

Autonomy in entrustable professional activities after the COVID-19 pandemic: the perspectives of residents and teachers

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ABSTRACT

Introduction. The entrustable professional activities (EPAs) are 13 activities that new medical graduates should be able to perform without direct supervision. Our objective was to assess the perceptions of residents and teachers regarding their autonomy to perform the EPAs 2 years after the onset of the COVID-19 pandemic.

Materials and methods. Cross-sectional study of first-year residents of clinical and surgical specialties and their teachers. Electronic, anonymous questionnaires were used.

Results. Subjects were 31 residents and 20 teachers. Most residents believed that they were able to perform 8 of the 13 EPAs independently. According to most teachers, residents required direct supervision to perform 11 of the 13 EPAs. Significant differences were observed between residents' and teachers' perceptions in 8 of the 13 EPAs.

Conclusion. The perception of autonomy to perform the EPAs in the beginning of the residency program was considerably better among residents than their teachers.

Keywords: *medical education; professional skills; professional autonomy; entrustable professional activities (EPAs); internship and residency.*

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INTRODUCTION

The entrustable professional activities (EPAs) in undergraduate medical education are activities that graduates should be able to perform independently on their first day of the residency program, regardless of their specialty.¹⁻³ In 2014, the Association of American Medical Colleges (AAMC) defined 13 EPAs for new medical graduates.¹ In Argentina, according to most medical degree programs, graduates should develop the skills and abilities of a general practitioner in the primary level of care, but most do not specifically include EPAs.⁴

Several studies have shown that many physicians graduate without having acquired abilities and skills that are critical to their professional practice.^{5,6} In a study conducted in the United States, many first-year residents stated that they did not perceive themselves as capable of performing EPAs without direct supervision, and their teachers agreed with this assessment.⁷ In 2018, our group assessed the perception of residents and their teachers and found not only that residents did not feel capable of performing many of the EPAs independently, but also that there were significant differences between the perceptions of residents and those of their teachers.⁸

The COVID-19 pandemic resulted in an enormous disruption in the health care and medical education systems.^{9,10} In an attempt to maintain education continuity and to preserve the safety of students and teachers, universities had to transform their classes into virtual lessons, and many clinical clerkships were postponed or suspended.⁹ This may have affected the learning process of new medical graduates, particularly the development of practical skills.¹¹

In this setting, our objective was to assess the perceptions of residents and their teachers regarding their autonomy to perform EPAs 2 years after the onset of the COVID-19 pandemic.

MATERIALS AND METHODS

This was a cross-sectional study conducted between March and May 2022 at a tertiary care teaching hospital. First-year residents of basic clinical specialties (pediatrics, general medicine, family medicine) or surgical specialties (general surgery, traumatology, obstetrics and gynecology), and their teachers (director, coordinator, residency program supervisor, chief resident, trainer, other teachers) were included.

Participants were invited to complete an anonymous online questionnaire (*Supplementary*

material 1 and 2). Two reminders were sent. Questions referred to the 13 EPAs listed by the AAMC during the first month of the residency program.¹ Possible answers included the 5 levels of supervision previously defined for the EPAs:² 1. Has knowledge, but cannot perform; 2. Performs under direct supervision; 3. Performs under indirect supervision (a teacher is briefly and immediately available); 4. Performs independently; and 5. Performs as a supervisor or trainer. In addition, a question asked to what extent they believed that the COVID-19 pandemic limited learning (1. Strongly agree, 2. Agree, 3. Neither agree nor disagree, 4. Disagree, and 5. Strongly disagree).

Continuous variables were reported as mean and standard deviation, while categorical variables were described as absolute and relative frequencies. For the analysis, the level of autonomy (levels 1 and 2 versus 3, 4, and 5) and the degree of agreement with learning limitations (1 and 2 versus 3, 4, and 5) were dichotomized. The χ^2 test was used to assess the associations in the perception of autonomy between residents and their teachers. A value of $p < 0.05$ was considered statistically significant. The statistical software used was Stata 15.

The study was approved by the Research Protocol Ethics Committee of Hospital Italiano de Buenos Aires (number 0002-22). Study participation was voluntary.

RESULTS

The questionnaire was sent to 99 residents and 47 teachers. A total of 31 residents (31%) and 20 teachers (42%) completed it.

Table 1 describes the characteristics of participants. Most residents and teachers worked in clinical specialties (81% and 75%, respectively) and had knowledge of the professional skills required by medical graduates (77% and 80%, respectively).

