

Characteristics of Postgraduate Physician Assistant Residency/fellowship Programs: A National Survey

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Abstract

Introduction: The development of postgraduate programs for physician assistants (PAs) began in 1973 and by 2020 there were approximately 100 programs spread across a broad range of medical and surgical disciplines. An assessment of these programs was undertaken.

Method: A non-experimental, descriptive research study was designed to obtain information on the characteristics of PA postgraduate education programs in the US. The source of information was from surveyed members of the Association of Postgraduate Physician Assistant Programs. Questions were drawn from consensus discussions. Programs that were operational in 2020 were eligible to participate.

Results: Seventy-two programs were invited to the survey and 34 replied. They are geographically distributed across the US in 13 states. The respondents represent a wide range of medicine: surgery, emergency medicine, critical care, orthopaedics, hospitalist, psychiatry, oncology, primary care, pediatrics, and cardiology. Most programs are associated with an academic medical center. The curriculum includes bedside teaching, lectures, mentorship, assigned reading, procedures, simulation, and conferences. The PA fellow serves as house officer alongside physician residents and fellows. An average program length is 12 months and awards a certificate. Stipends for PA fellows are \$50,000-80,000 (2020 dollars) and benefits include paid time off, health and liability insurance. About half of the programs bill for the services rendered by the PA. Over 90% of graduates are employed within two months of fellowship completion.

Conclusion: A trend is underway in American medicine to include PAs in postgraduate education. PA fellowships occur across a broad spectrum of medical and surgical areas, as well as diverse institutions and organizations overseeing the programs. Most are in academic medical centers or teaching hospitals. This study expands information on PA fellowships and their operation.

Introduction

Postgraduate education for American physician assistants (PAs) has been underway for half a century. Montefiore Hospital in New York introduced PAs as house officers on the surgery service in 1971 and began the first PA postgraduate fellowship program in 1973. Norwalk Hospital/Yale School of Medicine in 1976 was next (1)(2). In the second decade Mount Sinai Hospital PA Surgical Program, University of Oklahoma Occupational Medicine PA Residency, and The University of Southern California Medical Center Emergency Medicine PA Residency followed. Other postgraduate programs were created in rural medicine, neonatology, and primary care (3). By the new century postgraduate programs had broadened into many areas of medical and surgical specialties. For 50 years a trend has been underway to adopt a postgraduate model of PA education (4). The Association of Postgraduate PA Programs (APPAP.org) website lists over 100 programs spanning 32 tracks - some within the same institution (5). Additionally, some programs have been paused during the COVID-19 pandemic of 2020.

Postgraduate PA training programs have been insufficiently researched and more clarity is needed about this aspect of medical education (5). The notion that PAs can supplement house officers (i.e., physician residents or fellows) is growing as shown by the number of new and established programs. However, little information has been advanced in terms of the broad characteristics of PA postgraduate programs. Informing administrators and medical directors about this trend is warranted. Documenting when, where, why, and how PAs and nurse practitioners (NPs) are used in American medicine is important to health economists and workforce planners if national goals of access to care are to be met (6). The principal aim of this study was to address this change in the organization of medicine. To address this, a survey of PA postgraduate education programs was undertaken.

Method

A non-experimental, descriptive research study was designed to obtain aggregated information on the characteristics of PA postgraduate education programs in the U.S. The list of programs was drawn from the APPAP membership (APPAP.org). The APPAP website contains information on each program, the sponsoring institution, a contact, degree awarded, and class size. Additional information is gained through reaching the program's website.

Questions were developed based on the author's experience with postgraduate programs and relevant literature. Through an open, iterative process, the questions were refined with APPAP board member feedback. Fifty-five questions were selected. The survey instrument was uploaded in Survey Monkey®, an on-line social science survey firm. The web-based questionnaire invitation was sent to active members of APPAP during October 2020 and two separate reminders followed. Each question was singular and not algorithm driven. Responses were aggregated and descriptive statistical analyses were utilized through a statistical package built into the survey software. Text space below the questions provided for impromptu comment by the respondent. The estimated time to complete the questionnaire was 17 minutes. Publicly available information supplemented some of the results.

Results

In total 72 programs were sent a set of questions along with an introduction and an invitation for participation. Thirty-four programs responded to all or part of the questions (47% rate of return). Their distribution is spread across the US in 13 states. Most programs are associated with an academic medical center. On a few occasions, the respondent skipped a particular question (with per question responses varying between 29–34).

The majority (82%) of the 34 respondent programs are a single-track program, meaning they provide postgraduate training in one discipline such as orthopaedics; 18% are “multi-track” areas of medicine and surgery (Fig. 1). The disciplines most represented are surgical (39%), Emergency Medicine (33%), Critical Care (30%), and Orthopaedics (24%). Other PA fellowships include hospitalist, psychiatry, oncology, primary care, pediatrics, neonatology, urology, cardiology, and cardiothoracic surgery.

All 34 postgraduate programs are focused on the education of PAs, and 12 (35%) include nurse practitioners (NPs). The duration of postgraduate PA education is 12 months (79%), with two at 18 months, and one two-year program. Some programs include research and award a postgraduate degree (7).

