

## DO CANADIAN FEMALE SURGEONS FEEL DISCRIMINATED AGAINST AS WOMEN?

Lorraine E. Ferris, PhD, CPsych; Susan E. Mackinnon, MD, FRCSC; Cynthia L. Mizgala, MD, FRCSC;  
Irene McNeill, BSc (Pharm)

### Abstract • Résumé

**Objective:** To describe female surgeons' perceptions of discrimination against them as women during the selection and training process and in career development and advancement, and to describe trends over time.

**Design:** Population survey of practising Canadian female surgeons.

**Setting:** Canada.

**Participants:** All 459 female members in good standing of the Royal College of Physicians and Surgeons of Canada or the Corporation professionnelle des médecins du Québec, or both, practising in Canada as of March 1990. Participants completed a survey between March 1990 and May 1992; the response rate was 91% (419/459).

**Outcome measures:** Reported levels of discrimination during selection and training and in career development and advancement, institutional policies on maternity leave and job sharing, and the existence of female role models or mentors.

**Results:** Discrimination during the process of selection for residency was reported by 15% (63/413) of the respondents. Just over half of the respondents (206/405) reported male attending staff as being discriminatory during training, and 41% (168/407) reported nursing staff as being discriminatory. Almost half of the respondents (199/408) indicated that discrimination did not hinder their career development or advancement at all, and 29% (118) indicated that it had little effect. Almost two thirds (245/381) reported no maternity leave policies during residency or practice, and 78% (296/379) reported having no job-sharing opportunities. Although 82% (338/413) agreed that female medical students need female role models, 80% (330/415) reported they did not have a female mentor.

**Conclusions:** Although most of our respondents perceived no discrimination in their selection for residency and reported that discrimination did not hinder their career development or advancement, the perception of discrimination during surgical training suggests that there needs to be a concentrated effort to identify and address problems. Moreover, since few respondents reported having institutional policies on maternity leave and job-sharing or female mentors, these issues need to be examined.

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**Objectif :** Décrire les perceptions que les chirurgiennes ont de la discrimination dont elles sont la cible comme femmes à l'égard de la sélection et de la formation, de l'évolution de leur carrière et de leur avancement, et décrire les tendances dans le temps.

**Conception :** Sondage démographique auprès des chirurgiennes actives au Canada.

**Contexte :** Canada.

**Participant(e)s :** Les 459 femmes membres en règle du Collège royal des médecins et chirurgiens du Canada ou de la Corporation professionnelle des médecins du Québec, ou des deux, qui pratiquaient au Canada en mars 1990. Les participantes ont répondu à un questionnaire de sondage entre mars 1990 et mai 1992 et le taux de réponse s'est établi à 91 % (419/459).

**Mesures des résultats :** Niveaux signalés de discrimination à l'égard de la sélection et de la formation, de l'évolution de leur carrière et de leur avancement, politiques des établissements sur les congés de maternité et le partage des emplois, et existence d'exemples ou de mentors féminins.

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*Dr. Ferris is in the Department of Behavioural Science, Faculty of Medicine, University of Toronto, and the Clinical Epidemiology Unit, Sunnybrook Health Science Centre, Toronto, Ont.; Dr. Mackinnon is in the Division of Plastic Surgery, Department of Surgery, Washington University School of Medicine, St. Louis, Mo.; Dr. Mizgala is in the Section of Plastic Surgery, Department of Surgery, Ochsner Medical Institutions, New Orleans, La.; and Ms. McNeill is with the Clinical Epidemiology Unit, Sunnybrook Health Science Centre, Toronto, Ont.*

**Reprint requests to:** Dr. Lorraine E. Ferris, Clinical Epidemiology Unit, Sunnybrook Health Science Centre, 2075 Bayview Ave., North York ON M2N 3M5; fax 416 480-6048

