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Survey

Trainee Insight into Pain Fellowship Programs: A Critical Evaluation of the Current Educational System by the APPD

Sayed Emal Wahezi, MD[1], Tahereh Naeimi, MD[1], Moorice Caparó, MD[1],Trent D. Emerick[2], Heejung Choi, MD[3], Yashar Eshraghi, MD[4], Magdalena Anitescu, MD[5], Kiran Patel, MD[6], Rene Przkora, MD[7], Thelma Wright, MD[8], Susan Moeschler, MD[9], Meredith Barad, MD[10], Stephanie Rand, MD[1], Mooyeon Oh-Park, MD[11], Benjamin Seidel, DO[11], Ugur Yener, MD[1], Jonathan Alerte, MD[1], Naum Shaparin, MD[12], Alan D. Kaye, MD, PhD[13], and Lynn Kohan, MD[14]

From: [1]Department of Physical Medicine and Rehabilitation, Montefiore Medical Center, NY; [2]Division of Chronic Pain, Department of Anesthesiology, University of Pittsburgh School of Medicine, Pittsburgh, PA; [3]Department of Anesthesiology, Northwestern University Feinberg School of Medicine, Chicago, IL; [4]Department of Anesthesia, Ochsner Medical Health Center, New Orleans, LA; [5]Department of Anesthesia and Critical Care, The University of Chicago Medicine, Chicago, IL; [6]Department of Anesthesiology, NYU Langone Medical Center, New York, New York; [7]Department of Anesthesiology, University of Florida College of Medicine, FL; [8]Department of Anesthesiology, University of Maryland Medical Center, Baltimore, MD; [9]Department of Anesthesiology and Perioperative Medicine, Mayo Clinic, Rochester, MN; [10]Department of Anesthesiology, Perioperative and Pain Medicine, Stanford University School of Medicine, Stanford, CA; [11]Department of Physical Medicine and Rehabilitation, Burke Rehabilitation Hospital, Albert Einstein College of Medicine, Montefiore Health System, White Plains, New York; [12]Department of Anesthesiology, Montefiore Medical Center, NY; [13]Department of Anesthesiology, Louisiana State University Health Sciences Center, Shreveport, LA; [14]Department of Anesthesiology, University of Virginia, Charlottesville, VA

Address Correspondence:
Sayed Emal Wahezi, MD
Department of Physical Medicine and Rehabilitation, Montefiore Medical Center
1250 Waters Place, Tower #2, 8th Floor
Bronx, NY 10461
E-mail: swahezi@montefiore.org

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Background: Since 1992, when the Accreditation Council of Graduate Medical Education (ACGME) acknowledged pain medicine as a subspecialty, the field has experienced significant growth in its number of programs, diversity of sponsoring specialties, treatment algorithms, and popularity among applicants. These shifts prompted changes to the educational model, overseen by program directors (PDs) and the ACGME. The pool of pain fellowship applicants also changed during that period.

Objectives: This study aims to investigate trainees' reasons for applying to pain medicine fellowship programs as well as the applicants' specific expectations, interests, and motivations, thereby contributing to the remodeling and universal improvement of programs across the country.

Study Design: Online survey via SurveyMonkey. The online questionnaire targeted pain fellowship applicants in 2023 and current fellows in the US.

Methods: Our study was designed by board members of the Association of Pain Program Directors (APPD). The board disseminated a survey to those who applied to ACGME Pain Medicine fellowships in 2023 as well as to existing fellows. The survey was emailed to residency and fellowship PDs for dissemination to their trainees. The participants answered a 12-question survey on their reasons for pursuing pain medicine fellowships, expectations of and beyond those fellowships, and educational adjustments.

Results: There were 283 survey participants (80% applicants in residency training and 20% fellows). Participants ranked basic interventional procedures and a strong desire to learn advanced procedures as the most significant factors in pursuing a pain fellowship. Most trainees (70%) did not wish to pursue a 2-year fellowship, and 50% desired to go into private practice.

Limitations: The relatively small number of respondents is a limitation that could introduce sampling error. Since most of the respondents were from the fields of physical medicine and rehabilitation (PM&R) and anesthesia, the use of convenience sampling reduced our ability to generalize the results to the wider community. Furthermore, approximately 80% of the trainees were residents, who might have had less experience in or knowledge of the survey's particulars than did the fellows.

Conclusion: This survey demonstrated that procedural volume and diversity were important factors in trainees' decisions to apply to the field of pain medicine; however, extending the duration of a pain fellowship was not an option survey participants favored. Therefore, PDs and educational stakeholders in pain fellowship training need to develop creative strategies to maintain competitive applicants' interest while they adapt to our evolving field.

