack of mentorship. The glass ceiling represents barriers that prevent women from advancing to higher positions in a hierarchy, despite the fact that more women are entering traditionally male-dominated fields.

Social media is becoming increasingly important for networking and mentorship for women who may not have access to female mentors at their workplace (36). Additionally, female surgeons are using the media to challenge traditional stereotypes. Since 2015, hundreds of thousands of people have tweeted the hashtag #ILookLikeASurgeon, highlighting the diversity among surgeons beyond the stereotype of an arrogant white male. Logghe et al. (37) noted that this movement emphasizes that surgeons come from diverse genders, backgrounds, and appearances, reflecting the diversity of humanity itself.

CONCLUSION

This study shows different views of gender prejudice among male and female surgeons in general surgery. Female respondents indicated experiencing bias and underrepresentation in academic disciplines, although male and female surgeons had differing perspectives on discrimination. Both genders agreed on the difficulty of worklife balance, with a similar percentage of individuals identifying family responsibilities as an obstacle. Even though there are now more female surgeons, the survey shows that male and female surgeons continue to view gender-related issues in the field differently.

Ethics

Ethics Committee Approval: The Mersin University Clinical Research Ethics Committee approved this study, dated February 21, 2024, and numbered 2024/193.

Informed Consent: Consent to participate in the study was implied by completing the survey.

Acknowledgments

The authors would like to thank Assistant Professor Assistant Professor Ayça Özdemir for the statistical analysis of the study. The authors would also like to thank all the participants who took part in the survey.

Footnotes

Author Contributions

Concept - S.T., H.B.; Design - S.T., T.Ç., H.B.; Supervision - H.B., S.T.; Fundings - H.B., C.Ö., E.R., S.T.; Data Collection or Processing - E.R., S.T., H.B.; Analysis or Interpretation - H.B., T.Ç., S.T.; Literature Search - H.B., S.T., C.Ö.; Critical Review - H.B., T.Ç., S.T., C.Ö., E.R.; Writing - H.B., S.T., E.R.

Conflict of Interest: No conflict of interest was declared by the authors.

Financial Disclosure: The authors declared that this study received no financial support.

REFERENCES

 Lyons NB, Bernardi K, Olavarria OA, Shah P, Dhanani N, Loor M, et al. Gender disparity among American Medicine and Surgery Physicians: A systematic review. Am J Med Sci. 2021;361:151-168.

- 2. Lim WH, Wong C, Jain SR, Ng CH, Tai CH, Devi MK, et al. The unspoken reality of gender bias in surgery: A qualitative systematic review. PLoS One. 2021;16:e0246420.
- 3. Giantini Larsen AM, Pories S, Parangi S, Robertson FC. Barriers to pursuing a career in surgery: An Institutional Survey of Harvard Medical School Students. Ann Surg. 2021;273:1120-1126.
- Fassiotto M, Li J, Maldonado Y, Kothary N. Female surgeons as counter stereotype: The impact of gender perceptions on trainee evaluations of physician faculty. J Surg Educ. 2018;75:1140-1148.
- 5. The Turkish Ministry of Health. The CIMER information acquisition platform. [Internet] [Cited 1 Jan 2024]. Available from: https://www.cimer.gov.tr/
- 6. Park J, Minor S, Taylor RA, Vikis E, Poenaru D. Why are women deterred from general surgery training? Am J Surg. 2005;190:141-146.
- Zhuge Y, Kaufman J, Simeone DM, Chen H, Velazquez OC. Is there still a glass ceiling for women in academic surgery? Ann Surg. 2011;253:637-643.
- Webster F, Rice K, Christian J, Seemann N, Baxter N, Moulton CA, et al. The erasure of gender in academic surgery: a qualitative study. Am J Surg. 2016;212:559-565.
- 9. Kuzuca İG, Arda B. What can we say about gender discrimination in medicine? A limited research from Turkey. Ankara Üniversitesi Tıp Fakültesi Mecmuası. 2010;63:1-8.
- Choi J, Lee JE, Choi B, Kim J, Lee SE. Experiences and perceptions of gender discrimination and equality among Korean Surgeons: Results of a survey of the Korean Surgical Society. J Korean Med Sci. 2021;36:e323.
- 11. Kinder BK. Women and men as surgeons: are the problems really different? Curr Surg. 1985;42:100-104.
- 12. Berg LD. Gender equity asboundary object': or the same old sex and power in geography all over again?(Focus: equity for women in geography). The Canadian Geographer. 2002;46:248-255.
- Bernardi K, Shah P, Lyons NB, Olavarria OA, Alawadi ZM, Leal IM, et al. Perceptions on gender disparity in surgery and surgical leadership: A multicenter mixed methods study. Surgery. 2020;167:743-750.
- Ross SB, Jadick MF, Spence J, DeReus H, Sucandy I, Rosemurgy AS. Men surgeons' perceptions of women surgeons: is there a bias against women in surgery? Surg Endosc. 2020;34:5122-5131.
- 15. Bellini MI, Graham Y, Hayes C, Zakeri R, Parks R, Papalois V. A woman's place is in theatre: women's perceptions and experiences of working in surgery from the Association of Surgeons of Great Britain and Ireland women in surgery working group. BMJ Open. 2019;9:e024349.
- Chen YW, Westfal ML, Chang DC, Kelleher CM. Contribution of unequal new patient referrals to female surgeon under-employment. Am J Surg. 2021;222:746-750.
- Wallis CJ, Ravi B, Coburn N, Nam RK, Detsky AS, Satkunasivam R. Comparison of postoperative outcomes among patients treated by male and female surgeons: a population based matched cohort study. BMJ. 2017;359:j4366.
- 18. Vasey CE, Mitchell RA. Gender perceptions in surgery: is it really a level playing field? ANZ J Surg. 2015;85:898-901.
- Schlick CJR, Ellis RJ, Etkin CD, Greenberg CC, Greenberg JA, Turner PL, et al. Experiences of gender discrimination and sexual harassment among residents in general surgery programs across the US. JAMA Surg. 2021;156:942-952.
- 20. Malik MA, Inam H, Martins RS, Janjua MBN, Zahid N, Khan S, et al. Workplace mistreatment and mental health in female surgeons in Pakistan. BJS Open. 2021;5:zrab041.
- Hu YY, Ellis RJ, Hewitt DB, Yang AD, Cheung EO, Moskowitz JT, et al. Discrimination, abuse, harassment, and burnout in surgical residency training. N Engl J Med. 2019;381:1741-1752.