Table 2 describes the EPAs and perception of autonomy by residents and teachers. More than half of residents believed they were able to perform 8 of the 13 EPAs without direct supervision. Most teachers recognized that residents were able to perform only 2 of the EPAs in an autonomous manner (document the clinical encounter in the patient record and form clinical questions and retrieve evidence). The perception about the need for supervision to perform the EPAs was statistically different between residents and their teachers for 8 of the 13 EPAs.

TABLE 1. Characteristics of residents and teachers

	Residents n = 31	Teachers n = 20
Age (years), mean ± SD	26.3 ± 2.1	41.2 ± 11.5
Sex female, n (%)	20 (65)	9 (45)
Specialty, n (%)		
General medicine	25 (81)	15 (75)
Surgery	6 (19)	5 (25)
Has knowledge about the professional skills required by medical graduates, n (%)	24 (77)	16 (80)
Graduate from a public university, n (%)	22 (71)	
Average career score, mean ± SD	8.3 ± 0.5	
Role in the residency program, n (%)		
Director		4 (20)
Coordinator or supervisor		6 (30)
Trainer or chief resident		10 (50)

SD: standard deviation.
n: number.

In relation to the impact of the COVID-19 pandemic on their education, 65% of teachers and 48% of residents agreed that the pandemic limited their clinical skill development ($p = 0.2$).

DISCUSSION

This study describes the perceptions of residents and their teachers in relation to their autonomy to perform the EPAs for medical graduates upon entering the residency. Most residents perceived themselves as capable of

performing more than half of these activities in an autonomous manner, whereas their teachers believed that they required direct supervision for most of the EPAs. In general, these results are consistent with prior observations in our group reported in a study conducted before the COVID-19 pandemic.⁸ In addition, a lower perception of autonomy was noted in this study compared to studies carried out in other countries.^{7,12,13}

TABLE 2. Entrustable professional activities that participants perceived that residents could perform in an autonomous manner

Entrustable professional activities (EPAs)	Residents n = 31	Teachers n = 20	*p value
1 Gather a history and perform a physical examination.	21 (68)	7 (35)	0.02
2 Prioritize a differential diagnosis following a clinical encounter.	15 (48)	4 (20)	0.04
3 Recommend and interpret common diagnostic and screening tests.	18 (58)	3 (15)	0.002
4 Enter and discuss orders and prescriptions.	15 (48)	1 (5)	0.001
5 Document clinical encounter in the patient record.	21 (68)	10 (50)	0.2
6 Provide an oral presentation of a clinical encounter.	16 (52)	3 (15)	0.008
7 Form clinical questions and retrieve evidence to advance patient care.	23 (74)	12 (60)	0.2
8 Give or receive a patient handover to transition care responsibly.	14 (45)	4 (20)	0.06
9 Collaborate as a member of an interprofessional team.	25 (81)	7 (35)	0.001
10 Recognize a patient requiring urgent or emergent care and initiate evaluation and management.	15 (48)	3 (15)	0.01
11 Obtain informed consent for tests and/or procedures.	27 (87)	4 (20)	< 0.0001
12 Perform general procedures of a physician (basic CPR, bag-mask ventilation, sterile technique, intravenous and peripheral line insertion, urinary catheter placement).	10 (32)	2 (10)	0.06
13 Identify system failures and contribute to a culture of safety and improvement.	16 (52)	6 (30)	0.1

* χ^2 test.
CRP: cardiopulmonary resuscitation.

The transition from undergraduate medical school to clinical practice is a complex process. In Argentina, it is possible to practice medicine immediately after graduation, and only about half of the graduates enter the residency system, which is intended to provide in-service training under supervision, with progressive autonomy.¹⁴ However, the contrast between expectations and reality in terms of graduate skills, together with the fact that no EPAs have been defined in our country, hinders the possibility of establishing adequate supervision levels for those entering residency programs.

The COVID-19 pandemic resulted in major changes in the health care and medical education systems.⁸⁻¹⁰ Studies assessing the perspectives of students and residents at a national and international level revealed that the pandemic had a clear negative effect on multiple domains.^{15,16} With the sudden shift to virtual classes and the disruption or reduction of opportunities for in-person patient interaction, it is appropriate to wonder whether recent graduates may have had even more deficiencies in the development of clinical skills compared to previous generations. The COVID-19 pandemic may have particularly affected the training of physicians who were completing their medical education during the most stringent restrictions, since it is during this period (mandatory final practice) that they are expected to develop most of their clinical skills. Many of these medical graduates entered the residency system in October 2021, which is why it was decided to explore their perceptions in this study.