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Since its inception as an official subspecialty fellowship of the Accreditation Council for Graduate Medical Education (ACGME) in 1992, pain medicine has seen an exponential growth in applicants (1,2). The number of trainees subspecializing in this area has significantly increased over the past decade, as have the various interventional options available to patients with chronic pain. As described by the ACGME, fellowship-trained physicians serve the public by providing subspecialty care, which may also include core medical care, acting as a community resource for expertise in their field, creating and integrating new knowledge into practice, and educating future generations of physicians (3). Completing a pain medicine fellowship has become increasingly common in many fields, particularly anesthesiology, physical medicine and rehabilitation (PM&R), neurology, and psychiatry. These 4 specialties agreed on standard ACGME requirements in 2005. Since then, the educational competencies have been adjusted to accommodate our constantly changing specialty (4). For the last 2 decades, more than 90% of applicants each year have been in anesthesiology and PM&R. However, since the COVID-19 pandemic, there has been a significant decline in anesthesiology residents and an increase in applicants from other specialties, with more than 12 primary specialties having received certifications in pain medicine (5).

The pain medicine fellowship application process typically occurs during the fall of the penultimate year of residency training and involves the submission of a common application through the Electronic Residency Application Service® (ERAS®) system. This submission is followed by an interview process in the spring of the next year, which is now done virtually because of the COVID-19 pandemic. The lack of in-person interviews and on-site visits has meant that limited comprehensive information is available to prospective applicants. In one 2021 study, Gupta et al (6) reported that Web sites lacked information on programs for prospective pain medicine trainees. The study suggested that optimizing such resources would help institutions attract the best candidates for their programs.

Pain medicine is a subspecialty of interest to many residents from different backgrounds for a multitude of reasons. Some of these factors include personal satisfaction, salary potential, the ability to perform procedures, the desire for a more specialized practice, and competitiveness in the job market. However, there is no clear literature on what factors motivate prospective or current fellows to apply to pain medicine fellowships or remain in pain practices after graduation. A 2022 study showed that 10% of pain-trained anesthesiologists were no longer practicing pain medicine (7). Our authors believe that building a better understanding of trainees' motivations and expectations can curtail the continued decline of competitive applicants and thus preserve the talent pool required for our growing field. To improve recruitment and strengthen the field of pain medicine, there is a need to identify and minimize gaps between trainees' expectations and the current standard of pain fellowship training.

The authors of this study theorize that when those in charge of training programs understand why fellows apply and what characteristics of a fellowship keep them motivated during their education, the programs will be remodeled and improved nationwide.

Methods

Participants

Approval for research was obtained from the Montefiore Medical Center IRB (2023-15590). Our study was designed by board members of the Association of Pain Program Directors (APPD). The board created a survey and disseminated it to applicants to the 2023 ACGME pain medicine fellowship as well as to pain fellows enrolled for the same year. The survey was emailed

to residency and fellowship PDs for dissemination to their trainees. Residency PDs directed the messages to members of their programs who intended to apply to pain medicine fellowships. Participants completed a 12-question survey covering a myriad of topics that addressed their reasons for pursuing the pain medicine fellowship, expectations of and beyond the fellowship, and responses to potential educational changes. The questionnaire was administered online through a 3-part recruitment process of advanced notification, invitation, and follow-up. The study recruited participants through convenience sampling from pain fellowship programs and residents in their third or fourth post-graduate year (PGY) who applied for pain medicine fellowships. A total of 283 participants completed the survey.

Survey Instrument

The APPD Board of Directors developed this survey to capture participants' attitudes toward and experiences of the pain medicine fellowship. Leaders within the APPD Research Committee were selected to draft a document listing specific fellowship application information that the group identified as important. A questionnaire was then developed from this document by the research committee and edited by the board. The board voted to disseminate the survey after 3 rounds of editing, which then consisted of 12 questions, including multiple-choice and drag-and-drop items. To facilitate accurate responses, the questions were formulated to be concise and unambiguous.

Procedure

After approval from the APPD Board, the survey was administered online, using a secure survey platform (www.surveymonkey.com). A notification email was first sent to the PDs of anesthesia, PM&R, neurology, and emergency medicine programs, requesting that PDs forward the survey to their programs' pain medicine fellows and applicants. One week later, the main email was sent to the PDs to be released to the target population. Participants were provided with an introductory statement explaining the purpose of the study and assuring them of anonymity and confidentiality. To enhance response rates and reduce nonresponsive bias, a reminder email was sent to PDs one week after the initial invitation. PDs were asked to forward the survey to the residents and fellows again. The link to the survey was single-use, and there was no way to change the answers after submitting it. Turnaround time for all responses was approximately 3 months.