**Résultats :** Parmi les répondantes, 15 % (63/413) ont fait état de discrimination au cours du processus de sélection pour la résidence. Un peu plus de la moitié des répondantes (206/405) ont signalé avoir été la cible de discrimination par le personnel traitant masculin au cours de la formation et 41 % (168/407) ont déclaré que le personnel infirmier se livrait à de la discrimination. Presque la moitié des répondantes (199/408) ont indiqué que la discrimination n'a pas nui du tout à l'évolution de leur carrière ou à leur avancement et 29 % (118) ont indiqué qu'elle avait eu peu d'effet. Presque les deux tiers (245/381) ont signalé qu'il n'y avait pas de politique sur les congés de maternité pendant qu'elles étaient résidentes ou qu'elles pratiquaient et 78 % (296/379) ont signalé n'avoir aucune possibilité de partage des emplois. Même si 82 % (338/413) ont convenu que les étudiantes en médecine ont besoin d'exemples féminins, 80 % (330/415) ont signalé n'avoir aucun mentor féminin.

**Conclusions :** Même si la plupart de nos répondantes n'ont pas perçu de discrimination pendant le processus de sélection pour la résidence et ont signalé que la discrimination n'a pas nui à leur plan de carrière ou à leur avancement, la discrimination perçue au cours de la formation en chirurgie indique qu'un effort concentré s'impose pour définir et régler les problèmes. De plus, comme peu de répondantes ont signalé avoir un mentor féminin ou que leur établissement avait des politiques sur les congés de maternité et sur le partage des emplois, il faut se pencher sur ces questions.

Surgery has been criticized for its discouragement of women who wish to practise in its specialties.<sup>1</sup> Despite the increased numbers of women in medicine in Canada,<sup>2</sup> the number of women entering surgery has not increased greatly. One early study showed that male physicians recommended child psychiatry and anesthesiology as being the most suitable specialties for women, with urology, orthopedics, neurosurgery and general surgery being the least suitable.<sup>3</sup> Female medical graduates still tend to be directed toward primary care specialties,<sup>4,5</sup> and, if specialty trained, they tend to cluster in several nonsurgical fields, such as psychiatry, pathology, anesthesiology, pediatrics, physical medicine and rehabilitation, and preventive medicine.<sup>1</sup>

The reasons for the disparity in the number of women entering surgical careers may be varied. One possible deterrent is a perceived notion that the practice of surgery is incompatible with personal and family goals. However, several investigators have reported that women either do not consider lifestyle issues or consider them to the same extent as do men when deciding on surgical careers.<sup>6,7</sup> In spite of the challenges of this demanding specialty, we found that Canadian female surgeons report a high degree of satisfaction with their family lives, friendships and marriages and rate themselves as happy overall.<sup>8</sup> We also found that they are likely to be married, to have at least one child, to be active in surgical practice and to be happy with their decision to pursue a career in surgery.<sup>9,10</sup>

Another possible reason for the difference in male:female ratios of surgeons may be related to discrimination on the basis of sex. This may be direct discrimination, such as blocking selection and advancement, or indirect discrimination, whereby women are discouraged from entering the specialty because of issues such as maternity leave, job-sharing policies and mentorship.

Anecdotal reports suggest that women are being actively discouraged from applying to surgical programs,<sup>11</sup>

are sexually harassed,<sup>12-14</sup> experience financial discrimination<sup>15</sup> and are underrepresented in the hierarchy,<sup>15</sup> including higher academic ranks.<sup>16-20</sup> A study of female medical students at Oxford University showed that although 17% reported positive encouragement from medical staff to pursue a surgical career, the remainder reported that they had been actively discouraged.<sup>1</sup>

There are reports concerning the lack of maternity leave benefits.<sup>21,22</sup> A survey of the specialty boards in the United States showed that most had some maternity leave (or sick leave that may be applied to maternity leave) for their residents: obstetrics and gynecology, otolaryngology and orthopedics provided 6 weeks per year; plastic surgery, surgery and ophthalmology provided 4 weeks per year; and neurosurgery had no policy.<sup>23</sup> There was no information available on the remaining specialties. As stated by Bickel,<sup>24</sup> "a program without a well-drawn policy will increasingly find itself at a competitive disadvantage in attracting women residents."