It is striking that only about half of the residents in this study agreed that the pandemic affected their education, in contrast to the studies mentioned above.^{15,16} Likewise, their perception of autonomy to perform the EPAs was not substantially different from that of the residents and teachers from the same hospital surveyed in 2018.⁸ It is even interesting to note that there was a trend towards a greater perception of autonomy. Both teachers and residents perceived an additional EPA as being performed autonomously compared to the previous study: for residents, recommending and interpreting common diagnostic and screening tests; and for teachers, documenting the clinical encounter in the patient record.

It should be noted that the perceived need for supervision is a subjective phenomenon and does not necessarily reflect the actual skills of these

residents. It is also worth noting that the difference in the perceptions of residents and their teachers regarding their autonomy to perform the EPAs was consistent with the findings of other similar studies.^{17,18} It has been reported previously that students may overestimate their practical skills.¹⁹

Even with the considerations mentioned here, it is critical to take into account these contributions regarding the need for supervision to perform the EPAs, which highlight potential deficiencies in basic skills for daily clinical practice. The EPAs account for the minimum standards that any medical graduate should meet to practice medicine. However, every year, residents enter the different pediatric residency programs in our country who, according to the results of this study, may not have the skills necessary to conduct patient handoffs or perform basic cardiopulmonary resuscitation without direct supervision. Such deficiencies could lead to a marked risk in patient safety. Ensuring an adequate supervision may reduce medical errors.^{20,21} In addition, it has been observed that medical graduates who felt prepared to perform the EPAs autonomously were able to adapt more easily at the beginning of their residency program.¹²

It is unacceptable that responsible teachers consider recent graduates incapable of performing basic professional activities without direct supervision. This is clearly a problem for residency programs, and even more so for those physicians who do not enter this kind of residency programs.¹⁴ Generating strategies to improve training in the EPAs and reduce the gap in the transition between undergraduate education and the initiation of residency programs is a challenge that the education and health care systems must address without delay. This will probably require a collaborative effort on the part of universities, education authorities, physicians, and health care system managers to define minimum standards in undergraduate training and skill assessment mechanisms, and ideally, to include the EPAs into the curriculum, considering the greater perception of autonomy in countries where they are widely implemented.^{7,12,13} In the future, it would be interesting to continue studying this issue and assess the impact of training in the EPAs on the perceptions of residents and teachers. Likewise, 2 years after the onset of the COVID-19 pandemic, even with the emergence of new SARS-CoV-2 variants and restrictions in many countries, it is necessary to plan medium- and long-term solutions regarding medical education, especially

in relation to the development of clinical skills.

This study has some limitations. First, it was performed at a single tertiary care teaching hospital, where the concept of levels of supervision and privileges is part of the medical residency curriculum; therefore, the results may not be generalized. The EPAs have been recently introduced in the undergraduate training offered in our university; however, this did not affect medical graduates who entered medical residency programs at the time of our study. In addition, to date, the EPAs have not been included in residency programs, although this is being considered for some specialties. Also, our sample was small due to the low response rate, especially in the case of residents. This is relatively common with electronic surveys,²² and similar studies showed similar response rates.^{23,24} Most likely, the digital fatigue resulting from the pandemic has worsened this phenomenon, which could lead to a selection bias. Finally, another limitation is the time elapsed between the admission of the residents and the completion of the questionnaire. Although participants were asked about their autonomy to perform the EPAs at the beginning of the residency program, the rapid learning curve during the first months of training may have influenced their answers.

However, we believe that this study provides valuable information on the perception of autonomy to perform the EPAs among residents and teachers in the context of the COVID-19 pandemic. Our results allow us to reflect on the reality and begin to discuss future plans regarding the need for supervision of medical residents.

CONCLUSIONS

The perception of autonomy to perform EPAs in the beginning of the residency program was considerably better among residents than their teachers. Both residents and their teachers agreed that the pandemic limited their ability to learn while seeing patients. ■

Supplementary material available at: https://www.sap.org.ar/docs/publicaciones/archivosarg/2023/2996_EM_Eymann_Anexo.pdf

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