Data Analysis

Descriptive statistics were computed to summarize the participants' demographic characteristics. The survey responses were analyzed using appropriate statistical measures, such as frequencies and percentages.

Results

The sample consisted of 80% residents and 20% fellows.

Level of Primary Specialty

PM&R trainees had the highest rate of survey completion (46%). Anesthesia (34%), neurology (8%), and emergency medicine (7%) were the specialties of the next most common respondents, in that order. Fifteen (4%) of the participants belonged to psychiatry, general medicine, family and internal medicine, and obstetrics and gynecology (OBGYN). In 2023, there were 415 pain medicine fellowship applicants and 396 fellows; therefore, our respondent pool represents 55% of applicants (226/415) and 14% of fellows (57/396) in the academic year 2023.

Career Goals After Completing Pain Fellowship

Almost 50% of the trainees intended to go into private practice, based on the results of the survey. Thirty-seven percent chose an academic career. Of the remaining 13%, all wanted to start their own clinical practices; one trainee planned to become a researcher.

Important Factors When Considering a Pain Fellowship

To assess the important factors involved in choosing a pain fellowship, participants were presented with a list of different options and asked to assign a level of importance to each. The results indicated that the participants considered basic interventional procedures the most important, with 96% of respondents assigning a high level of importance to this option. Advanced interventional procedures followed, with 67% of participants demonstrating importance. Practice management (58%), medication management (56%), and program geographic location (51%) showed varying levels of importance to the participants. Acute pain medicine exposure (37.5%) and program specialty affiliation (33%) were the least important factors for the participants (Fig. 1).

Most Important Advanced Procedures to Learn in Fellowship

Participants were asked to express their attitudes toward the importance of learning the advanced procedures taught during fellowship, using a scale ranging from very important to not important. Most respondents (81%) agreed that spinal cord stimulator (SCS) trials were essential to learn in training. Sixty-four percent of participants believed that SCS implants and peripheral nerve stimulator (PNS) implants were the other most desirable procedures. Interestingly, the respondents expressed the idea that endoscopic surgeries (31%) and interspinous fusions (25%) were not important procedures to learn in their one-year training (Fig. 2).

Advanced Procedures to Learn After Fellowship

Regenerative medicine therapies (specifically, platelet-rich plasma [PRP] and stem cell injections) and minimally invasive lumbar decompression (MILD®) were the procedures trainees reported as most important to learn after the fellowship (72% and 59% response rate, respectively). All other procedures included in the options were rated similarly, ranging from 36% to 48% (Fig. 3).

Most Preferred Setting for Learning Advanced Procedures

The survey found that 98% of the respondents ranked fellowship training as their most preferred setting in which to learn advanced procedures. However, 63% believed industry events and society-based workshops were better opportunities for acquiring such knowledge.

What If the Procedures Were Not Part of the Educational Curriculum?

Seventy-six percent of the trainees responded they would not apply to the pain medicine fellowship if it had no procedural aspect. Only 8% expressed that they would still be interested in this field if it lacked procedures, and 15% were unsure if they would apply. However, 24% of the respondents did not answer this question.

Two-Year Fellowship with Advanced Procedural Features

Analysis indicated that 48% of the respondents agreed with applying for a 2-year fellowship with advanced procedures included, although the rest (52%) were unsure or would not apply (Fig. 4).

