





Original Article

Surgeons' perception of their training for the autonomous practice of the specialty

Percepción de los cirujanos sobre su formación para el ejercicio autónomo de la especialidad

 Segovia Lohse, Helmut Alfredo¹;  Aldana Ubillus, Celso Augusto¹;  Gamarra Sosa, José Daniel¹;
 Gómez Cantore, José Aníbal¹

¹Universidad Nacional de Asunción, Facultad de Ciencias Médicas, Hospital de Clínicas | San Lorenzo, Paraguay.

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ABSTRACT

Background: During general surgery residency, residents expand their knowledge, skills and aptitudes, progressively acquiring autonomy. Recent changes in residency training models have raised questions about actual graduate preparedness. **Objective:** To explore the perceptions of key educational stakeholders regarding the training of general surgery residents at Hospital de Clínicas, Facultad de Ciencias Médicas, Universidad Nacional de Asunción, Paraguay, for autonomous professional practice. **Methods:** Qualitative study using an interpretive hermeneutic approach. Fifteen semi-structured interviews were conducted with five residents, five recently graduated surgeons, and five resident tutors between November and December 2020. Thematic content analysis was performed using two dimensions and nine descriptors. **Results:** General surgery residents graduate without being prepared for autonomous practice, though they are capable of performing low-complexity procedures. Most wish to pursue a subspecialty. Participants demanded more operative exposure, systematic use of simulation, and structured rotations. The COVID-19 pandemic exacerbated pre-existing deficiencies. Tutors were identified as the main institutional strength. **Conclusions:** Preparation for autonomous practice is incomplete. Extending residency duration without addressing infrastructure and administrative problems will not improve training.

Keywords: medical residency, general surgery, perception, professional autonomy, medical education, qualitative research.

Corresponding author: Dr. Helmut Alfredo Segovia Lohse. Universidad Nacional de Asunción, Facultad de Ciencias Médicas, Hospital de Clínicas | San Lorenzo, Paraguay. **Email:** hhaassll@gmail.com.

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*Universidad Nacional de Asunción, Facultad de Ciencias Médicas. San Lorenzo, Paraguay.

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RESUMEN

Introducción: Durante la residencia de cirugía general el médico residente amplía sus conocimientos, habilidades y aptitudes, adquiriendo progresivamente autonomía. En las últimas décadas los cambios en los modelos de enseñanza-aprendizaje han generado interrogantes sobre la preparación real del egresado. **Objetivo:** Explorar la percepción de los actores clave del proceso educativo sobre la formación de los médicos residentes de cirugía general del Hospital de Clínicas, Facultad de Ciencias Médicas, Universidad Nacional de Asunción, Paraguay, para el ejercicio profesional autónomo. **Métodos:** Investigación cualitativa de enfoque hermenéutico interpretativo, realizada mediante 15 entrevistas semiestructuradas —cinco residentes, cinco cirujanos recién egresados y cinco tutores— entre noviembre y diciembre de 2020. El análisis fue de contenido temático, organizado en torno a dos dimensiones y nueve descriptores. **Resultados:** Los residentes de cirugía general egresan sin estar preparados para el ejercicio autónomo, aunque son capaces de realizar cirugías de baja complejidad. La mayoría desea subspecializarse. Los participantes demandan mayor número de cirugías, uso sistemático de simuladores y rotaciones estructuradas. La pandemia COVID-19 agravó deficiencias preexistentes. Los tutores fueron identificados como principal fortaleza institucional. **Conclusiones:** La preparación para el ejercicio autónomo es incompleta. Prolongar la residencia sin resolver los problemas de infraestructura y gestión administrativa no mejorará la formación.

Palabras clave: residencia médica, cirugía general, percepción, autonomía profesional, educación médica, investigación cualitativa.

Introduction

Medical residency is a teaching-learning period in which the resident physician undertakes a program that allows the expansion of their professional development through knowledge, skills, and competencies within a specialty. Through this process, the trainee deepens their knowledge in a specific area of medicine (1-3).

In Paraguay, the general surgery residency has a duration of three years (1,4), which differs from some international programs that propose longer training periods (2,5).

Various modifications have occurred from the rigid concepts implemented by Dr. William Halsted at the end of the 19th century to the current flexibilization of residency—workload, abolition of the pyramidal system, among others—raising concerns as to whether graduates in general surgery meet the essential requirements for autonomous professional practice, despite having successfully completed the residency (6-10).

These considerations, together with the institutional context of the residency at the Hospital de Clínicas, motivated the present study. The research question was: *What is the perception of key stakeholders in the educational process regarding the preparation of general surgery residents at the Hospital de Clínicas, FCM-UNA, for autonomous professional practice?* The objective was to explore this perception in three groups: residents in training, recently graduated surgeons, and tutors.