- 22. Smeds MR, Aulivola B. Gender disparity and sexual harassment in vascular surgery practices. J Vasc Surg. 2020;72:692-699.
- 23. McKinley SK, Parangi S. Addressing sexual harassment in surgical training. Ann Surg. 2020;271:614-615.
- 24. Baptiste D, Fecher AM, Dolejs SC, Yoder J, Schmidt CM, Couch ME, et al. Gender differences in academic surgery, work-life balance, and satisfaction. J Surg Res. 2017;218:99-107.
- 25. Paragraph (A) of Article 104 of Law No. 657 of the Republic of Turkey as amended by Law No. 6663 dated 29/1/2016.
- Eyigör H, Can İH, İncesulu A, Şenol Y. Women in otolaryngology in Turkey: Insight of gender equality, career development and work-life balance. Am J Otolaryngol. 2020;41:102305.
- 27. Turner PL, Lumpkins K, Gabre J, Lin MJ, Liu X, Terrin M. Pregnancy among women surgeons: trends over time. Arch Surg. 2012;147:474-479.
- 28. Rangel EL, Lyu H, Haider AH, Castillo-Angeles M, Doherty GM, Smink DS. Factors associated with residency and career dissatisfaction in childbearing surgical residents. JAMA Surg. 2018;153:1004-1011.
- 29. Phillips EA, Nimeh T, Braga J, Lerner LB. Does a surgical career affect a woman's childbearing and fertility? A report on pregnancy and fertility trends among female surgeons. J Am Coll Surg. 2014;219:944-950.
- 30. Rangel EL, Castillo-Angeles M, Easter SR, Atkinson RB, Gosain A, Hu YY, et al. Incidence of infertility and pregnancy complications in US female surgeons. JAMA Surg. 2021;156:905-915. Erratum in: JAMA Surg. 2021;156:991.

- 31. Mahendran GN, Walker ER, Bennett M, Chen AY. Qualitative study of mentorship for women and minorities in surgery. J Am Coll Surg. 2022;234:253-261.
- Oppenheimer-Velez M, Sims C, Labiner H, Baxter N, Kozar R, McCoy J, et al. Women empowering women: Assessing the American College of Surgeons Women in Surgery Committee Mentorship Program. J Am Coll Surg. 2022;235:375-381.
- Yorozuya K, Kawase K, Akashi-Tanaka S, Kanbayashi C, Nomura S, Tomizawa Y. Mentorship as experienced by women surgeons in Japan. World J Surg. 2016;40:38-44.
- 34. Ferrari L, Mari V, Parini S, Capelli G, Tacconi G, Chessa A, et al. Discrimination toward women in surgery: A systematic scoping review. Ann Surg. 2022;276:1-8.
- 35. Kass RB, Souba WW, Thorndyke LE. Challenges confronting female surgical leaders: overcoming the barriers. J Surg Res. 2006;132:179-187.
- 36. Luc JGY, Stamp NL, Antonoff MB. Social media in the mentorship and networking of physicians: Important role for women in surgical specialties. Am J Surg. 2018;215:752-760.
- Logghe H, Jones C, McCoubrey A, Fitzgerald E. #ILookLikeASurgeon: embracing diversity to improve patient outcomes. BMJ. 2017;359:j4653.