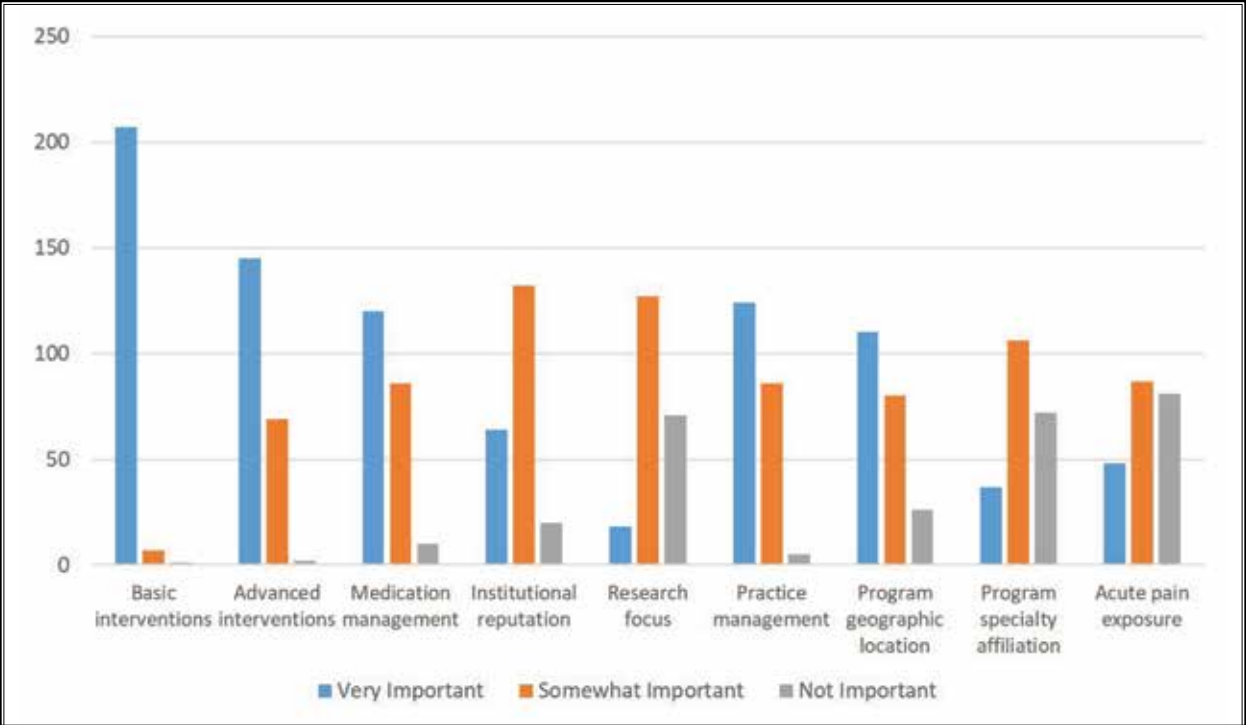

Fig. 1. *Level of importance of the proposed options when considering the pain fellowship.*