Last, there have been reports of the unavailability of mentors and role models for women wishing to pursue surgical specialties. It has been suggested that women's medical careers are hindered by their not having access to powerful mentors.<sup>25,26</sup> Although some research suggests that high-ranking male mentors are less effective career sponsors for women than female mentors,<sup>27</sup> other evidence suggests that these role models need not be female.<sup>28</sup> In fact, there is evidence that the most helpful mentors are male<sup>27,29</sup> and that the best role models may be of either sex.<sup>30</sup>

Between March 1990 and May 1992 we conducted a cross-sectional national population survey of female surgeons practising in Canada, looking at professional practice patterns, personal history and quality-of-life issues. An overview of the epidemiologic results of the survey and reports on quality of life and lifestyle have been published elsewhere.<sup>8-10</sup> In this article we describe the perceptions of these surgeons with respect to discrimina-

tion. Since discrimination and perceptions of it may have changed over time, we examined trends by grouping the data by year of graduation. For the purposes of this study we defined discrimination as the perception that female surgeons face prejudice because of being women. We did not focus on any other causes of discrimination, such as age or ethnic background.

The questions we sought to answer were the following: (a) Do female surgeons report discrimination during the selection and training process, and are there differences in these reports by year of graduation from medical school or surgical specialty? (b) Do female surgeons report that discrimination hinders their career advancement? (c) Are maternity leave policies and job-sharing programs available for women in surgical specialties? and (d) Do female surgeons believe that female medical students need female role models?

## METHODS

### SAMPLE SELECTION

We examined the listings of the divisions of surgery in the Royal College of Physicians and Surgeons of Canada and the Corporation professionnelle des médecins du Québec to identify all female members who were listed as residing and practising in Canada and who were members in good standing as of March 1990. (Over 90% of those certified in a surgical specialty in Canada become fellows of one of these colleges.) The total number of such members was 506.

### QUESTIONNAIRE

The questions regarding discrimination were part of a 93-item questionnaire focusing on medical education and training, surgical specialty, professional productivity, personal history (e.g., age, marriage, and parenting and child-care issues), institutional policies on maternity leave, perception of discrimination on the basis of sex, satisfaction with career and family life, and overall quality of life. Several questions were formulated based on the findings of an earlier survey exploring how women in academic medicine balanced career and family responsibilities.<sup>8</sup> We examined the survey for face and content validity in a pilot study.<sup>9</sup> The goal of the pilot study was to ensure that the content was comprehensive and relevant and that the questions and instructions were clear. We then revised the questionnaire based on the feedback. (A copy of the questionnaire is available from the corresponding author on request.)

We included questions concerning the availability of maternity leave, job sharing, and role models or mentors. Questions about discrimination included the re-

spondents' perceptions of discrimination against them as women during the process of selection and training in surgery as well as discrimination during career development and advancement. The respondents were asked to rate how much the discrimination bothered them on a scale of 1 (very little) to 5 (a great deal). The scores were averaged over the population to produce a mean score reflecting the extent of perturbation.

All the questions but two directly inquired about the possibility of discrimination. As an indirect indicator of possible discrimination during the selection process, we asked the respondents whether they had received their first choice of internship and residency. We recognize that many candidates do not receive their first choice for a host of reasons, and discrimination may not be a primary cause. However, we included this question because we felt that it would not be subject to recall bias and that the failure of our respondents as a group not to receive their first choices may be indicative of discrimination. We also asked the respondents whether, when they were senior residents, junior residents treated them differently than they treated male senior residents. We wanted to see whether more respondents answered Yes to this question than to questions that used the term "discrimination" directly.

### SURVEY PROCEDURE

We used a modified Dillman five-step method<sup>31</sup> to optimize the response rate. First, all eligible participants were mailed a package consisting of a letter of introduction, a copy of the questionnaire, a return envelope and a sheet addressed to the investigators and labelled with the respondent's name and address to be returned if she wished to be apprised of the study's findings. Respondents were identified by a code on the questionnaire. In subsequent weeks nonrespondents were sent a reminder letter and were sent full participant packages again 2 weeks later if they still had not replied. Finally, any remaining nonrespondents were telephoned to see whether they had any questions or comments, and an appeal was made for their participation.