The techniques used by programs in role development varies. The most common education delivery methods are bedside clinical teaching, Grand Rounds, professional conferences, case studies, in-person didactic instruction, core discipline rotations, simulation, and other (Fig. 2) Beyond a focus on the education in learning about the particular medical or surgical specialty involved, the program incorporates a wide variety of skill development activities such as procedural training, roles in team-based care, interprofessional communication, and other modalities of education. Nearly all programs provide continuing medical education credits to trainees for maintenance of national certification and state licensure. All PAs must be licensed in the state where employed.

Evaluations and assessments of PA fellows incorporate various methods. The more common ones are by the one-on-one observation by a mentor or preceptor, through regular reviews with the program director or supervising (e.g., attending) physician, and by achieving clinical competence (Fig. 3).

Institutional Affiliation

Administratively half (55%) of postgraduate programs reside in medical schools, with (40%) in health science colleges, and (5%) in a nursing school. Three-quarters (76%) of the hospitals that sponsor PA postgraduate programs are affiliated with an academic medical center, the others are multi-hospital systems such as The Mayo Clinic (located in three states) (15%), community hospitals (6%), and one in an ambulatory clinic. Almost all PA fellowship programs (97%) award a certification of completion or a diploma (3%). The combined Army/Air Force- Baylor program awards a Doctor of Science (DSc) for active-duty members and Arrowhead Orthopedics in collaboration with University of Lynchburg offers a Doctor of Medical Science (DMSc) track (7).

Nomenclature:

PAs in postgraduate training are referred to as “Fellows” (59%) or “Residents” (41%). One respondent commented, “We refer to them as fellows, but our program is HRSA grant-funded which is NP only and requires the name *resident*.” The majority of programs (88%) reported that the PA fellow works alongside the physician residents/fellows in the same specialty.

Applicant pool:

Most programs (88%) draw on a national applicant pool with a few relying on regional or local applicants. All PAs accepted into a program are graduates of an accredited program and all are nationally certified by the National Commission on the Certification of Physician Assistants (NCCPA). Entry into a fellowship most commonly occurs within two years of graduation.

Employment of PA fellowship graduates:

Upon graduation, the respondents reported that 96% were employed within two months. When asked about the demand for graduates from the fellowship program, (78%) reported the demand was “high.”

Administration

All of the postgraduate programs reported a PA administrator. One PA reported being a full-time administrator of multiple tracks, with the remainder varying from 4 hours to 20 hours a week (63%). Most (80%) of PA administrators reported 5 years or more of clinical experience before assuming the program director role. A medical director was assigned to all PA postgraduate programs. The role of the medical director was to serve as the main medical supervisor of the PA fellow and involvement in educational assessment, and program advocacy. The majority (76%) of physician medical directors are not allocated additional administrative time outside their clinical responsibilities. In most cases, physician supervision is a requirement of PA state licensure. How programs are administered differed: by clinical department (38%), office of Graduate Medical Education (29%), office of advanced practice (13%), medical group (13%), or other (7%). Figure 4.

Organizational costs associated with the PA Fellowship:

The majority of costs associated with the PA fellowship were derived from the medical group (42%) or the hospital system (46%) with the remainder from graduate medical education or a private donor (12%). However, program administrative costs (excluding resident salary and benefits) are unknown.

Billing for PA Fellow services

PA trainees enrolled in postgraduate education are NCCPA-certified and licensed in the state where the program resides and are eligible for billing of their services. Billing is done by the hospital, medical group, or academic medical center. Not all the respondents answered this question but of those that did, 23 of the 29 programs (79%) reported billing for services provided by the PA fellow. Additionally, four programs said they intended to begin billing for services rendered by their PA trainees. It should be noted that not all PA fellowship programs bill first assist services. Billing for these services typically requires an attestation from the surgeon that no qualified resident is available to assist with eligible operative cases. Medicare reimbursement for a PA/NP assisting in surgery is 13.6% of the primary surgeon’s allowable fee and some surgeries are ‘restricted’ from reimbursement.

PA Fellowship compensation and benefits:

All programs provide a stipend for the PA fellow. The amount varied between \$50,000–80,000 (2019 dollars) (Fig. 5). Not reported were the wages for federal employees (e.g., military and VHA) which are government scheduled and at a higher rate than civilian stipends. Employment benefits (not reported) include paid time off (2–4 weeks), health insurance, CME, liability insurance, and clothing/uniforms.

Value of APPAP Membership

When asked about satisfaction with APPAP, the responses were mixed. Networking, website listing of the program, and as a resource for programs were answers that stood out the most. Research opportunities and job listings were neutral or less satisfied (Fig. 6). All respondents intended to renew membership in APPAP (100%). One respondent offered the following reasons for maintaining APPAP membership: “networking with other programs, annual meetings, listing the program on the website.” Another comment was: “I appreciate being a part of APPAP and the history behind its beginnings.” The top areas of satisfaction for APPAP membership include program listing on the APPAP website (79%), accreditation updates (71%), networking with other programs (61%), and APPAP annual conference (57%).

