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ORIGINAL RESEARCH

The pregnant female surgical resident

Vanessa Shifflette[1]
Susannah Hambright[2]
Joseph Darryl Amos[1]
Ernest Dunn[3]
Maria Allo[4]

[1]Associates in Surgical Acute Care, Methodist Dallas Medical Center, Dallas, TX, USA; [2]Methodist Surgical Associates, Methodist Dallas Medical Center, Dallas, TX, USA; [3]Graduate Medical Education - General Surgery, Methodist Dallas Medical Center, Dallas, TX, USA; [4]Santa Clara Valley Medical Center, San Jose, CA, USA

Background: Surgery continues to be an intense, time-consuming residency. Many medical students decide against surgery as a profession due to the long work hours and family strain. The pregnant female surgical resident has an added stress factor compared to her male counterpart.
Methods: We distributed an electronic, online 26-question survey to 32 general surgery programs in the southwestern region of the United States. Each program distributed our survey to the female surgical residents who had been pregnant during residency in the last 5 years. Each program was re-contacted 6 weeks after the initial contact. Most questions were in a 5-point Likert scale format. The responses were collected and analyzed using the Survey Monkey website.
Results: An unvalidated survey was sent to 32 general surgery programs and 26 programs responded (81%). Each program was asked for the total number of possible responses from female residents that met our criteria (60 female residents). Seven of the programs (27%) stated that they have had zero residents pregnant. We had 22 residents respond (37%). Over half of the residents (55%) were pregnant during their 2nd or 3rd year of residency, with only 18% pregnant during a research year. Thirty-one percent had a lower American Board of Surgery In-Training Exam (ABSITE) score. Ninety percent of the residents were able to take 4 weeks or more for maternity leave. Most of the residents (95%) stated that they would do this again during residency given the opportunity, but many of the residents felt that returning back to work with a child at home was the most difficult part.
Conclusion: Our preliminary study shows that the programs surveyed were accommodating to the female surgical resident. Nevertheless, despite adequate support from their program and an overall positive experience, many residents indicated that they had a decline in their education and performance.
Keywords: surgical resident, pregnant, medical education, maternity leave, graduate medical education

Introduction

A general surgery residency is intense and time-consuming. The long hours and the strains it places on family life often deter medical students, especially women, from choosing it as a profession. Over the last few decades, the percentage of women graduating from United States medical schools has exponentially increased. The Association of American Medical Colleges (AAMC) published a report showing 48.3% of the graduating medical students in the 2009–2010 class were women.[1] This is a marked increase when compared with the 1970–1971 class where only 9.2% of the graduates were women (Table 1).[1] Despite the increase in women graduating from medical school, there has not been a proportional increase in the number of women choosing general surgery residencies.

Correspondence: Vanessa Shifflette
Associates in Surgical Acute Care,
221 W. Colorado Blvd #425, Dallas,
TX 75208, USA
Email vkshifflette@gmail.com

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As reported by AAMC, 4.5% of all women residents in the 1999–2000 academic year were in a general surgery residency program. This percentage only increased to 5.4% in the 2009–2010 academic year.[1] Therefore, women continue to be a minority among general surgery residents. With few women in surgery, the topics of pregnancy and childbearing continue to be extremely sensitive. However, graduate medical programs of all specialties, including general surgery, are seeing more pregnant female residents, and often there are no defined guidelines for dealing with this complex situation. Many physicians who became pregnant during their training felt negative influences from their peers and faculty.[2] Maternity leave continues to be poorly defined and unrealistically short. The current American Board of Surgery (ABS) leave policy on applicants for general surgery certification requires no fewer than 48 weeks of full-time experience in each residency year. This accounts for no more than 4 weeks of time off allowed per year. For documented medical problems or maternity leave, the ABS will accept 4–6 weeks of training in one of the first 3 years of residency and 4–6 weeks of training in one of the last 2 years.[3] This exception will allow for an additional 2 weeks off if granted permission by the ABS. If the resident requires more time off than allotted, the resident may extend their residency by a few months, but this time is usually unpaid and not covered by insurance. With the increasing number of women residents, pregnancy has been an issue general surgery programs deal with every year. There is minimal evidence in current literature detailing the experience of pregnancy among the women surgical residents both in the US and internationally.[4] Our study attempts to show the impact that pregnancy has on the female resident and the general surgical program.

Methods

We distributed an electronic, on-line 26-question unvalidated survey to 32 general surgery programs in the southwestern region. After review by the Methodist Clinical Research Institute, the project was deemed to be Quality Improvement which did not require institutional review board approval or oversight, or participant consent. A convenience sample of the Southwest Surgical Congress was conducted with a survey link was emailed to the program directors and coordinators. Given the anonymity of the survey, ethical approval was not required. Each program was also contacted by telephone. We asked each program to distribute our survey to the female surgical residents who had been pregnant during residency in the last 5 years. Each program was re-contacted 6 weeks after the initial contact. Most questions were in a 5-point Likert scale format. The responses were anonymously collected and analyzed using the Survey Monkey website.