Materials and Methods

Design and approach

A qualitative study with an interpretative hermeneutic approach (11) was conducted, focused on understanding the meanings and evaluations that the participants themselves assign to their training experiences. This approach was selected because the research

question requires understanding perceptions rather than quantifying phenomena.

Context

The study was conducted in the General Surgery Department of the Hospital de Clínicas, affiliated with the Faculty of Medical Sciences of the Universidad Nacional de Asunción, located in the city of San Lorenzo. It is one of the most important referral hospitals in the country. The general surgery residency attached to this institution has a duration of three years. The interviews were conducted between November and December 2020, during the SARS-CoV-2 pandemic.

Researchers' reflexivity

The researchers are university faculty members actively practicing at FCM-UNA, which facilitated rapport with participants and understanding of institutional terminology, but also entailed a risk of familiarity bias. To mitigate this, a reflexive journal was maintained during the analysis, interpretations were discussed in group sessions among the four researchers, and the member outside the surgical field contributed an external perspective to the training process.

Participants and sampling

The target population consisted of three groups: (a) residents currently enrolled in the program, (b) surgeons who had graduated within the previous two years, and (c) resident tutors—on-call chiefs and ward chiefs. The inclusion criteria were affiliation with the Hospital de Clínicas, FCM-UNA; active practice in the corresponding role; and provision of informed consent. First-year residents with less than three months of training were excluded.

Sampling was purposive, based on criteria and contrasting groups^(11,12), with simple random selection within each stratum to minimize convenience bias. The sample size of five participants per group was determined based on adequacy criteria for qualitative research

⁽¹³⁾. Data saturation was reached by the fourth interview in each group and confirmed with the fifth.

Data collection

Individual semi-structured interviews were conducted remotely between November and December 2020, with an average duration of 45 minutes (range 30–60 minutes). All interviews were audio-recorded with prior consent. The interview guide (**Table 1**) was organized into two dimensions with nine descriptors: Dimension A (Surgical training: what is taught?): autonomy and subspecialization; Dimension B (Learning: how is the surgeon trained?): current training process, ideal training process, duration of residency, rotations, relationships among residents, obstacles, and facilitators. The guide was reviewed by consensus among the four researchers and piloted in a preliminary interview prior to fieldwork.

Data processing and analysis

The recordings were transcribed verbatim by the researchers and reviewed by a second member of the team. Each participant received their transcript for validation and potential correction, ensuring the fidelity of the corpus. The analysis followed the phases of thematic content analysis proposed by Bardin⁽¹⁴⁾: (a) pre-analysis and organization of the material, (b) coding of the corpus according to the descriptors of the guide, (c) construction of clusters of meanings in double-entry matrices—actor group × descriptor—and (d) interpretation and triangulation of findings among researchers until consensus was reached.

Methodological rigor

The quality criteria of Yvonna Lincoln and Egon Guba⁽¹⁵⁾ were adopted. Credibility was ensured through triangulation of sources—three groups of actors—and researchers—four coders—as well as the use of a reflexive journal and validation of transcripts by participants. Transferability was facilitated through a thick description of the context. Dependability

was ensured by systematic documentation of the analytical process. Confirmability was supported by group discussion of interpretations until consensus was achieved.

Ethical considerations

The study was conducted in accordance with

the principles of the Declaration of Helsinki and the current institutional ethical standards of FCM-UNA. All participants signed an informed consent form. Recordings and transcripts were stored in an anonymized manner; participants are identified exclusively by their role and a sequential number (e.g., Resident 1, Tutor 3).

Table 1. Semi-structured interview guide.

DIMENSION A: Surgical training — What is being trained?	
Autonomy	Do you consider yourself prepared for the independent practice of general surgery upon completion (or after having completed) the residency? Why?
Subspecialization	Do you plan to pursue a surgical subspecialty? Which one and where? What motivates you?
DIMENSION B: Learning — How is the surgeon trained?	
Current training process	How would you describe the process through which you were surgically trained during residency?
Ideal training process	What would you change or add to the current training process to improve the preparation of the general surgeon?
Duration	Do you consider that three years are sufficient for the training of a general surgeon? Justify.
Rotations	Which rotations in other surgical specialties would you consider necessary? How should they be organized?
Relationships among residents	How would you describe the relationship among residents from different years? Does hierarchy help or hinder training?
Obstacles	What are the main obstacles or weaknesses of the general surgery residency program at Hospital de Clínicas?
Facilitators	What positive aspects or strengths do you recognize in the training program?