ARC-PA accreditation

Accreditation of PA postgraduate programs has been evolving in various forms since 2010 but the process was put in “abeyance” in 2014. One reason for suspending was that not all programs participated in accreditation, and none were bound by the accreditation process. The following survey question was about an accreditation process. “*If ARC-PA accreditation becomes available for your fellowship program will you pursue it?*” Two-thirds (67%) said they would *decline*. Another two-thirds (68%) said they had discussed ARC-PA accreditation funding with their institution. The main reason for declining accreditation was cost (48%), as well as lack of support (18%), and other (joint PA/NP program or cost of multi-track programs). A plurality (37%) would be interested in applying for joint accreditation (not yet available), if it included NPs.

Including Nurse Practitioners in APPAP (selected comment):

There is an undeniable need for a JOINT accreditation process ... as more programs are accepting NP and PA applicants.

Value of Postgraduate Programs at Sponsoring Institutions

To probe the reasons why programs have developed and remain operational, a series of questions were asked. Most agreed that recruitment and retention of postgraduate trainees is part of meeting workforce demands (83%), and retention of career staff (55%). Most program directors (76%) believed their program improved decision making and autonomy of PAs/NPs in the clinical setting. Additionally, (93%) of respondents believed their postgraduate program fostered interprofessional collaboration. Lastly, (34%) of respondents felt their postgraduate training program improved compliance with physician resident regulated work hours.

Discussion

The development of postgraduate fellowships for PAs began in 1973 in New York City and residencies for NPs at the Community Health Center, Inc., of Connecticut in 2007 (8). Because program records have not been centralized, it is difficult to determine the total number of new programs versus those that have closed over the years. As a result, a summary of the number of graduates from PA fellowship programs remains largely unknown. Our conservative estimate, based on an average number of programs with graduates per year spread over 45 years, is approximately 1200.

Why did PA postgraduate fellowships develop and why do they remain operational? From the program director's viewpoint, having a fellowship program in clinical medicine and surgery provides the new PA an opportunity to focus on a specialty and receive intensive training in a structured and abbreviated period. Value for the employing hospital or medical practice is from providers who can also back-fill the reduction in physician residency and fellowship work hours. The need for more medical personnel is growing as hospital bed expansion is underway without concurrent physician trainees to staff house officer roles and PAs and NPs provide readily available sources of trained personnel for these roles (9, 10).

Administratively, adding a PA into an existing fellowship (AKA 'residency') is not likely to impact the 'span of management' for an attending physician. Adding another trainee appears to require little more in the human resource office or in department commitment (10). From the student's viewpoint, additional education with supportive mentors provides more confidence to be gainfully employed with a marketable skill set (11). The economist views additional education as an opportunity cost (12). In essence for additional (optional) clinical education the PA foregoes full employment (at 50% higher wages) for one year. The exception being the military where the trainee is also a full-time government employee. From the educator's point of view the salary of a postgraduate trained PA does not differ from on-the-job trained PAs and therefore, some may be reluctant to recommend a PA fellowship (13)(14).

As for the future, based on this census and survey project, half of the respondent programs have been operational for more than 10 years. Older programs include Montefiore Hospital (Surgery, Critical Care), Norwalk Hospital/Yale Medical University (Burn/Surgery), The Army/Air Force-Baylor doctoral program (Orthopedics, Emergency Medicine) and Arrowhead Orthopedic Surgery PA Fellowship program. Most of the programs (74%) train PA fellows in both inpatient and outpatient settings. A growing number of institutions, such as The Mayo Clinic, have multiple postgraduate programs for PAs and NPs located on three campuses suggesting their demand is growing in large medical centers (15)(4). The VHA, within the Department of Veterans Affairs, has eight postgraduate programs for PAs and NPs ranging from primary care, geriatrics, psychiatry, to orthopedics (16). Given the VHA has 160 medical centers and most are affiliated with an academic medical center, the growth of PAs and NPs is likely to continue (17).

Limitations

All surveys have limitations and this one was no exception. The APPAP survey was lengthy (average 17 minutes), which may have contributed to a low rate of return (47%). In addition, many clinically focused

educational programs were suspended, or activity restricted, during the COVID-19 crisis. For example, there were 29 emergency medicine postgraduate programs for PAs in 2019 (18). This number was reduced in half in deferment of the 2020 Coronavirus pandemic. Suspending clinical postgraduate education may have affected the ability or interest of program personnel to complete the survey. The survey was also restricted to APPAP members.

One shortcoming is the limited information about NP residencies in this census. Centralized information of postgraduate NP information remains in development and not available at the time of this project. The next iteration of a postgraduate census survey should include NPs as their role appears to be indistinguishable from PAs.

Another limitation is that it was a single-mode survey delivered by email invitation. No incentives were offered even though they can improve response rates in certain situations. However, clarification of some responses was sought which improved the reliability of the answers. The strength of this survey is its uniqueness in providing a contemporary overview of the characteristics of American clinical postgraduate education.