Table 1 Women in medical school

Academic year	Applicants	Accepted applicants	Graduates
1965–1966	9.0%	8.9%	6.9%
1985–1986	35.1%	34.0%	30.8%
2000–2001	46.6%	45.8%	43.2%
2009–2010	47.9%	47.9%	78.3%

Note: Data obtained from the Association of American Medical Colleges (AAMC) website. Additional years are available at: https://www.aamc.org/members/gwims/statistics. © 2016 AAMC. May not be reproduced without permission.[22]

Results

The surveys were sent to 32 general surgery programs and 26 programs responded (81%). Each program was asked for the total number of possible responses from female residents that met our criteria (60 female residents). Seven of the programs (27%) stated that they did not have any pregnant residents. We had a 37% response rate (22 residents). Over half of the residents (55%) were pregnant during their 2nd or 3rd year of residency, with only 18% (4) pregnant during a research year (Figure 1). The majority of the residents missed elective rotations. Ninety percent of the program directors were accommodating. Most of the teaching faculty surgeons were very understanding (55%) and continued to educate (81%). However, 24% (5) of the residents stated that the faculty actually performed fewer operations with them. Half of the residents felt that their medical knowledge and technical skills fell behind that of their fellow residents. Thirty-one percent had a lower American Board of Surgery In-Training Exam (ABSITE) score. Twenty-five percent had a 10% drop in ABSITE score, while 6% showed a greater than 20% drop (Figure 2). Ninety percent of the residents had 4 weeks or more of maternity leave. Total time for maternity leave was 2, 4, 6, 8 and 10 weeks, in 10%, 30%, 30%, 20%, and 10%

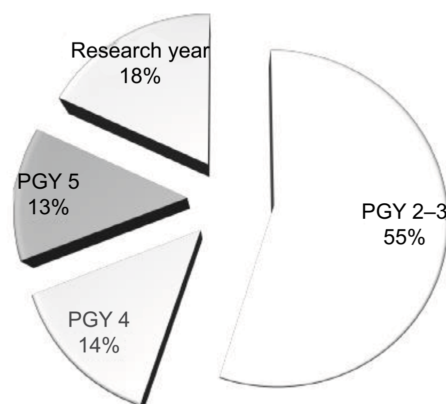

Figure 1 Postgraduate year of pregnancy.
Abbreviation: PGY, postgraduate year.

respectively (Figure 3). Eighty-three percent (15) of the residents had no extension of their residency training. However, 11% (2) had an additional 8 weeks and 6% (1) added 6 weeks. Most of the residents (95%) stated that they would become parents again during residency given the opportunity, but many of the residents felt that returning back to work with a child at home posed the greatest difficulty.

Discussion

No one would argue that surgery continues to remain a male-dominated profession.[5] With the increasing female presence in medical schools, a change needs to occur to increase the recruitment of women into surgery. Surgery has notoriously been a competitive residency, and to continue to attract the most capable and talented medical students, programs need to appeal to a diverse medical student body and specifically women. A survey by Novielli et al showed that a larger percentage of women starting medical school were less interested in a surgical discipline than men and were less likely to develop interest in surgery during medical school.[6] Many studies have been done to help define some deterrents. Ten US medical schools were surveyed to help identify factors to increase female interest in surgery. A few interventions were identified that would make general surgery a more attractive professional choice: child care availability at the hospital, the option of part-time residency training and/or part-practice, and the presence of more women role models on surgical faculties and in residencies.[7]

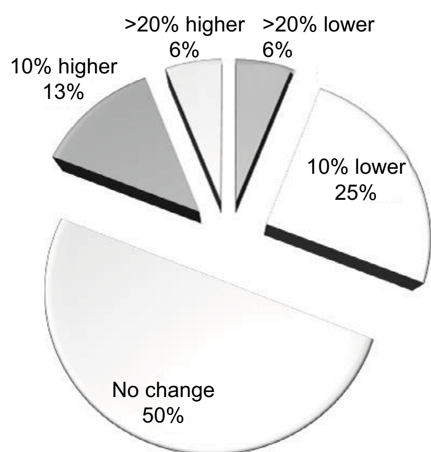

Figure 2 Following maternity leave, the percent change in ABSITE scores.
Abbreviation: ABSITE, American Board of Surgery In-Training Exam.

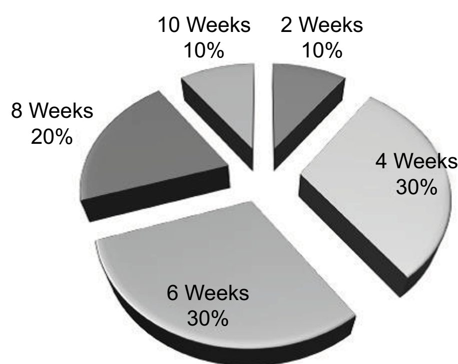

Figure 3 The percent distribution of allowed length of maternity leave in surgical residents.