Results

The results are presented organized according to the nine descriptors of the interview guide. Verbatim quotations are identified by group and participant number.

1. Autonomy or independent professional practice

There is a nearly unanimous perception across the three groups: residents are not prepared upon graduation or their preparation is incomplete. Theoretical training is positively valued, but practical surgical skills are considered deficient. Residents consider themselves capable of performing low-

complexity surgeries—appendectomies, hernia repairs, laparoscopic cholecystectomies—but not higher-complexity procedures.

“I believe that my learning curve is not yet complete [...] There are many procedures for which I should have surgical skills, having performed them beforehand in order to say that I am ready. [...] So the answer would be no. I still do not consider myself prepared for independent practice.” Resident 2

2. Subspecialization

Virtually all residents and recently graduated

surgeons wish to pursue a surgical subspecialty, although many have not yet defined which one. The motivation is centered on acquiring greater technical competence, not on moving away from general surgery. The Hospital de Clínicas is not perceived as an adequate option for subspecialization due to administrative shortcomings and the low number of procedures.

"I would like to pursue a subspecialty. Lately I realize that I am going to fall short; I feel that the training is not really complete. I would like to do it, but I have many doubts about where; I believe Clínicas is not meeting my expectations in that regard." Resident 4

3. Current training process

All three groups agree on the progression of training: the first year focuses on patient reception and preparation, as well as low-complexity procedures; the second year incorporates medium-complexity surgeries; and the third year includes complex procedures and teaching responsibilities for junior residents.

"The surgeon in charge of the procedure showed me all the steps, placing primary emphasis on preparation before surgery: reading about the technique, understanding the pathology, and managing potential complications. Then, with the support and supervision of a senior surgeon during the procedure, the learning process was completed." Recently graduated surgeon 2

Tutors prioritize discipline and observation before performing surgery, whereas residents and recently graduated surgeons mainly value the number of procedures performed as the primary operator. The role of a mentor as a personal reference figure is scarcely mentioned.

4. Ideal training process

Participants agree that the current process is a valid foundation but can be improved. The main demand is systematic access to

laparoscopic surgery simulators with required hours, supervision, and progressive evaluation. Additionally, there is a need to operate earlier and more frequently, and it is suggested that the current checklist should be transformed into an objective assessment tool.

"A program could be developed in which there are required simulation hours for certain procedures included in the curriculum, with supervision and progressive evaluation." Resident 1

5. Duration of residency

There is a divergence of opinions regarding whether three years are sufficient. Those who consider it adequate argue that the issue is not the duration but the institutional barriers to performing surgeries. Those who consider it insufficient propose extending it by one or two years. The cross-cutting consensus is that prolonging residency without addressing administrative and infrastructural obstacles would not bring real benefit.

"For a general surgery resident, one of the most important things is being able to operate, operate, and operate. That is where one gains practice and overcomes fear: therefore, it would be necessary to always have operating rooms available so that scheduled surgeries can be performed. Regarding the duration of residency, perhaps one to two more years." Resident 4

"Regarding the years of residency, if the structure is not changed, it will be of no use. There has to be a structural change." Tutor 5

6. Rotations

There is consensus that rotations should be systematic, organized into modules with protected time, with an approximate duration of two months per module. The requested specialties include: trauma surgery, vascular, thoracic, colorectal, abdominal wall, hepatobiliopancreatic, upper gastrointestinal, and oncologic surgery. Training in trauma surgery was identified as particularly deficient,

as polytrauma patients are not referred to the Hospital de Clínicas.

7. Relationships among residents. Hierarchy

Relationships among residents were generally perceived as good and characterized by camaraderie, although some conflicts and disagreements were reported. All three groups recognize hierarchy as inherent to surgery and necessary for training, although first-year residents often do not understand it as such at the time.

"Hierarchy has its pros and cons. [...] When you are a first-year resident, you at least feel very attacked, you no longer want to be in the place you are, and that makes work more difficult in the long run. Eventually, you understand why there was insistence on certain things." Resident 1

An antithesis is identified: first-year residents report workload overload, while third-year residents tend to delegate. Episodes of abuse of power among residents were documented, always originating from a senior resident, with a negative impact on the training and well-being of junior residents.

8. Obstacles

The availability of operating rooms and medical supplies was the most pervasive weakness across all narratives, including nursing staff, anesthesiology, and surgical equipment.

"The lack of supplies in the hospital greatly delays work and patient progress; that is very frustrating and exhausting." Recently graduated surgeon 4

The COVID-19 pandemic, coinciding with the data collection period, was unanimously identified as the most significant obstacle in 2020. Other limitations identified included: low quality of postgraduate classes, scarcity of research projects, and lack of teaching vocation among some tutors.

