


Impact of the early COVID-19 pandemic on Breast Surgical Oncology fellow education

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Abstract

Introduction: The early COVID-19 pandemic rapidly transformed healthcare and medical education. We sought to evaluate the professional and personal impact of the pandemic on 2019–2020 Breast Surgical Oncology (BSO) fellows in Society of Surgical Oncology approved programs to capture the experience and direct future changes.

Methods: From July 15, 2020 to August 4, 2020 a survey was administered to the American Society of Breast Surgeons' fellow members. The survey assessed the impact of the pandemic on clinical experience, education/research opportunities, personal health/well-being, and future career. Responses were collected and aggregated to quantify the collective experience of respondents.

Results: Twenty-eight of fifty-seven (54%) eligible fellows responded. Twenty-one (75%) indicated the clinical experience changed. Twenty-seven (96%) reported less time spent caring for ambulatory breast patients and sixteen (57%) reported the same/more time spent in the operating room. Fourteen (50%) stated their future job was impacted and eight (29%) delayed general surgery board examinations. Stress was increased in 26 (93%). Personal health was unaffected in 20 (71%), and 3 (10%) quarantined for COVID-19 exposure/infection.

Conclusion: The COVID-19 pandemic altered the clinical experience of BSO fellows; however, the operative experience was generally unaffected. The creation of frameworks and support mechanisms to mitigate potential challenges for fellows and fellowship programs in the ongoing pandemic and other times of national crisis should be considered.

KEYWORDS

breast surgical oncology, Breast Surgical Oncology fellows, COVID-19, surgical education

1 | INTRODUCTION

The COVID-19 pandemic rapidly and drastically influenced every aspect of medical care in the United States. The chaotic nature and regional characterization of “hotspots” resulted in variable severity by geographic

region given the number of cases within an individual community. In the early pandemic period, a national effort to flatten the curve and decrease the number of cases was employed so as not to overwhelm the health-care infrastructure. These considerable changes echoed through communities, subsequently impacting patients and hospital systems.

Medical education and surgical training programs were not immune from these changes. Immediately, there was a necessary shift from traditional approaches of medical education highly dependent on hands-on training and in-person exposure to social distancing, adoption of virtual platforms for didactics, and even deployment of trainees to care exclusively for COVID-19 positive patients.^{1,2} This required learners and instructors to identify innovative methods for education and assessment while ensuring clinical requirements were met to maintain the training experience.

There have been multiple publications regarding the change in medical student and resident education during the COVID-19 pandemic, but there are few publications around postgraduate medical education, particularly at the fellowship training level.^{1–5} Surgical fellowship training is a highly specialized and focused period where surgical trainees master advanced operative techniques and hone clinical decision-making skills in a particular field. Breast Surgical Oncology (BSO) fellowship training is a 1-year intensive training in the multidisciplinary and surgical management of breast cancer. These programs are organized under the Society of Surgical Oncology (SSO) and the American Society of Breast Surgeons (ASBrS) with a defined minimum volume of exposure required for proficiency in operative and nonoperative settings.⁶ During this comprehensive year, while completing clinical rotations on surgery and multidisciplinary services, fellows often complete the American Board of Surgery general surgery board certifying examination, engage in clinical research, and interview to secure their first career position outside of fellowship. For these reasons, BSO fellowship training, as well as other 1-year surgical subspecialty training programs, may have been particularly at risk from changes in health care and training during the pandemic.

The primary aim of this study was to examine the impact of the early COVID-19 pandemic on the training of BSO fellows during the 2019–2020 fellowship year in terms of clinical exposure, education/research opportunities, personal health and well-being, and future careers. The secondary aim was to identify challenges and opportunities, acknowledged by fellows themselves, that emerged within this time of national crisis that may inform training programs moving forward.

2 | METHODS

In late-April 2020, a survey was designed to capture the early COVID-19 pandemic experience among BSO fellows and their perception of its impact on their training. After obtaining approval from the Institutional Review Board (IRB) at MD Anderson Cancer Center and the ASBrS, the survey was administered to ASBrS members in fellowship training via the Qualtrics platform from July 15, 2020 to August 4, 2020. To participate in the survey, a consent statement indicating that the action of completion of the survey was equivalent to giving study participation consent and explicitly stating the authors' intention to publish the survey results had to be acknowledged. Responses were obtained from fellows who self-identified to be enrolled in an SSO-approved breast fellowship program. The majority of the survey was composed of 39 questions designed to assess the impact of the pandemic on the clinical experience, education/research opportunities, personal health and well-being, and future career. Age and geographic region (as defined by the Centers for Disease Control) were also requested, although other demographics were specifically avoided so as to preserve the anonymity of the respondents. Three final questions pertained to specific changes implemented by the fellowship programs, identification of future opportunities for improvement, and general comments. Responses were collected and aggregated to quantify the collective experience of respondents.