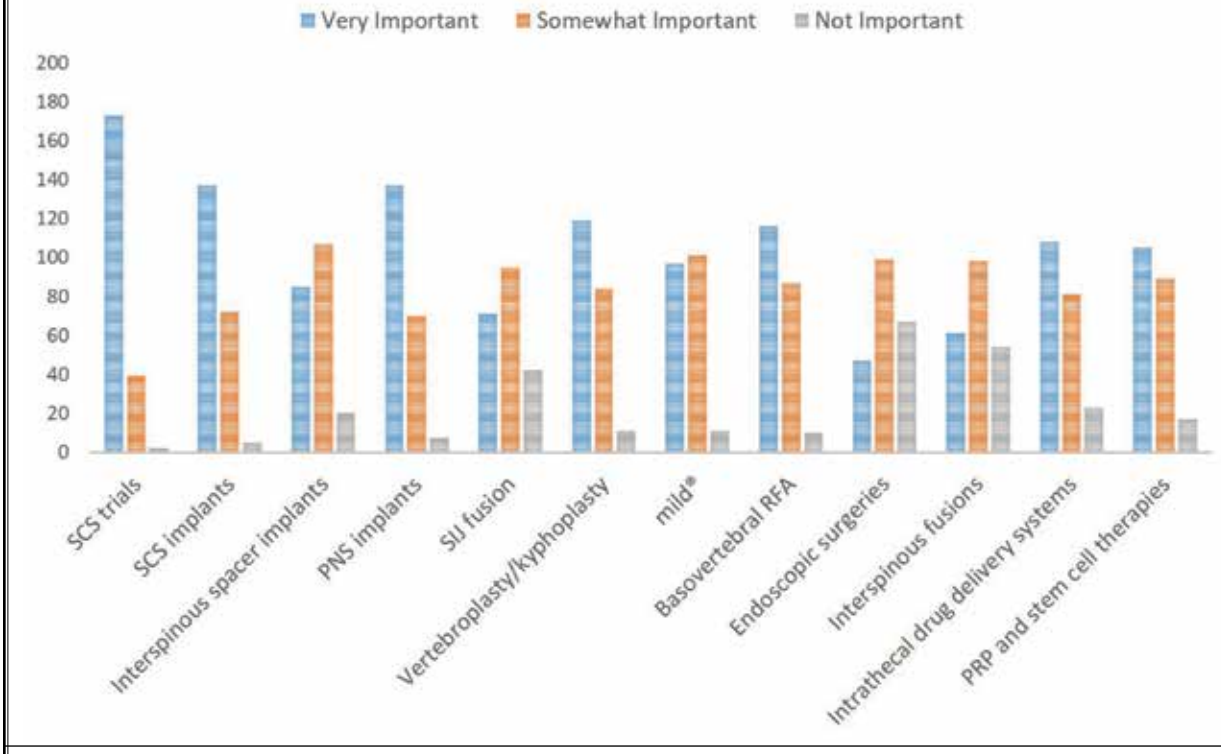

Fig. 2. *The most important advanced procedures to learn during fellowship.*

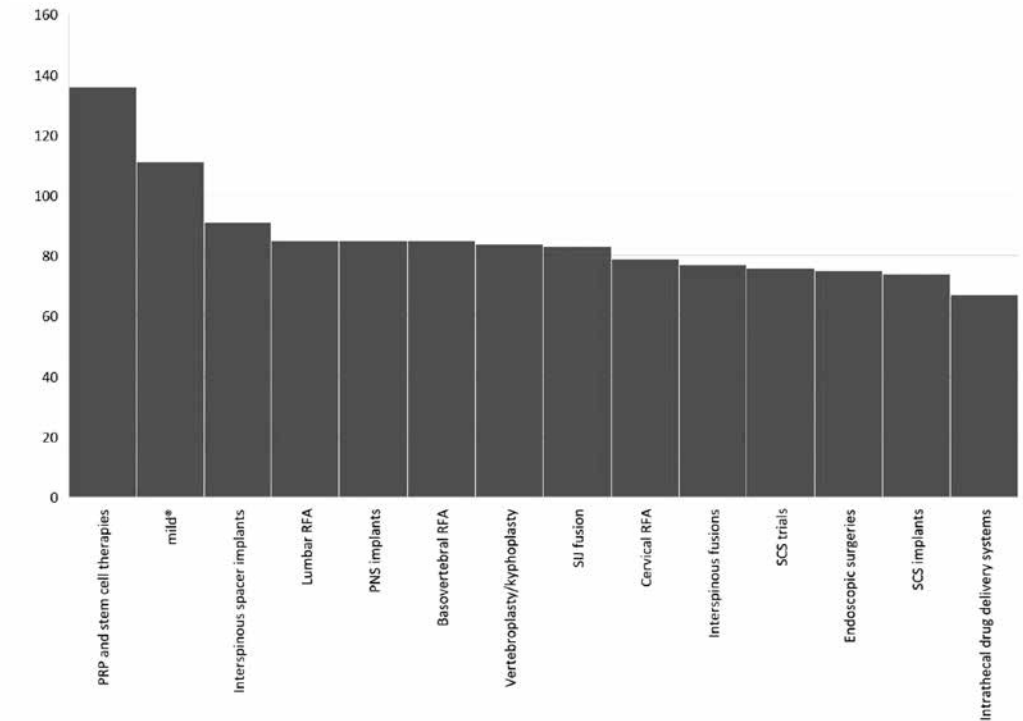

Fig. 3. *The most important advanced procedures to learn after fellowship.*

Two-Year Pain Fellowship with More Exposure to a Wide Range of Advanced Procedures

Based on the data provided, 70% of trainees would not prefer a 2-year fellowship, despite the wide range of advanced procedures that the program would offer. Notably, however, almost 25% of the respondents skipped answering this question.

Most Valued Reasons for Completing a Pain Medicine Fellowship

Based on the 73% response rate, understanding and diagnosing painful conditions (46%), performing interventional procedures to reduce pain, and improving the opioid crisis were the participants' top reasons for completing their fellowships. Meanwhile, the ability to create a practice model of continuity of care, improving lifestyle relative to the participant's primary specialty, and becoming a leader in the field of pain medicine in a nonacademic center were the least important causes (Fig. 5).

Characteristics Program Directors Valued Most in Selecting a Pain Fellow

Of the 283 participants, 85 did not answer this question. The participants reported that they considered integrity (48%), intelligence (26%), and professionalism (15%) to be the characteristics PDs valued most in applicants. Caution, multidisciplinary collaboration, and diligence were seen as the least favored characteristics (18%, 15%, 12%, respectively) (Fig. 6).

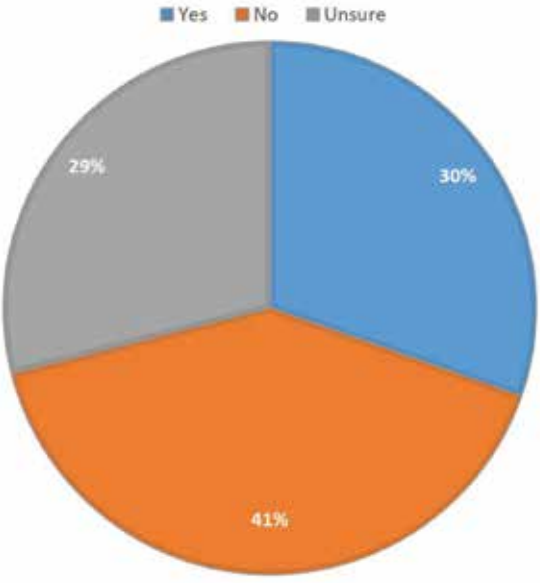

Fig. 4. *Apply to a 2-year fellowship program with more exposure to advanced procedures.*

Discussion

This survey was completed by many physician trainees interested in pain medicine. The questionnaire was designed to capture the importance of trainees' perceptions of pain fellowships and identify those individuals' expectations of fellowship education and the subsequent post-graduation experience. To the authors' knowledge, no previous evaluation of this type has been published. Our findings illuminate the perceived level of importance of pain medicine fellowships' various educational elements.