Of the 506 women identified in the college listings we were able to locate 459. Since current office addresses are necessary to practise, we can assume that this represented 100% of practising female surgeons in Canada and 90.7% of the total population. Of the 459, 419 responded, for a response rate of 91.3%.

### ANALYSIS

We wanted to examine whether more recent medical school graduates had different experiences from those who had graduated earlier. We grouped the respondents

into five cohorts based on the year of graduation: before 1971, 1971–75, 1976–80, 1981–85 and after 1985. For the purpose of analysis four categories of surgical specialties were recognized: general surgery (excluding its subspecialties), obstetrics and gynecology, ophthalmology and other. "Other" included cardiovascular and thoracic surgery, colorectal surgery, neurosurgery, orthopedic surgery, otolaryngology, plastic surgery, urology and vascular surgery. The data on discrimination in selection and training were treated as categorical data, and descriptive statistics were used to summarize them. We developed contingency tables to examine whether there were differences in discrimination by year of graduation. We used the  $\chi^2$  test to test the null hypothesis of no statistically significant differences in reports of discrimination between the various cohorts, considering *p* values of less than 0.05 as significant.

## RESULTS

### CHARACTERISTICS OF THE RESPONDENTS

The largest specialties of practice were obstetrics and gynecology (172 respondents [41%]), ophthalmology (88 [21%]), general surgery (50 [12%]), plastic surgery (29 [7%]), otolaryngology (21 [5%]), orthopedic surgery (17 [4%]), cardiovascular and thoracic surgery (13 [3%]), colorectal surgery (13 [3%]), vascular surgery (8 [2%]), neurosurgery (4 [1%]) and urology (4 [1%]). The "other" category thus consisted of 109 women (26%).

Of the 419 respondents 48 graduated before 1971, 31 in 1971–75, 60 in 1976–80, 132 in 1981–85 and 142 after 1985; 6 respondents did not provide this information. Most of the respondents were 31 to 40 years of age (63%), were married or in a common-law relationship (71%), had at least one child (56%), were in full-time practice (82%), had some university affiliation (58%) and graduated after 1980 (66%). Table 1 presents selected demographic information.

### DISCRIMINATION DURING SELECTION AND TRAINING

A total of 89% (369/415) of the respondents reported being accepted into their first choice of internship and 88% (367/415) into their first choice of residency. Among those who graduated before 1971, 70% (33/47) were accepted into their first choice of residency, as compared with 89% (127/142) of those who graduated after 1985, with the zenith occurring in the decade 1976–85 (96% [185/192]) ( $\chi^2 = 33.99$ , 4 degrees of freedom [df], *p* < 0.0001). This trend was most prevalent in obstetrics and gynecology (68% [19/28] before 1971 v. 100% [52/52] after 1985). The "other" specialties also showed

this trend (60% [3/5] and 93% [25/27] respectively).

When asked whether they perceived discrimination during the process of selection for residency, 76% of the respondents answered "No." Of the 15% who answered "Yes" most (41%) were in obstetrics and gynecology. There was a steady drop over time in the proportion of respondents who answered "Yes," from 26% (12/47) of those who graduated before 1971 to 13% (19/142) of those who graduated after 1985 ( $\chi^2 = 22.35$ , 8 df, *p* = 0.004).

Table 2 shows the number of respondents reporting discrimination by specific groups of people with whom they interacted as surgical trainees. The groups reported to have been discriminatory by the highest proportions of respondents were male attending staff (51% of the respondents) and nursing staff (41%). There were no significant trends over time except for growing perceptions of discrimination by nursing staff (15% [7/48] of the respondents who graduated before 1971 v. 49% [69/142] of those who graduated after 1985) ( $\chi^2 = 16.14$ , 8 df, *p* = 0.04).

### DISCRIMINATION DURING CAREER DEVELOPMENT AND ADVANCEMENT

When asked whether discrimination against them as women had hindered their career development or advancement 199 (49%) of the 408 respondents who answered this question stated "not at all," 118 (29%) "a little," 43 (11%) "a fair amount," 18 (4%) "a great deal" and 7 (2%) "a very great deal"; 23 (6%) were uncertain. These proportions did not vary over time or by specialty.