3 | RESULTS

The survey was sent to 57 ASBrS fellowship training, and 31 responses were received (54.4%). Twenty-eight respondents self-identified as a fellow within an SSO-approved BSO fellowship program during 2019–2020 and were included in the analysis (Figure 1). The median age of respondents was 34.5 years. The geographic distribution of fellowship programs by fellow was 3 (10.7%) from the Midwest, 8 (28.6%) from the Northeast, 12

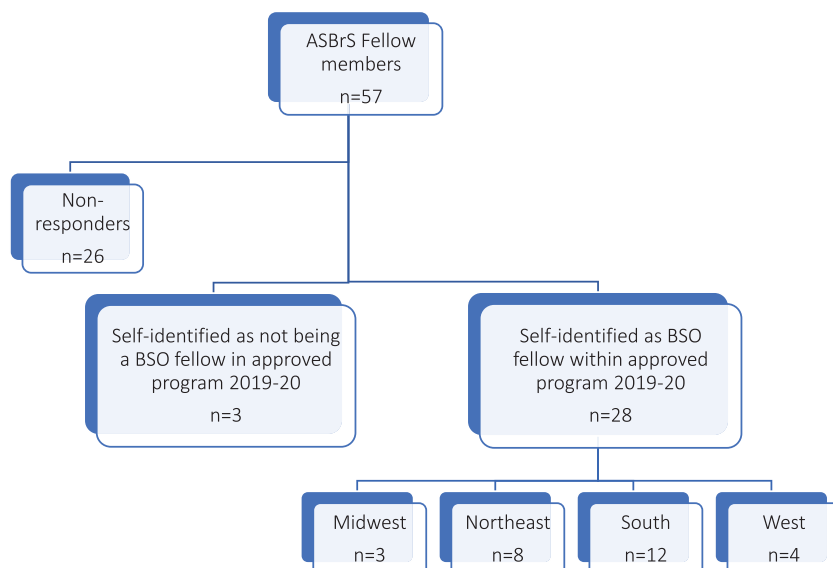


FIGURE 1 Flowchart of participation. ASBrS, American Society of Breast Surgeons; BSO, Breast Surgical Oncology

(42.9%) from the South, and 4 (14.3%) from the West. Overall, 17 (60.7%) indicated their fellowship experience was impacted both positively and negatively, 2 (7.1%) in a positive manner only, 5 (17.9%) in a more negative manner, and 4 (14.3%) indicated no change.

3.1 | Clinical fellowship experience

Twenty-one (75.0%) respondents indicated that their fellowship clinical experience changed during the COVID-19 pandemic. Changes to direct breast patient-related care included: 21 (75.0%) spending less time, 2 (7.1%) increased time, and 5 (17.9%) the same amount of time in these activities. The majority (23, 82.1%) reported less time spent in the clinic with 4 (14.3%) stopping all outpatient care and 1 (3.6%) who reported no change. By contrast, in the operating room, 10 (35.7%) spent the same amount of time, 6 (21.4%) spent more time, 10 (35.7%) spent less time, and 2 (7.1%) stopped operating for breast disease. Almost all trainees noted no change in their operative independence (25, 89.3%) while 2 (7.1%) had more and 1 (3.6%) had less operative independence (Figure 2). Most indicated that they continued to primarily care for breast patients ($n = 24$, 85.7%), while 3 (10.7%) also took care of another group of patients (e.g., general surgery patients, intensive care unit [ICU] or COVID-19 positive patients).