With the implementation of the 80-hour work week, medical students stated a more favorable impression of a surgeon's lifestyle.[8] Another study of medical students showed the 80-hour work week as positive with an improvement in resident lifestyle.[9] Both male and female medical students agree that adhering to an 80-hour work week would make surgical programs more appealing, along with shorter, joint training programs for residency and fellowship.[7] These concerns for lifestyle and parenting issues are not sex-specific as shown in the article by Mayer et al.[10] Interestingly, a recent study by Behbehani and Tulandi demonstrated higher than average obstetrical complications in the pregnant surgical residents given longer operating hours and more than 6 nights of call per month.[11] The ABS needs to account for this as policy changes are recommended to attract talented female surgical residents.

Our study showed 10% of the respondents taking 2 weeks off for maternity leave, 30% took 4 weeks, and 30% 6 weeks. This time off seems slightly less than other specialties in the literature. In comparison, Obstetrics and Gynecology residents reported maternity leaves of 4–8 weeks[12] whereas Family Medicine averaged 6.5 weeks[13] and Pediatrics only 6 weeks.[14] This is ironic as Family Medicine residents have stated that they consider the optimal time off for maternity leave would be 7–12 weeks.[13] This is interesting given both Pediatrics and Family medicine are "family-focused" specialties. Female physicians would have preferred 3 months of maternity leave, while the male physicians desired 6 weeks of paternity leave.[10]

As stated previously, the ABS leave policy for a general surgery resident is 4 weeks off per training year, with an additional 2 weeks upon special request.[3] This will only allow for a maximum of 6 weeks for maternity leave. The majority of the residents in our paper only took off the allotted 6 weeks or less (70%), with 30% of the respondents needing more time off. If the resident goes beyond the ABS leave policy, then their residency may be extended for completion. There are many issues concerning an extension to residency which are not addressed by the ABS or current literature. Residency programs are only given salaries by the government for 5-year

categorical residents and no further. Any extension would be unpaid; leaving the financial burden on each individual resident or teaching institution. The residents would also be impinging on the education and experience of the upcoming senior residents. Another issue deals with fellowship training which usually starts on July 1 after the resident's chief surgical year. By extending the residency, corresponding fellowships would also need to delay their start date. Despite the above, our study, in conjunction with previous studies indicates program directors are supportive of the requested time off.[15]

The ABS did amend the leave policy in 2009 permitting general surgery residents to complete clinical training over 6 years, which allows residents to take up to 12 months of leave during their first 4 postgraduate years.[3] No additional updates have been made. The interest in the "flexible-track" option is undefined. A national survey indicated junior residents with the strongest support for this option, and a study by Snyder et al showed that medical students have an increasing interest in surgery if flexible training was an option.[7,16] However, this study also stated an interest in a combined shorter surgery residency and fellowship program.[7] Many medical students are deterred from general surgery because of the length of training. By extending residency, the interest and caliber of applicants into general surgery may not improve. As the number of applicants to medical schools in the United States has already declined by 25% since 1996, the "flexible-track" residency may not be the answer for allowing a better work–family balance.[1,7]

The lack of paid maternity leave noted in general surgery is a countrywide issue across all professions in the United States. The United States is the only high-income country that fails to provide paid maternity leave for mothers of newborns.[18] This is in stark contrast to other industrialized nations such as the Netherlands (112 days), Germany (98 days) and Sweden (90 days). Other nations provide paid maternity leave at either reduced or fixed pay rate. Extensive research has demonstrated that paid maternity leave has several benefits including reducing turnover, reducing cost, positive workplace productivity, improving employee morale and improving family income. Given the above, should the ABS and the US consider implementing paid maternity leave policies?

One limitation of our study is the low response rate of 37%. Survey research typically states that a 60% response rate is the acceptable minimum.[19] One obvious bias in our paper is nonresponse bias. This usually occurs with sensitive topics which the respondents prefer not to discuss. The risk of exposing one's program and possible loss of anonymity are valid concerns some residents may have felt while reading our survey. To optimize response rate, a nationwide survey could be distributed in association with the surgical in-service ABSITE exam.

A second limitation within our survey was the fact that we only dealt with the view of the resident. A survey of general surgery program directors was done showing only 2% of all female surgical residents had a child during their training from 1997 to 2001.[1,7] Women in surgery tend to delay starting a family until after completion of their training more often than men.[10,20] This sample represents only a small proportion of females in surgical training going through pregnancy during residency. However, there was a study published by Turner et al querying female surgical faculty recently out of training and women with decades of experience.[2] They found a slightly higher rate of pregnancy among the female surgeons during their trainee years which complements our survey representation.[2] This article also showed a decrease in the stigma associated with pregnancy during training, but an overall negative attitude to the situation persists.[2,21] Unlike the study by Turner, the residents in our survey had an overall positive experience with relations with their faculty and peers.

Conclusion

Pregnancy is an issue commanding our attention. Current graduating physicians are less inclined to sacrifice quality of life than previous generations. The ABS leave policy may not address the concerns of the current generation of physicians, and needs to be reassessed. At this time, we are unsure if individual programs or the ABS should be responsible for instituting maternity leave guidelines. Despite the inadequate support from the ABS, general surgery programs are accommodating and supportive of the female surgical resident during this difficult situation. Future studies must be conducted to address this concern.

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Disclosure

The authors report no conflicts of interest in this work.

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