Of the 200 respondents with academic rank 4 (2%) were full professors, 30 (15%) associate professors, 90

Table 1: Demographic characteristics of female surgeons practising in Canada in 1990–92

Characteristic	No. (and %) of respondents*
<b>Marital status</b>	<i>n</i> = 418
Single	89 (21)
Common-law	21 (5)
Married	274 (65)
Separated or divorced	27 (6)
Widowed	7 (2)
<b>No. of marriages</b>	<i>n</i> = 274
1	252 (92)
2	20 (7)
≥ 3	2 (1)
Mean age at medical school graduation, yr	24.9
Mean age at completion of residency, yr	30.9

\*Unless otherwise stated.

(45%) assistant professors, 32 (16%) lecturers, 30 (15%) instructors and 12 (6%) "other." The four full professors were in obstetrics and gynecology and in ophthalmology. Twice as many associate professors were in general surgery and "other" specialties. There were no differences in the numbers of full professors or associate professors by decade of graduation (before 1971, 1971–80 or 1981–90). More of the assistant professors finished training after 1985 than in 1985 or earlier.

#### AVAILABILITY OF MATERNITY LEAVE AND JOB SHARING

Of the 381 respondents who answered the question regarding the availability of formal maternity leave policies during residency or practice 245 (64%) said they were unavailable, 57 (15%) said they were available, 13 (3%) said some institutions had such policies, and 66 (17%) were uncertain. The proportions of respondents indicating that such policies were available did not vary among the specialties. The availability of maternity leave policies increased over time: only 8% (5/64) of the respondents who graduated before 1976 reported such policies, as compared with 20% (26/132) of those who graduated after 1985.

When asked whether their institutions provided opportunities for faculty or residents to share jobs, 296 (78%) of the 379 respondents who answered this question responded "No," 23 (6%) "Yes" and 15 (4%) "some institutions"; 45 (12%) were uncertain. Those most likely to have job-sharing opportunities were obstetrician/gynecologists (8% [14/166]).

#### AVAILABILITY OF ROLE MODELS AND MENTORS

When asked whether they agreed that female medical students need role models of successful female faculty members, 168 (41%) of the 413 respondents who answered this question strongly agreed, 170 (41%) agreed, 52 (13%) were neutral, 17 (4%) disagreed and 4 (1%) strongly disagreed; 2 (0.5%) were uncertain. Of the 168 who strongly agreed 12 (7%) graduated before 1971, 11 (7%) in 1971–75, 20 (12%) in 1976–80, 57 (34%) in 1981–85 and 65 (39%) after 1985; 3 (2%) did not indicate their year of graduation.

A total of 20% (85/415) of the respondents indicated that they had had a female mentor or role model. Of the 85, 41 (48%) were obstetrician/gynecologists, 24 (28%) ophthalmologists, 13 (15%) general surgeons and 7 (8%) other specialists ( $\chi^2 = 9.4$ , 3 df,  $p = 0.02$ ). The mentor was a surgeon for 84% (70/83). Specifically, the mentor was a surgeon for 90% (9/10) of the general surgeons, 90% (37/41) of the obstetrician/gynecologists, 68% (17/25) of the ophthalmologists and all 7 of the other specialists.

#### DISCUSSION

Most of the respondents in our study did not report being particularly discriminated against as women in the selection process (and any perceptions of discrimination decreased among more recent graduates), and most reported that their careers were not hindered as a result of discrimination. It was during training that there were increased re-

Table 2: Number of respondents who felt that they were discriminated against as women by various groups during training