Based on the survey results, learning interventional procedures was very important to the majority of respondents and seemed to be the trainees' most significant reason for preferring to apply to pain fellowships. In fact, nearly 80% of respondents indicated that they would not apply to a pain fellowship if interventional procedures were not part of the curriculum, and more than 96% reported that basic interventional procedures were very important in their decision to apply. Learning advanced interventional procedures was the respondents' second most important reason for applying.

Research, program specialty, and acute pain medicine exposure were perceived to be trainees' least important considerations in their decision to pursue post-graduate training. The responses gathered from these questions alone provide valuable information for academic pain programs, since the volume and quality of applicants may depend upon the types of procedures performed at an institution. Some academic programs may shift toward more intervention-based education to remain competitive among applicants. The authors submit that some pain fellowships may become more interventional to stay competitive in an era of declining applications (5). Furthermore, we submit that national strategies should be developed for program monitoring and accreditation, since there is currently no ACGME policy in place for procedural competency in pain fellowships. In light of the survey responses' emphasis on performing procedures, it is interesting to reflect on trainees' other reasons for choosing to enter the field of pain medicine; trainees rank their desire to become better diagnosticians for painful conditions as

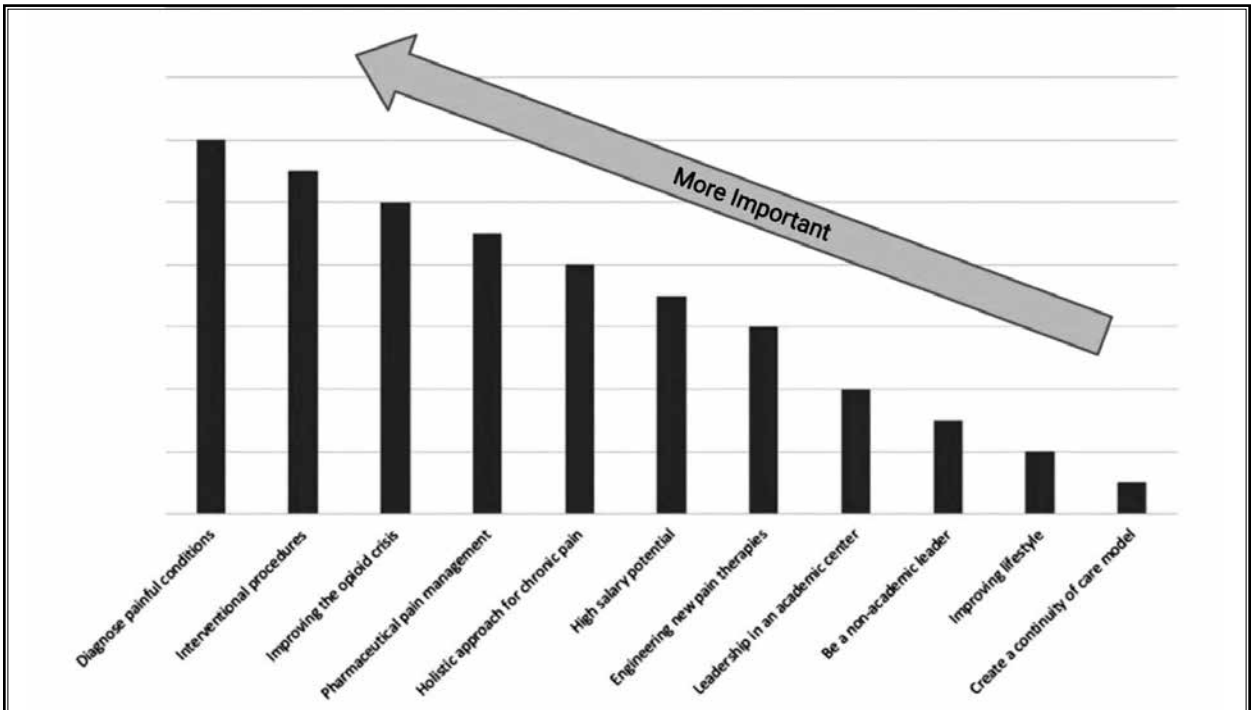

Fig. 5. *The most valuable reasons for completing a pain medicine fellowship. Understanding and diagnosing painful conditions (46%), interventional procedures (22%), and improving the opioid crisis (15%) were thought to be the most valuable characteristics.*