Conclusion

The movement to enhance the newly graduate PA with additional clinical education began in 1973. A half century later more than 100 PA postgraduate programs are operational across the US and producing medical specialists in 32 medical and surgical disciplines. Those most represented are surgery, emergency medicine, critical care, and orthopaedics. Most postgraduate programs are one year in length and utilize the PA as house officer alongside categorical residents. The 34 participating PA programs in this APPAP member survey have several elements in common as they align with General Medical Education approved postgraduate programs and the PA is added at the margin of infrastructure. The prediction is that PA and NP postgraduate programs will grow as the shortfall in medical and surgical specialties worsens. As a source of readily available and reliable medical and surgical workforce their addition appears to be a necessity. Areas of needed research include return on investment for the sponsoring institution, external funding (*i.e.*, grants) opportunities for postgraduate PA programs, assessing the career arc of PA/NP graduates, comparing postgraduate to on-the-job trainees, and assessing the opportunity cost of PA and NP postgraduate programs.

Declarations

Ethics approval and consent to participate

- Not applicable as this study does not involve human subjects research

Consent for publication

- No consent required

Availability of data and materials

- Available from the corresponding author on reasonable request

Competing interests

- None of the authors have any competing interest

Funding

- None

Authors' contributions

- **D.K**- Coordinated and supervised project, approved survey, manuscript discussion/development, and review, editing, and approval of manuscript.
- **V**- Coauthor-approved survey, reviewed, edited, and approved manuscript
- **S.H**- Coauthor-manuscript development, prepared figures, review, editing, and approval of manuscript

Acknowledgements

- None

Data availability statements

- The datasets used and/or analysed during the current study are available from the corresponding author on reasonable request.

