A Survey of Breast Imaging Fellowship Programs: Current Status of Curriculum and Training in the United States and Canada

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Purpose: The Society of Breast Imaging and the Education Committee of the ACR Breast Commission conducted a survey of breast imaging fellowship programs to determine the status of fellowship curricula, help identify strengths and potential areas for improvement, and assess the current demand for fellowship programs.

Methods: In 2012, a two-part survey was emailed to breast imaging fellowship directors from 72 fellowship programs.

Results: Of the 66 respondents, a total of 115 positions were identified. There were 90 positions with 9-12 months of breast imaging, and 25 positions with 6 months focused on breast imaging. Approximately two-thirds of programs reported an increase in the number of fellowship applicants, with three-quarters having 3 or more applicants for each position. All programs offered digital mammography, breast MRI, and diagnostic ultrasound services, and nearly all provided experience with interventional procedures. Approximately one-third provided breast screening ultrasound training. More than two-thirds required at least a 1-day rotation with a breast surgeon. Important nonclinical areas of training were not addressed in many programs. Approximately 40% of programs did not offer training related to the practice audit, and one-third of programs did not provide formal training related to quality control.

Conclusions: Breast imaging fellowships are currently in higher demand than in the past. Most fellowship programs provide training in the key imaging modalities and interventional procedures. Potential gaps in training for many programs include the practice audit, quality control procedures, breast positioning, and mammography technical factors.

Key Words: Breast imaging, radiology training, fellowship, radiology education

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INTRODUCTION

Breast imaging is a dynamic and challenging field in radiology. Since the 1970s, after randomized trials first showed that screening mammography saves lives, radiologists have played a pivotal role in the early detection of breast of cancer [1,2]. Breast imagers are invaluable members of the multidisciplinary health care team, playing a role in the detection, evaluation, and diagnosis of benign and malignant breast disease. The need for individuals trained in this subspecialty area continues to grow as more women enter the screening population and the diversity of breast imaging services increases. In addition, as radiology groups become more subspecialized, many practices seek radiologists who are skilled in breast imaging. Study data suggest that fellowship-trained and experienced breast imagers have improved accuracy [3]. Strong breast health programs attract women patients, who make 80% of health care decisions for families [4]. Therefore, health care plans seek radiology partners with skilled breast imagers.

In the past, recruiting radiology residents into the breast imaging subspecialty was challenging, owing to the perceived high risk of malpractice, high stress, and low reimbursement, and to a higher level of interest in fields heavily weighted in CT and MRI techniques [5-8]. However, more recently, the popularity of breast imaging

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fellowships has increased, possibly in part as a result of advancements in technology, such as image-guided interventional procedures, digital mammography, MRI, and more recently, digital breast tomosynthesis [9].

As the demand for breast imagers has increased, the number of fellowship programs has also increased, from 53 programs in 2000 to 63 in 2008 [5,10]. In the recent past, a breast imaging fellowship graduate was in great demand in the job market owing to the high volume of job vacancies [11,12]. Anecdotal evidence indicates that the combination of having more fellowship-trained specialists and fewer job openings has recently made the job search more competitive.

The Society of Breast Imaging (SBI) and the Education Committee of the ACR Breast Commission conducted a survey of breast imaging fellowship programs, which included programs offering 6-12 months of breast imaging fellowship training. The purpose of the survey was to determine the status of fellowship curricula, which would help identify strengths and potential areas for improvement. The survey also assessed the current demand for fellowship programs and the types of jobs obtained after completion of the programs.

METHODS

In 2012, we conducted a two-part e-mail survey with breast imaging fellowship directors from 72 fellowship programs. These programs were identified via the SBI. The preliminary 5-minute survey covered basic demographic information about the fellowship program. Of the 72 programs, 66 completed this portion of the survey (92% response rate). The second part of the survey included questions on practice volume, fellowship curriculum, and job market issues. This 15-minute survey was completed by 49 programs (68% response rate). Informed consent was waived by the Washington University School of Medicine institutional review board.

The survey tool was designed by several members of the Education Committee of the ACR Breast Imaging Commission and the SBI Education Committee who are also authors of the current paper (DF, DM, MR, BM, LB). One of the authors was a breast imaging fellow at the time of the study (JS).

General Practice Characteristics

Basic demographic questions on practice type and location were included. Questions addressed 2011 practice volumes for a broad range of procedures, including screening and diagnostic mammography, screening and diagnostic ultrasonography, interventional procedures, and breast MRI.

Nature of Training and Curriculum

Fellowship directors were asked specific questions about their programs. These items addressed the number of trainees, length of training, and amount of hands-on experience with ultrasound, in addition to required and elective rotations. Questions addressed opportunities for formal training on patient positioning, technical settings, quality control procedures, practice audit, research, and conferences. In addition, respondents were asked whether fellows spent time with other breast cancer specialists, such as medical oncologists, radiation oncologists, pathologists, or breast surgeons. There were also questions regarding whether the fellows had academic time, call duties, and opportunities for extra income.

Job Market

Fellowship directors answered a series of questions regarding difficulty in filling fellowship positions and the types of jobs their fellows obtained after training from 2009 to 2011. Questions about the demand for 2013-2014 fellowship positions were also included.

RESULTS

General Practice Characteristics

Of the 66 respondents, 56 (84.8%) programs were associated with an academic practice, 7 with a hybrid academic/private practice, and 3 with a private practice. Twenty-two programs were located in the South, 19 in the Northeast, 14 in the Midwest, 8 in the West, and 3 in Canada. For the 2014-2015 academic year, 90 (78%) fellowship positions were offered with 9-12 months of training. There were 25 (22%) positions at programs that offered 6 months of breast imaging fellowship training. These programs were usually women's imaging programs or combined breast imaging/body imaging fellowships.

The majority of programs had moderate to large mammogram volumes in 2011. Of the 49 respondents, 42 (85.7%) performed more than 10,000 screening mammograms in 1 year. For diagnostic mammograms, 17 programs (34.7%) performed more than 10,000 diagnostic mammograms (Table 1). In 2011, a total of 45 (91.8%) of the respondents utilized full-field digital mammography for 100% of their exams; the remaining 4 (8.2%) practices reported that >75% of their mammograms were digital exams.

The majority of programs did not offer training in screening whole breast ultrasound (32; 65.3%) in 2011. In contrast, diagnostic ultrasound was performed at all sites. Fifteen (30.6%) sites performed >5000 exams annually (Table 1).

In 2011, one of the fellowship programs did not offer interventional breast procedures, which include imaging-guided core biopsies and fine-needle aspirations. Approximately three-quarters of the programs performed ≥1000 interventional procedures in 2011 (Table 1).

All of the fellowships offered breast MRI services in 2011. However, the volume of procedures was variable. Approximately one-third (32.6%) of programs performed > 1000 exams (Table 1). For most practices, the