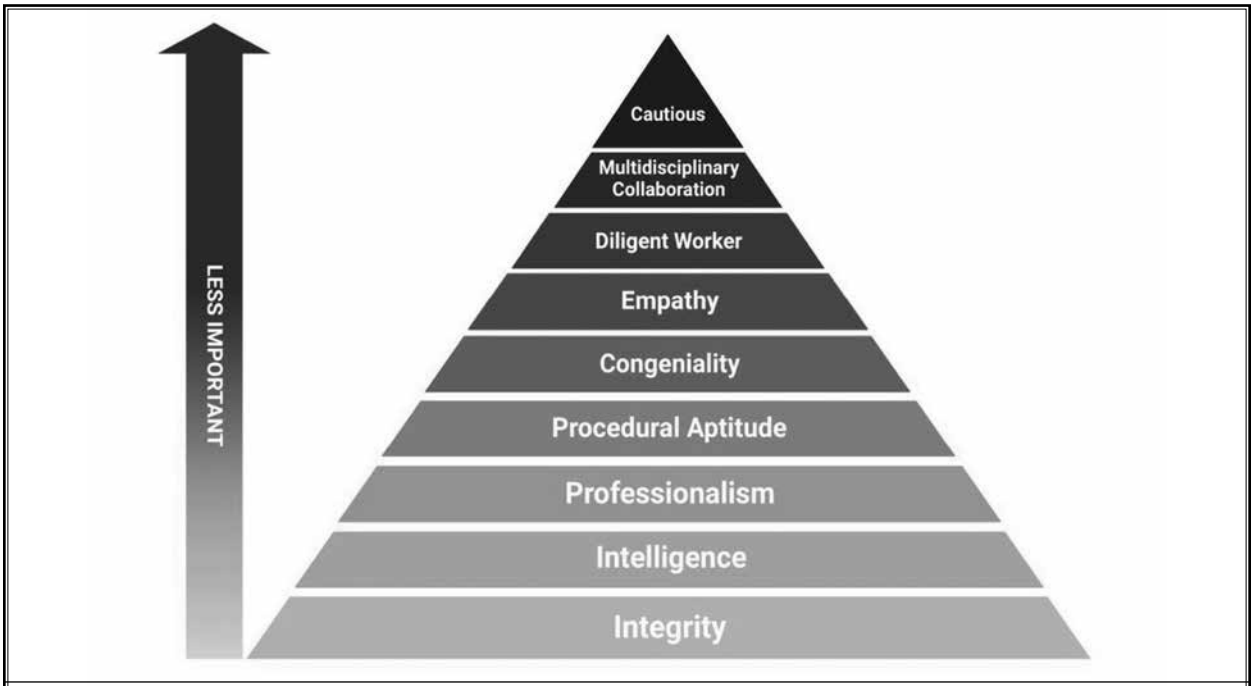

Fig. 6. *The most valuable characteristics for program directors in selecting a pain fellow. Integrity (48%) was thought to be the most valuable characteristic for the PDs in the trainees' opinion and transitioning to least favorable characteristic on top that was being cautious (18%).*

more important than their interest in performing interventional procedures. The authors believe that this is a very powerful statement, since it suggests that trainees understand that procedures are meaningful only when they are used to direct a care plan. The answer also supports the importance of proper history assessments and physical, functional, and imaging-interpretation evaluations to derive a differential diagnosis. Trainee enthusiasm about establishing diagnoses should be fostered in fellowships and used as a tool to teach other less popular but fundamental skills.

Though medical management was not ranked as a highly desirable educational endeavor, it remains a staple for pain treatment, which we believe will remain as an important teaching tool in pain fellowships. Through this analysis, trainees will learn to conduct procedures in a responsible way that will improve patient care (8). The application of a holistic approach was identified as one of the top 5 reasons for pursuing a fellowship. Perhaps this interest can be used as a method to teach the importance of medication management in this model. These responses emphasize the need for fellowships to provide comprehensive multidisciplinary education, including opioid management.

Our respondents indicated a belief that PDs valued integrity, professionalism, and empathy over skilled test-taking and procedural aptitude. (A future analysis would help clarify whether this perception was based on expectation or experience.) Applicants likely have, or want to develop, those traits if they believe that PDs use those qualities to rank their candidates. The authors maintain that these characteristics are necessary to create well-balanced physicians with altruistic motives. Again, we maintain that these values are the foundation for graduating accountable trainees who perform procedures with the patients' best interests in mind.