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Figures

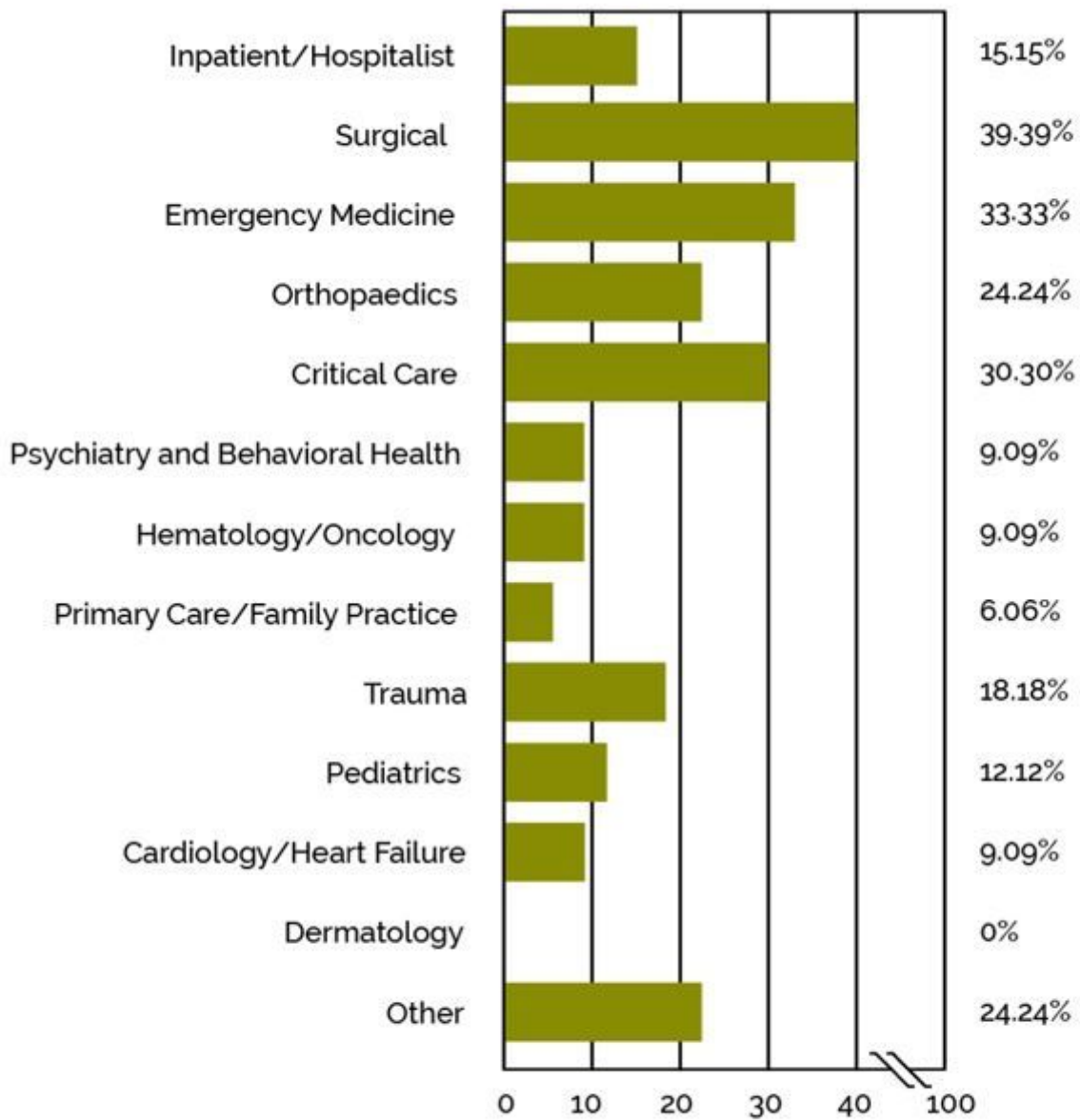


Figure 1

Select all specialty tracks that apply

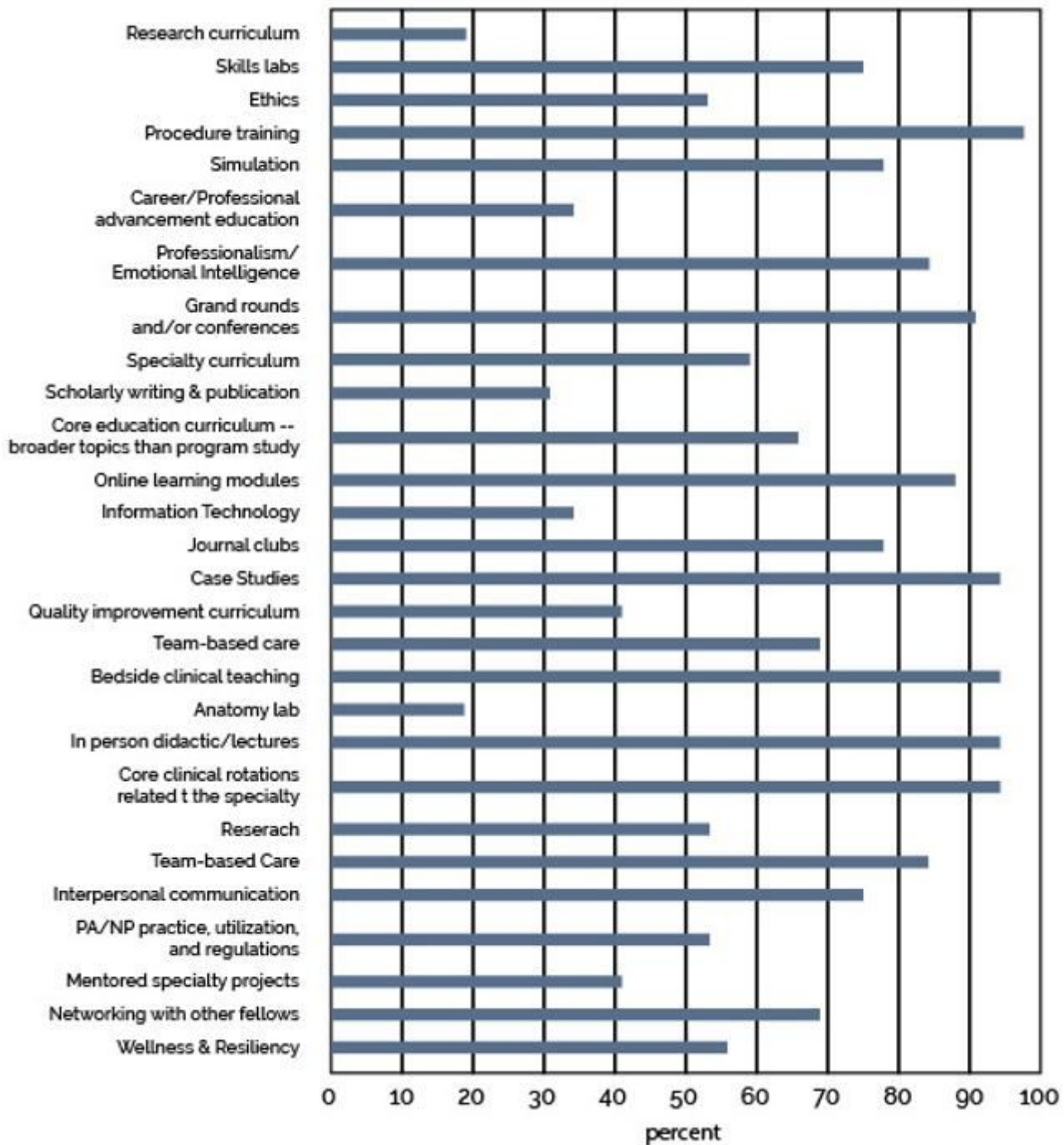


Figure 2

Does your program offer the following education delivery methods? and Beyond specialty education the program incorporates (select all that applies)?