"If the year had been typical without the pandemic, I definitely would have had much greater surgical skills." Resident 2

9. Facilidades

As the main strength of the training process, all three groups identified the attitudinal quality and teaching commitment of the tutors—on-call chiefs and ward chiefs.

"The tutors we have are very good; they are always willing to teach and to answer questions; that works well at Clínicas." Recently graduated surgeon 3.

Discussion

This study provides an interpretative understanding of the training of general surgeons for autonomous professional practice at the Hospital de Clínicas, FCM-UNA, Paraguay.

Autonomy at graduation

The lack of preparedness for autonomous practice at the time of graduation has been documented internationally. Mattar et al. found that psychomotor skills at the end of residency are inadequate, although clinical assessment and patient management are satisfactory ⁽⁷⁾. Bell points out that learning to operate requires, in addition to manual dexterity, visuospatial and tactile skills, as well as the ability to make appropriate clinical judgments, all of which are acquired through the cumulative experience of repeatedly performing surgeries ⁽¹¹⁾. The findings of the present study are consistent with this evidence.

Subspecialization

The trend toward subspecialization and the perception that general surgery is becoming increasingly less attractive have been documented in high-income countries ^(7,8). Some authors suggest the imminent disappearance of the traditional general

surgeon ⁽¹²⁾. Optimization of resources to increase surgical procedures at the Hospital de Clínicas could improve interest in subspecialization within the institution itself.

Current and ideal training process

The causes of the low level of preparedness are multifactorial: limited exposure to complex procedures, scarcity of mentors, reduction in emergency surgeries, and rigidity of the training paradigm ⁽⁷⁾. The demand for systematic simulation aligns with the recommendations of the surgical assessment committee of the American Surgical Association, which proposes that residents develop technical competencies in skills laboratories before encountering real patients ⁽¹³⁾.

Duration of residency

It has been shown that the reduction in working hours affects the quality of training, partly due to the compensatory workload it generates in other residents and the consequent decrease in teaching time ^(14,15). The findings of the present study suggest that extending the duration without a prior plan for improvements in administrative management would not produce real benefit.

Rotations

The need for systematic rotations and periodic evaluation is consistent with the standards proposed by the ANEAES ⁽¹⁶⁾. Debas et al. recommend that the surgical curriculum be organized into competency-based modules ⁽¹³⁾, which corresponds to the formal program of FCM-UNA ⁽³⁾, although participants report that this is not implemented in practice.

Hierarchy and resident well-being

A recent systematic review documented that general surgery residents may develop abusive behaviors toward their peers and junior trainees ^(17,18). The present study identified episodes of abuse of power among residents, which calls for a permanent institutional plan

to ensure awareness and enforcement of the rights and responsibilities of all members of the service ^(19,20,21).

Obstacles and strengths

The institutional difficulties described—overload with non-training activities, lack of research, and insufficient supplies—are similar to those reported in high-income countries ^(13,17,22), although in the local context they are exacerbated by structural factors of Paraguayan public hospitals. The quality and teaching commitment of the tutors constitute valuable institutional human capital upon which to base the necessary improvements.

LIMITATIONS

The study is single-center, and the data collection period coincided with the COVID-19 pandemic, which drastically reduced scheduled surgeries and may have magnified the perception of training deficiencies beyond what is attributable to permanent structural factors. The sample size of five participants per group is modest, although data saturation was achieved. Additional methodological triangulation—such as participant observation or document analysis—was not incorporated. These limitations should be considered when interpreting the transferability of the results.

Conclusion

At the completion of general surgery residency at the Hospital de Clínicas, FCM-UNA, graduates are not prepared for autonomous professional practice or report incomplete training: strong in theory but deficient in surgical skills.

Most residents and young surgeons wish to pursue a surgical subspecialty, motivated by the desire for greater technical competence. Systematic rotations and simulation are the most requested training strategies. The availability of operating rooms and supplies, the COVID-19 pandemic, and the scarcity

of research constitute the main obstacles identified.

Extending the duration of residency without first addressing structural, administrative, and infrastructural issues will not improve the training of general surgeons. Tutors represent the main strength of the training system.

Author's contributions: Segovia Lohse HA, Aldana Ubillus CA, and Gamarra Sosa JD conceived the project, designed the methodology, conducted the interviews, performed the analysis, drew the conclusions, and drafted the manuscript.

Gómez Cantore JA carried out the supervision and critical review at all stages. All authors approved the final version of the manuscript.

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