

## **SOCIO-ACADEMIC ANALYSIS OF THE ENTRY OF DOCTORS TO A POSTGRADUATE GRADUATE AT THE SCHOOL OF MEDICINE OF PONTIFICIA UNIVERSIDAD CATÓLICA DEL ECUADOR**

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**Abstract:** Background: In the last decade, thousands of doctors who graduate from the different medical schools cannot access a postgraduate course, since the availability of places and the specialties offered are very limited. This problem is linked to different determinants of a social, academic, health administrative nature, among others. The objective of this study was to identify the possible socio-academic determinants that allow access to a postgraduate degree in medicine at ``Pontificia Universidad Católica del Ecuador`` and thus provide recommendations and relevant information to have greater possibilities of accessing a position.

**Methodology:** A quantitative, analytical observational study was carried out, based on the information available in the databases of the medical applicants for a postgraduate course at the Faculty of Medicine of ``Pontificia Universidad Católica del Ecuador`` between 2018 and 2019.

**Results:** Of the 1,603 students who applied to the merit contest in 2019 to access a postgraduate degree in medicine, 11.4% were admitted. The academic merits and the knowledge exam of the winners had an evaluation that borders on 58% and the variables that presented significant differences were the research papers, publications and the exam score, constituting determinants that favor admission to a postgraduate course in medicine.

**Conclusions and recommendations:** The main socio-academic determinants to access a postgraduate degree in medicine at ``Pontificia Universidad Católica del Ecuador`` are age, years of graduation, research papers, publications and test scores. It is recommended to activate research, updating and motivation programs for alumni, which allow them to improve their participation in postgraduate programs.

**Keywords:** academic, medicine, doctors, postgraduate, applicants.

## BACKGROUND

Among the desires of young doctors who graduate from the Faculty of Medicine, is the possibility of entering a postgraduate course, since the collective imagination indicates that “staying” as a general practitioner implies a limitation in personal and professional development, which is why they will make the necessary efforts to obtain a specialty degree and achieve this respected and valued goal in the general community and especially in the academic community (Mosquera, 2016).

The path to access a postgraduate degree begins with the presentation of supporting documents in the faculties that offer these specialties under the regulations of the Higher Education Council (CES), the Ministry of Public Health (MSP) and private institutions. The number of places available is based on the requirement of the Ecuadorian health system; these “quotas” are informed to the universities that offer the different programs (MSP, SENESYT, IFT, CES, 2017).

To this end, the MSP has developed the Human Talent Strengthening Project, activating 18 agreements with the main universities and an approximate investment of USD 111 million dollars. As reported by the MSP, in order to improve the quality of health service provision at different levels of care, it planned to have 10,000 scholarships for doctors through the education, training and certification plan for human talent in health for the period 2013-2017, thanks to the tripartite agreement with the National Secretariat of Higher Education, Science, Technology and Innovation (SENESCYT) and the Ecuadorian Institute of Educational Credit and Scholarships (IECE) (MSP, 2013).

Unfortunately, thousands of doctors who graduate from the different medical schools

cannot meet the objective of entering a postgraduate course, since the demand far exceeds the available supply. This problem is linked to different determinants of a social, academic, health administrative nature, among others, that need to be analyzed to propose possible recommendations (Sánchez, 2019).

The PUCE can play an important role as an institution where professionals can achieve goals and build a solid foundation in the field of medical specialties, since it has become a recognized training institution, in 2019 it obtained the second position at the national level in the Scimago Institutions Rankings for its research observed through citations, the Times Higher Education (THE) awarded it the first position at the national level and the Latin American QS ranked it third among universities Ecuadorians evaluated by this ranking (Ponce, 2020).

## **GENERAL GOAL**

The objective of this study is to identify the possible sociodemographic and academic determinants that allow access to a postgraduate degree in medicine at ``Pontificia Universidad Católica del Ecuador`` (PUCE).