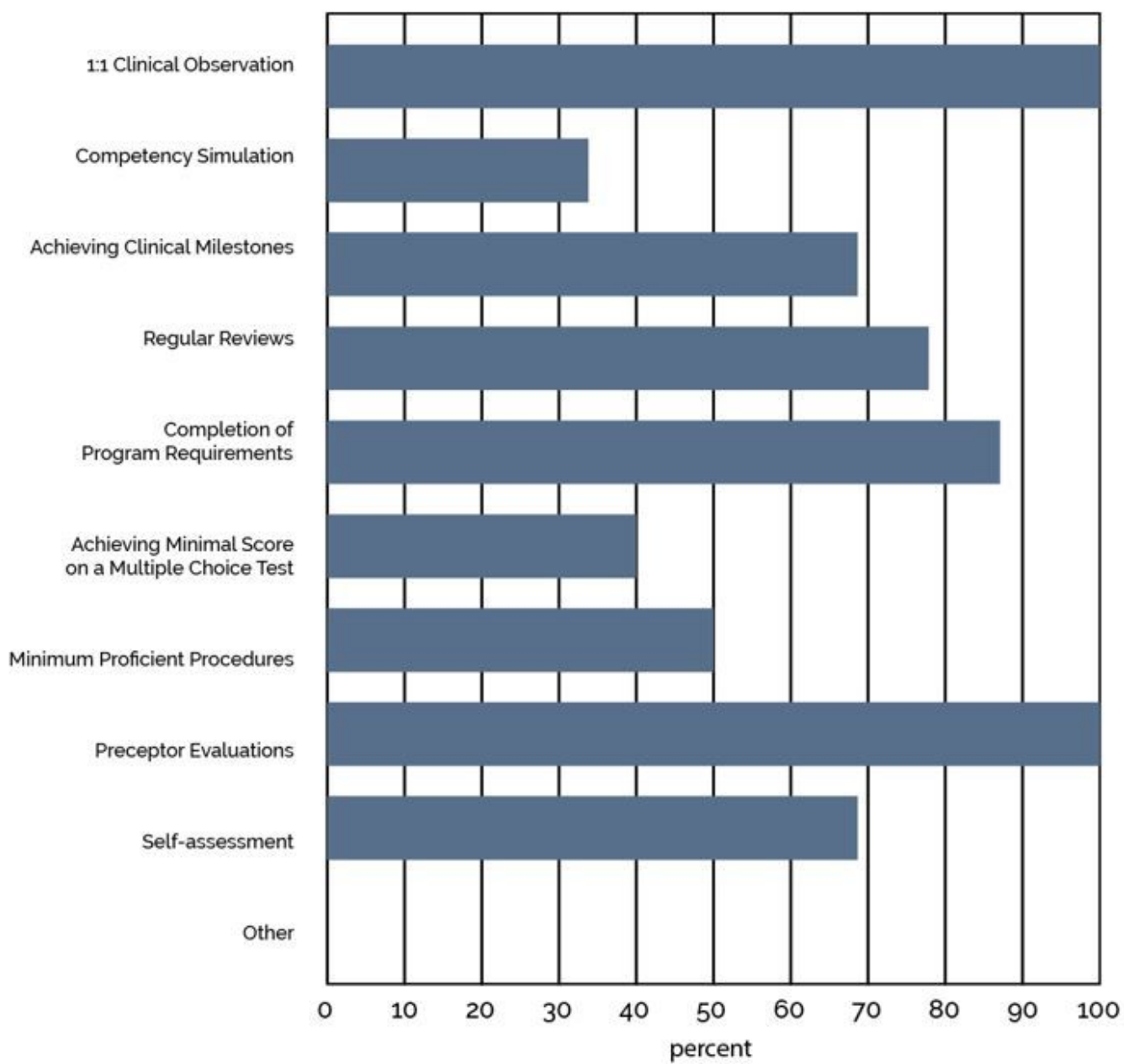


Figure 3

Evaluations and assessments of the fellows are done in the following methods: (Select all that apply)

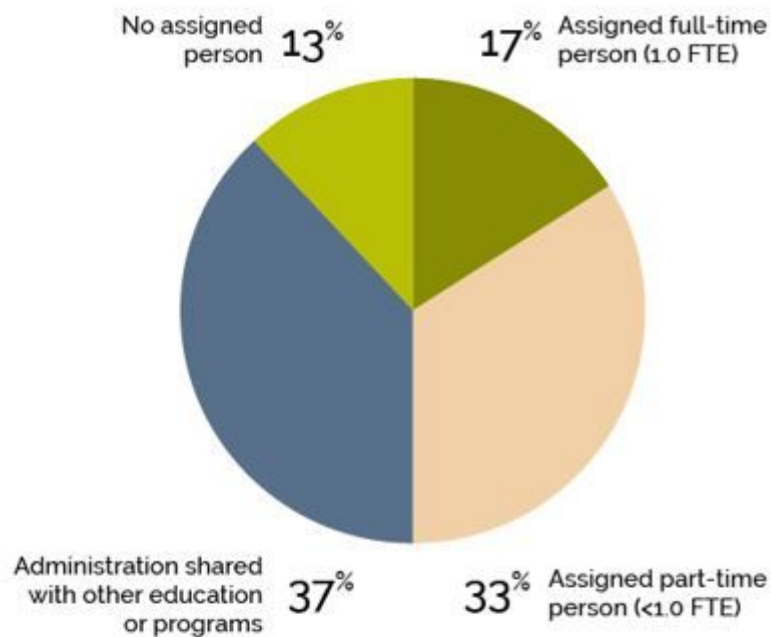


Figure #4 Is your program connected with the following organizational offices?