Our survey demonstrated that trainees preferred pain fellowships that would prepare them to be thoughtful and skilled diagnosticians. There also seemed to be a strong focus on learning interventional procedures. However, most trainees did not want to extend the time they spent in graduate medical education to learn these skills. The discrepancy between most trainees' desire to learn more and reluctance to take extra time in training suggests a discordance. Currently, the GME does not consider interventional procedures necessary for graduation, but the authors submit that this factor should be considered, given the swell of procedural innovation in our field and learners' desire to implement these procedures in clinical practice, as demonstrated here. Most new procedures require comprehensive training for patient selection and performance, so GME branding of pain fellowships with mandatory interventional pain training will organically necessitate well-rounded multidisciplinary education. Our findings suggest that some pain fellowships may require curriculum restructuring to meet applicant expectations, preserve trainee interest, and maintain high-level education. We recommend that future research should be directed to gather a needs assessment of employers with pain graduate competencies to understand how education may need to adapt in our rapidly changing field.

Most survey respondents preferred fellowships that had a high volume of basic and advanced procedures that had a focus on pain diagnosis expertise and did not increase fellowship duration, even if more advanced procedures were part of the curriculum. Approximately 25% indicated that they would not apply if the programs were extended to 2 years, and nearly 30% were unsure whether they would apply to 2-year pain fellowships. Furthermore, nearly all participants indicated that a fellowship, rather than a pain society or industry, was their preferred setting in which to learn procedures. Addressing this preference may force institutions to consider reorganizing their training programs' curricula if interventional experience and multidisciplinary education are to be preserved. One way to extend pain fellowship experience is to borrow elective time from a residency and transfer it into the pain curriculum for some programs that can perform that function (9,10).

A call for change in graduate medical education training is highlighted by most fellows' expectations of joining a private practice group or starting their own enterprise, based on our survey results. The authors believe that the foundational principles for independent practice should be established in graduate medical education programs. However, if additional time is given to instruction in procedure competency, then less time may be devoted to other critical elements of pain medicine education. As a result, some graduates may have to rely primarily on an interventional skill set to treat complex pain problems. Though some multi-physician private groups may be able to deliver oversight by having senior trained practitioners on-site, graduates developing solo practices may not have access to direct supervision, suggesting that tighter monitoring may be required in graduate training to prepare young post-graduate solo practitioners.

The authors submit that the ACGME may need to consider adding concrete procedural competencies for basic and advanced procedures, including the recognition and treatment of procedural complications (11). These additions should be made with the continued application of psychosocial chronic pain training. We propose that these strategies may develop graduates who practice the skillful and vigilant utilization of interventional pain technologies.

Limitations

This study's multiple limitations should be acknowledged. The use of convenience sampling limits the generalizability of the findings to the broader population. Most of the respondents were PM&R physicians, and the next greatest specialty among the respondents was anesthesia; however, the applicant pool has consisted primarily of anesthesia specialists since GME tracking, with PM&R applicants as the second highest applicant cohort. These conditions might have altered the interpretation of the results. The reliance on self-report measures could have introduced response biases, such as social desirability bias. In addition, the cross-sectional nature of the survey design limited causal inferences. Finally, as with any online survey, there was a possibility of sampling bias, because individuals without internet access or interest in taking online surveys were excluded.

One other potential limitation was that nearly 80% of trainees were residents. Compared to fellows, the trainees might have had less experience with or firsthand knowledge of specific elements of the survey, such as the types of advanced procedures. However, the residents' inclusion was extremely useful overall, since many of the questions pertained to their perceived importance of various aspects of a future fellowship experience. There were several questions to which approximately 25% of applicants did not respond; 2 were related to the respondents' reaction to a potential change in the pain curriculum. It was possible that the respondents did not know how they would be affected by the change and therefore did not select an answer. Another question that had a lower completion rate than the others asked the participants' reasons for completing a pain fellowship; the authors surmised that the question stem reads as if it were directed toward pain medicine fellows exclusively, so many residents did not answer.

Conclusion

There is an unbalanced emphasis on interventional pain management by trainees in graduate medical education. Though the authors support the continued development of basic and advanced procedures, we do believe that the technical aspects of our trade serve only a part of the comprehensive care that chronic patients require. Academicians need to create a dialogue among one another and involve the ACGME to determine the best strategies for catering to the popularity of interventional pain medicine in a way that fosters competent, well-rounded, and magnanimous physicians.

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