## **SPECIFIC GOALS**

Describe the characteristics of the applicants for the postgraduate courses in Medicine at the PUCE, years 2018-2019.

To assess the sociodemographic characteristics that influenced admission to a postgraduate course in medicine at PUCE.

To establish the academic components that differentiated those admitted and not admitted to a postgraduate course in medicine at PUCE.

Determine the proportion of admitted applicants according to the university of origin, with attention to those who received undergraduate training at PUCE.

## **METHODOLOGY**

A quantitative, observational and analytical study was carried out, based on the information available in the databases of the medical applicants for a postgraduate course at the PUCE School of Medicine between 2018 and 2019.

The qualitative variables were analyzed based on the calculation of frequencies, contingency tables and calculation of Chi square, as a statistic for differences in proportions. Quantitative variables were analyzed with summary statistics (arithmetic mean, standard deviation), and mean difference tests were applied. For the analysis, the IBM SPSS version 25 system was used.

## **RESULTS**

The social and professional profile of 5,100 registered between the years 2018 and 2019 was analyzed and it was observed that 57.9% of applicants were female, that the majority (91.1%) identify themselves as mestizos (Table 1). In addition, 1% of the applicants presented some kind of disability (0.1% auditory, 0.6% physical and 0.3% visual).

The most preferred specialties were: Pediatrics with 16.2%, Gastroenterology and Endoscopy with 13.1%; Family and Community Medicine 10.1%, Traumatology and Orthopedic Surgery 9%, General and Laparoscopic Surgery 8.3%. It is important to emphasize that the demand for the Family Medicine postgraduate course was influenced by the scholarships offered by the Ministry of Public Health.

Specialty preference varied by gender, with women preferring clinical areas, including Pediatrics, Gastroenterology, Family Medicine, Internal Medicine, Otolaryngology, and Geriatrics; and men surgical areas such as General Surgery, Traumatology, followed by critical areas such as Emergency and Intensive Care, observing a significant difference

between specialty preferences by gender ( $p=0.0000$ ) (Graph 1).

In the year 2019, in the first call made by the Faculty of Medicine, 2159 applicants were registered, in this group, the average age was 30.3 years, the average number of years of graduation was 3.4 years, 68% were single, 26.2% married, 4.1% divorced, 1.6% lived in a free union.

Of 1,603 doctors who took the entrance exams, only 182 (11.4%) passed and were admitted to postgraduate medicine; 53.8% of this group were women, the average age was 29.4 years and the average time to graduate was 3.4 years; only 10% of the professionals were over 35 years of age and over 7 years of graduation.

The total qualification was evaluated out of 100 points, 30 for the academic merits and 70 for the competitive exam. In the group that passed, the average in academic merits was 16.77/30 +/- 0.18, with a minimum of 11.74 and a maximum of 24.46 points; the mean of the opposition exam score was 41.68/70 +/- 0.28, with a minimum of 31 and a maximum of 51. In the sum of 100, the mean was 58.46 +/- 0.25 points, with a minimum of 48.76 and a maximum of 67.61 (Table 4). The Graduation Merit Index (IMG) out of 15 was 12.25, corresponding to 81.7/100 (Table 3).

The difference in means of the academic components was evaluated between those who did not pass and the 182 doctors who agreed to a postgraduate position. The variables with significant differences were those referring to research papers, publications and the exam score (Table 4).

When considering publications, research, and projects, only 14% presented publications, 2.7% evidenced merits or research, and 39% participated in a research project.

When relating the sociodemographic variables, a significant difference ( $p=0.04$ ) was observed in the variables age and years

of graduation, evidencing that young doctors with an average of 3 years of graduation were the ones who accessed a postgraduate degree in medicine at the PUCE to a greater extent.