Estimates of completion of the SSO minimum training requirements by May 1, 2020 were $\geq 100\%$ for 16 (57.1%), 76%–99% for 11 (39.3%), and 51%–75% for 1 (3.6%) for operative exposure and $\geq 100\%$ for 11 (39.3%), 76%–99% for 15 (53.6%), 51%–75% for 1 (3.6%), and 26%–50% for 1 (3.6%) with respect to nonoperative exposure. All fellows felt confident in their clinical ability and 27 (96.4%) in their operative ability with the majority indicating operative confidence was unaffected or improved by the pandemic (25, 89.3%). Multidisciplinary exposure was reported as appropriate or too much in 24 (85.7%), although it was also noted that flexibility was needed to achieve requirements.

3.2 | Nonclinical fellowship experience

Only four (14.2%) noted fewer research opportunities. Fellows indicated a decreased opportunity for national research presentations (20, 71.4%) and national conference attendance (19, 67.9%). Fourteen (50%) stated their future job was impacted and eight (28.6%) delayed general surgery board examinations. Stress was increased in 26 (92.9%) with 10 (35.7%) stating financial concerns and 7 (25%) stating childcare-related stress. Personal health was unaffected in 20 (71.4%), while 3 (10.7%) were quarantined due to COVID-19 exposure or infection.

Strategies employed by fellowship programs to address these clinical and nonclinical issues are listed in Table 1.

4 | DISCUSSION

In March 2020, the United States Surgeon General and American College of Surgeons (ACS) called for elective surgery to be postponed, providing guidelines by discipline for how to define “elective” based on the degree of urgency and COVID-19 need.⁷ In addition, the SSO and ASBrS issued guidance to surgical oncologists and breast surgeons specifically about how to triage cancer patients who required surgical management given limited hospital resources.^{7–9} This precipitous decrease in operations coupled with increased clinical restrictions was thought to greatly affect trainees.⁴ This study found that the training experience of the vast majority of BSO fellows during 2019–2020 was impacted by COVID-19, although fellows felt that they remained extremely well trained in the surgical management of breast cancer. The most common changes were less breast-specific clinical care and less time spent in the clinic; operating time and independence, however, were not affected for most trainees. Half of the respondents reported alterations in their future job plans, and almost all had an increase in stress levels during the early pandemic. While multiple studies have evaluated the influence of COVID-19 on the medical and surgical fields, this is the first, to our knowledge, to evaluate the influence on a 1-year surgical fellowship from the trainees themselves.

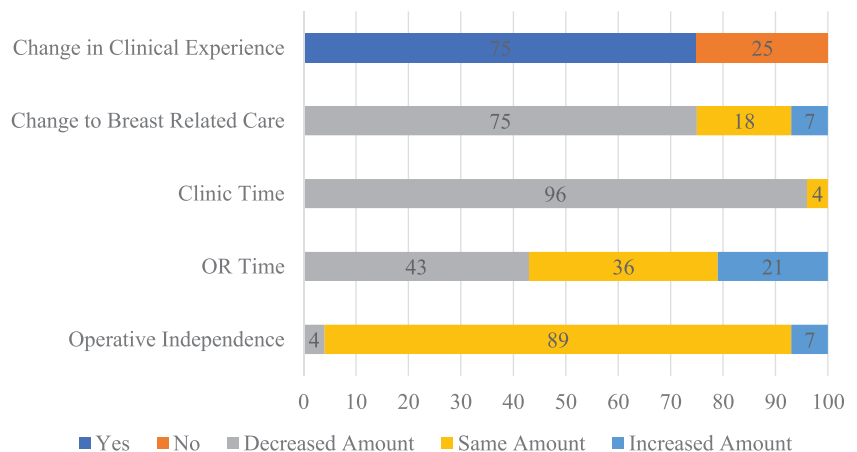


FIGURE 2 Self-reported BSO fellow clinical experience during the early COVID-19 pandemic. BSO, Breast Surgical Oncology

TABLE 1 Changes made to Breast Surgical Oncology fellowship programs and/or institutions to accommodate for the COVID-19 pandemic and opportunities identified

	N = 28	
Converted to virtual meetings/conferences	27	96%
Minimized your time in hospital	22	79%
Instituted travel restrictions	21	75%
Encouraged "stay at home" directive	16	57%
Decreased your multidisciplinary clinic exposure	14	50%
Changed your clinical rotations	13	46%
Created additional independent study/research time for you	11	39%
Created additional structured educational time for you	9	32%
Encouraged time for self-care/wellness	9	32%
Canceled your vacation	8	29%
Included you in developing temporary guidelines regarding breast surgical management during COVID-19	5	18%
Created additional career/professional development time for you	5	18%
Promoted you to an attending surgeon	1	4%
Other (not specified)	1	4%