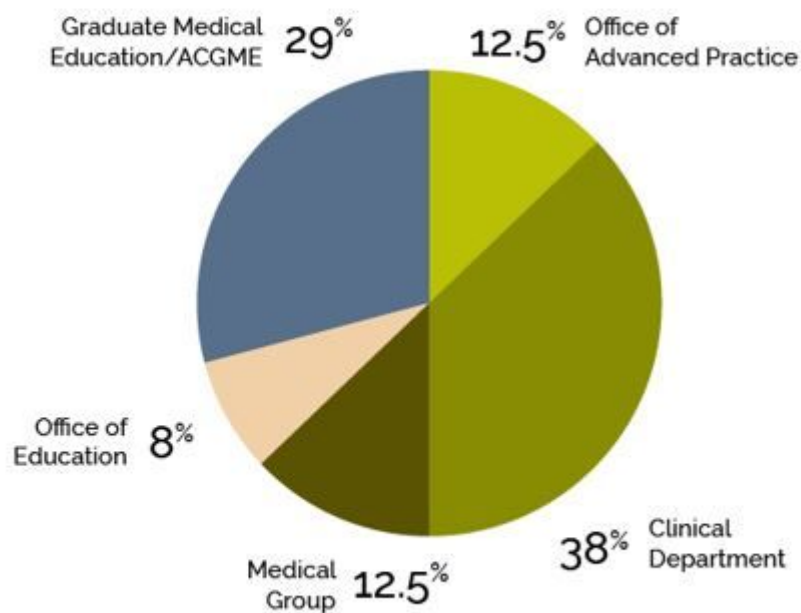


Figure 4

Program Administration Is there a person assigned exclusively for the provision of administrative and/or secretarial support for the program and is this person full time or part-time? Is your program connected with the following organizational offices?