Group	No. (and %) of respondents; response			Mean perturbation score* (and standard deviation)
	Yes	No	Uncertain	
Male attending staff (n = 405)	206 (50.9)	184 (45.4)	15 (3.7)	2.75 (1.28)
Nursing staff (n = 407)	168 (41.3)	225 (55.3)	14 (3.4)	2.76 (1.32)
Male house staff (n = 401)	142 (35.4)	240 (59.8)	19 (4.7)	2.41 (1.17)
Patients (n = 407)	113 (27.8)	284 (69.8)	10 (2.4)	1.94 (1.15)
Hospital support staff (n = 407)	61 (15.0)	325 (79.8)	21 (5.2)	2.23 (1.30)
Female attending staff (n = 384)	45 (11.7)	325 (84.6)	14 (3.6)	2.47 (1.34)
Medical students (n = 410)	46 (11.2)	345 (84.1)	19 (4.6)	2.09 (1.15)
Female house staff (n = 402)	38 (9.4)	344 (85.6)	20 (5.0)	2.55 (1.31)

\*Extent to which perceived discrimination bothered the respondent; 1 = very little, 5 = a great deal.

ports of discrimination, and these reports were quite specific. Few respondents reported discrimination by female attending staff, female house staff or hospital support staff, but the numbers increased when asked about male attending staff, nursing staff and male house staff. This circumstance did not change much over time except for increasing perceptions of discrimination by nursing staff. Overall, 25% of our respondents reported some discrimination during training. This rate is lower than that reported by other investigators.<sup>32,33</sup> Interestingly, 70% of our respondents indicated that patients did not discriminate against them as women. The perceived discrimination was reported to be only moderately bothersome, and this response was relatively uniform regardless of the source of discrimination. The respondents reported discrimination regardless of whether we used the actual term "discrimination" or asked the question indirectly (i.e., being treated differently).

Most of our respondents did not report that discrimination had hindered their career development or advancement. Despite this encouraging finding, one ought not to ignore the fact that 17% did feel that discrimination had hindered their career development or advancement at least a fair amount. Our findings do not concur with earlier reports that discrimination against women has resulted in delay in advancement in academic rank.<sup>16-20</sup> In an earlier paper we reported that 78% of this population had 5 or fewer reported peer-reviewed publications, 14% had 6 to 15 publications, 5% had 16 to 25 publications and 4% had over 25 publications.<sup>9</sup> Hence, it is possible that our respondents are in the relatively early stages of their careers, which suggests that they have not yet attempted to move forward in academic rank.

Several authors have described the difficulties faced by pregnant physicians.<sup>34-38</sup> In addition to the physician herself, the pregnancy may affect departments, colleagues and, in some specialties, patients.<sup>39-45</sup> Given these problems and the fact that the numbers of women are increasing in all fields of medicine, careful thought ought to be given to establishing maternity leave policies that take into account the needs of all these parties. Yet, our respondents reported that very little attention has been paid to this issue in surgical training programs.

The vast majority of women in our study believed that female medical students need role models of successful female faculty members. The availability of mentors and role models for women wishing to pursue surgical specialties may improve the training environment. We did not ask about the availability of male mentors; in retrospect, this information may have been important.

#### STUDY LIMITATIONS

There may have been differences between the respondents and the nonrespondents. However, since

90.7% of the entire population of Canadian female surgeons (and 100% of those currently practising) were invited to participate, and since the response rate was high (91.3%), we can assume that response bias was minimal.

We surveyed only women who had succeeded in becoming surgeons and who had remained in the profession. It would have been interesting to have included women who were unsuccessful or who were currently in training. Future research could focus on women in training and those who have left the field to see whether their perceptions of discrimination are different from those of our group of practising surgeons. Also, we believe it would be important to survey both women and men, especially if those in training, practising or having left the specialty or medicine are included.

We examined the respondents' perceptions of discrimination; we did not attempt to collect information on the actual situations. Consequently, actual discrimination may have been overreported or underreported. Also, we did not examine what types of discrimination existed or the forms it took. There may have been a bias in our respondents' personal definitions of discrimination, and one could speculate that this perception varies by year of graduation, since expectations may have changed over time.

#### CONCLUSIONS

We found fewer reports of discrimination than we had expected. Canadian female surgeons perceive less discrimination during the selection for training and once they have become surgeons than they do during the training period. Our findings suggest that more attention needs to be paid to issues of discrimination during training and to issues of maternity leave, job sharing and mentorship programs.

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