Similar survey-based studies have been performed to evaluate the experience of general surgery and plastic surgery residents during the COVID-19 pandemic.^{2,3} In contrast to our findings, general surgery residents had a significant reduction in operative case volume.³ This difference is likely a result of the decrease in "elective surgeries," which are common to general surgery and plastic surgery practices, while cancer surgeries, which were more often classified as "non-elective", represent most of the BSO case volume. In addition, residents may have been reassigned to care for ICU-level patients or to meet other patient care demands given their expertise in clinical training. Similar to our study, many trainees noted the shift to online didactics and conferences to allow for more time dedicated to these educational experiences and more flexibility in work-life balance.² In addition, these studies found an increase in stress levels due to the COVID-19 virus and practice changes, which appears common amongst all medical trainees.^{2,3}

Unlike general surgery or plastic surgery residency programs, which span multiple years, many surgical subspecialty fellowships, including BSO, are only 1 year in duration, which makes it difficult to adapt training schedules to meet all requirements during the short timeframe. During the start of the pandemic, trainees and educators had to quickly improvise and alter their training programs depending on clinical and hospital needs with no standardization across institutions. In addition to confronting these professional challenges,

trainees, and surgeons were also personally impacted by the pandemic: managing competing priorities including their personal health, family obligations, and career advancement amidst the pervasive fear and uncertainty about the future induced by this global pandemic. Despite these unprecedented conditions, we found that most fellows were confident in their clinical and operative abilities at the end of the fellowship. This is likely a reflection of their training and experience leading up to the onset of the pandemic coupled with the success of changes made to BSO programs during the pandemic to optimize BSO fellow experience despite external factors influencing clinical and nonclinical opportunities.

In addition, the responses reflected research time remained a priority and actually may have improved given flexibility in the schedules as a result of decreased patient care needs. The majority of national conferences were canceled, postponed, or restructured into virtual formats. This provided increased access to attend national meetings; however, there was also a variable level of visibility to fellows with respect to recognition for their research presentations and decreased networking with peers and soon-to-be colleagues. The wide adoption of virtual formats for sharing educational and didactic content also was noted to have advantages in terms of improved access and supplementing decreased clinical time with increased educational didactic content in several cases. Incorporation of didactic teaching for previously informal aspects to the BSO curriculum, such as career development, was highlighted by some respondents as a positive aspect that emerged during the early COVID-19 pandemic.

Our study also found a heightened level of personal stress during this time. This may be secondary to the increased general anxiety experienced in the public as well as potentially increased social isolation, work-life imbalance, fear of contracting the virus, and increasing responsibility on healthcare providers. These factors parallel common causes of physician burnout including loss of autonomy, heavy clinical workload, decreased meaning in work, and competing personal/family demands.¹⁰ Physician burnout is a well-recognized epidemic within health care impacting surgical oncologists at similar rates to other surgeons, with approximately 36% affected in one study administered by the ACS.¹¹ Providing support systems for trainees, particularly in times of extreme stress, may be warranted to minimize burnout and improve career satisfaction and may provide a more robust infrastructure to help support trainees in less traumatic times. Furthermore, while most of the comments highlighted positive attention from faculty during this time, one respondent reported mistreatment by a faculty member due to stress from the pandemic, highlighting how trainees are particularly susceptible to a variety of stressors within the healthcare system.

At the University of Texas MD Anderson Cancer Center, our BSO fellow clinical schedule evolved over the first few months of the pandemic. In late March 2020, fellows were pulled from multidisciplinary service rotations (e.g., breast pathology, breast medical oncology, etc.) to the breast surgical rotations, where their presence was critical to the delivery of patient care. For the following 4 weeks, the fellows alternated between 1 week of in-house patient care

TABLE 2 Example of the MD Anderson COVID-19 pandemic weekly didactic curriculum from late March 2020 to late April 2020

Date	Topic	Example	Moderator(s)
Mon	Clinical research topic	Review of fellows' research projects	Fellow/ faculty
Tue	Review of clinical cases		Faculty
	Breast surgical education conference	Nipple-sparing mastectomy	Faculty
Wed	Journal club	Surgical management of the axilla	Fellow/ faculty
Thu	ASBrS Online Fellows Tumor Board Discussion		Fellows
	BESAP II topics	BESAP II: Cancer management, surgery	Fellows
Fri	Career development lecture	Developing career plan/vision transitioning to practice	Faculty