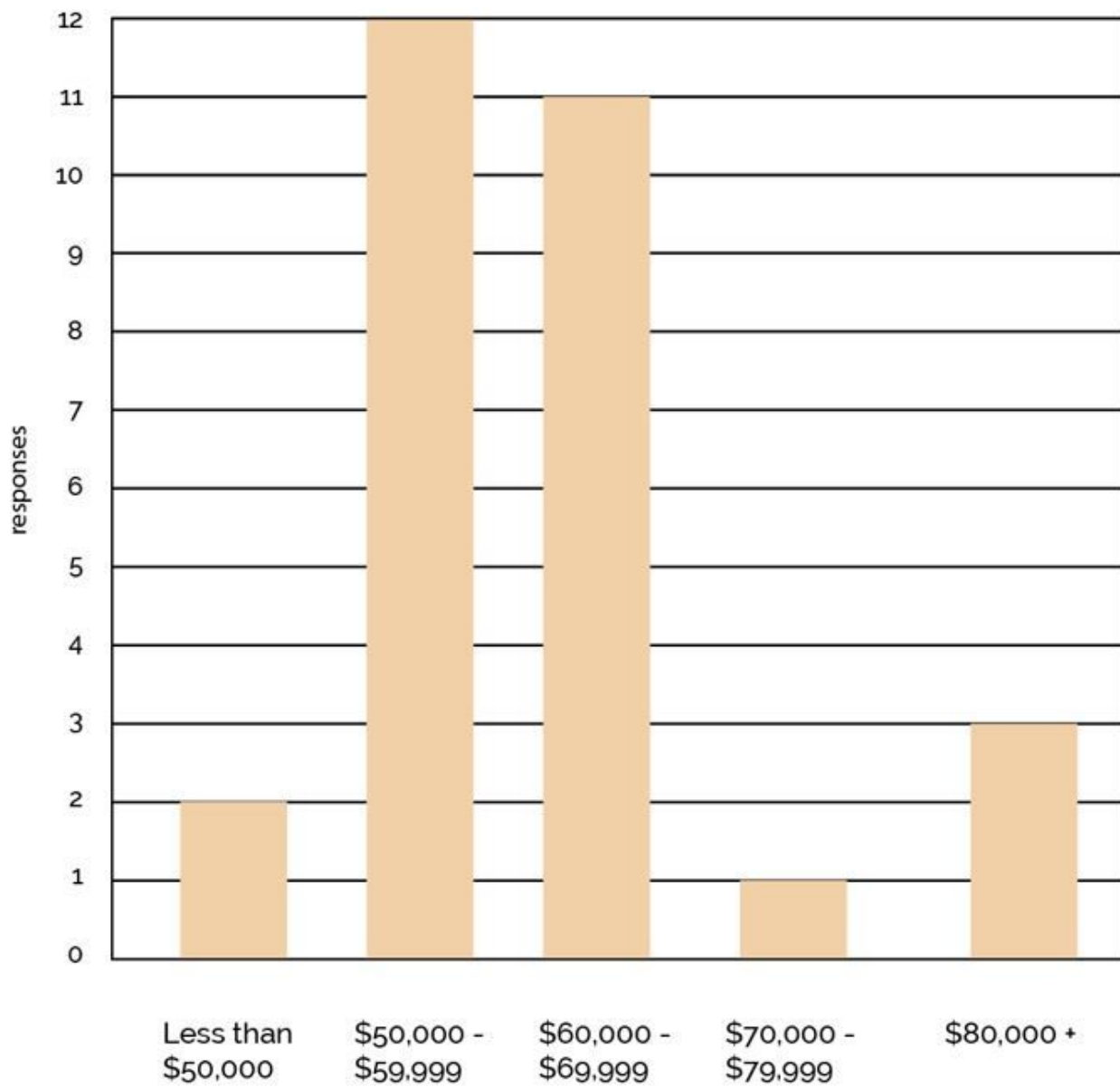


Figure 5

What is the annual stipend provided by your program?

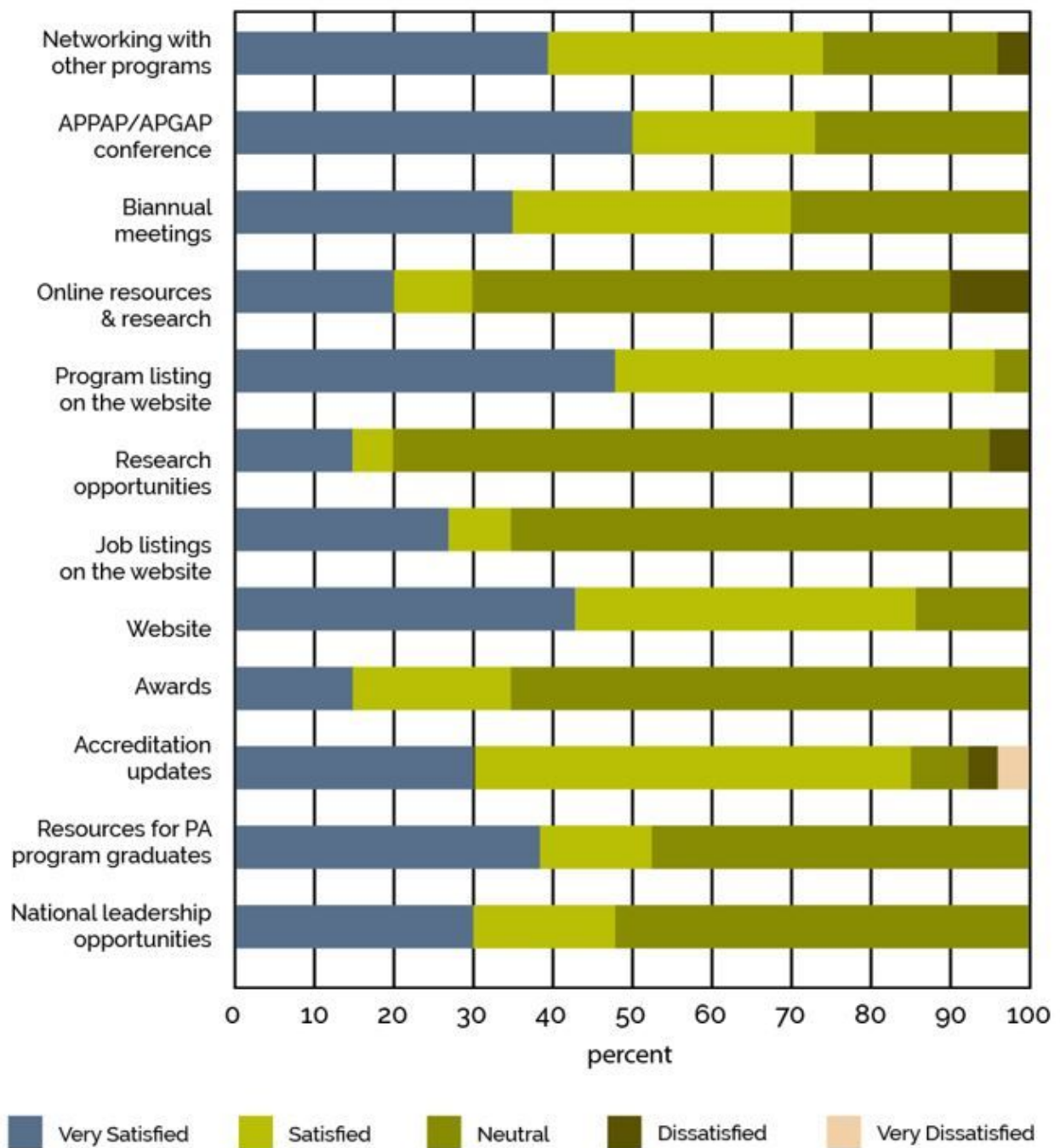


Figure 6

How satisfied were you with the offerings from APPAP?