Abbreviation: ASBrS, American Society of Breast Surgeons.

activities and 1 week of home-based didactics. This schedule was designed to minimize potential exposure to COVID-19 as well as to allow for additional backup clinical coverage if needed. To supplement the modified training experience, a daily virtual educational curriculum was created, which included didactics, research review, journal club, clinical case presentations, and guided self-study (Table 2). Some of the didactics included valuable career development topics such as “defining a career plan/vision” and other information that would not have otherwise formally been covered in a typical year's curriculum (Table 2). In addition, the work from home week allowed fellows to dedicate more time to research activities and eventually re-engage in multidisciplinary educational rotations with the opportunity to participate in telemedicine consults. This provided immense value given the pandemic greatly accelerated the use of telemedicine across our institution as well as the national healthcare landscape, providing a valuable skill for the fellows which was likely to be utilized in their future practice.¹² During May 2020 until the completion of the fellowship, case volumes increased, and fellows were able to complete their remaining multidisciplinary rotations without difficulty.

The early COVID-19 pandemic introduced both positive and negative changes to surgical fellowship training, as seen by responses by most of the BSO fellows. Results from our study can serve as a guide to current fellowship programs to identify areas for improvement as we continue to adapt to the ongoing COVID-19 pandemic. Ideally, in the months that follow the early pandemic, some of the positive modifications we have made to these training programs such as increased virtual didactic sessions and educational conferences, which allow for more schedule flexibility, may be permanently adopted into our educational culture.

There are several limitations to this study. First, this study included modest sample size, as BSO fellowships are a rather small subset of less than 70 fellows nationwide on an annual basis, with not all fellows belonging to the ASBrS to receive the survey. Our sample is, however, highly representative of this population given that ASBrS

is one of the premier national organizations for breast surgeons, and membership is encouraged for BSO fellows with targeted educational content and opportunities.¹³ Furthermore, respondents self-identified as belonging to an SSO-approved BSO fellowship program in 2019–2020. The effects of the COVID-19 pandemic were varied and dependent on geography; our modest sample size limited our ability to compare responses based upon geographic location. Furthermore, there could be a sample bias, as those most affected by the pandemic may not have had time to complete the survey and may have accounted for a greater proportion of the nonresponders. Also, the survey was sent out after obtaining IRB approval which occurred at the end of fellowship in July 2020, 4 months following the onset of COVID-19 regulation changes, leaving responses susceptible to recall bias. Fellows also may not have responded given the completion of fellowship training is typically a hectic time in the year. The first 4 months of the pandemic were a very dynamic time, with changes occurring almost daily in many programs which may have led to confusion when completing the survey. One respondent highlighted this issue indicating they answered questions during the initial months of the pandemic given that the end of their experience largely mirrored a normal or pre-COVID experience. Finally, the survey only captured the perceptions of trainees and did not include data from the fellowship programs themselves such as actual case numbers, which are not publicly available. As the COVID-19 pandemic is ongoing, additional potential prospective studies to further evaluate the implications of the pandemic on fellowship training are indicated.

5 | CONCLUSION

During the early COVID-19 pandemic, the 2019–2020 BSO fellows' operative experience and confidence were minimally affected by necessary program changes. Outpatient and multidisciplinary clinical experience, as well as education and research opportunities, were

changed—both positively and negatively. Multiple stressors were identified highlighting the need for additional support mechanisms. Further studies are needed to characterize the fellow experience and personal well-being during the ongoing COVID-19 pandemic period and to adjust educational objectives and experiences accordingly. In addition, although rare, times of acute crisis expose the potential for a substantial risk to subspecialty surgical fellowship education. The creation of a framework to mitigate potential challenges for fellows and fellowship programs in the ongoing pandemic and other times of national crisis should be considered.

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CONFLICTS OF INTEREST

Kelly K. Hunt is on the Medical Advisory Board for Armada Health and has received research funding from Cairn Surgical, Eli Lilly & Co., and Lumicell. Other authors have no conflict of interests.

DATA AVAILABILITY STATEMENT

Data is available on request due to privacy/ethical restrictions.

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