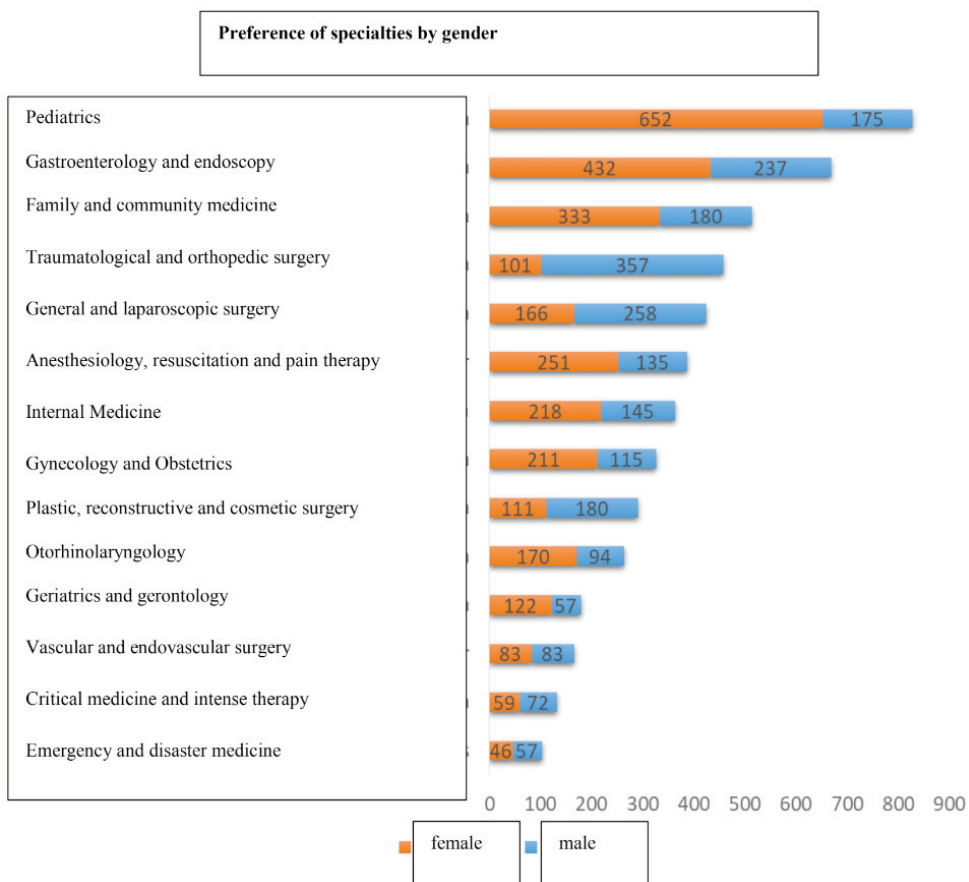
## DISCUSSION

According to figures from the MSP, in Ecuador there are 22 doctors for every 10,000 inhabitants, just one point less than what is recommended by the WHO; however, the problem is its geographical distribution, since most professionals are in the main cities where they would find better economic opportunities, professional development and a better "quality of life" (Basantes, 2020).

In the country in 2017, a contingent of 1,980 Pediatricians, 2,076 Gynecologists and 1,387 specialists in Family and Community Medicine were reported. It can be seen that the proportion of Family Physicians is very low (one for every 1,500 inhabitants), which barely represents a tenth of the population's demand. The presence of the Family Physician becomes necessary when the system is oriented towards seeking health in society, understanding health with collective principles that allow for the transformation of ways of life, that values work and consumption patterns and logics in the productive and political order and not only considers that the health process is a mere relationship of "attention" and "care" (Breilh, 2013a).

This situation reveals that the Ecuadorian health model has prioritized curing diseases in hospitals or highly specialized units, and has neglected the search for collective health, disease prevention in community health units, as well as the search for strategies to improve living conditions, sustainability, sovereignty, solidarity, and health/biosecurity (Salud, 2007)-(Breilh, 2013b).

Part of the problem may be the social image that has been built on the hospital specialist, minimizing or demotivating the social work



Graph 1: Preference of Specialties

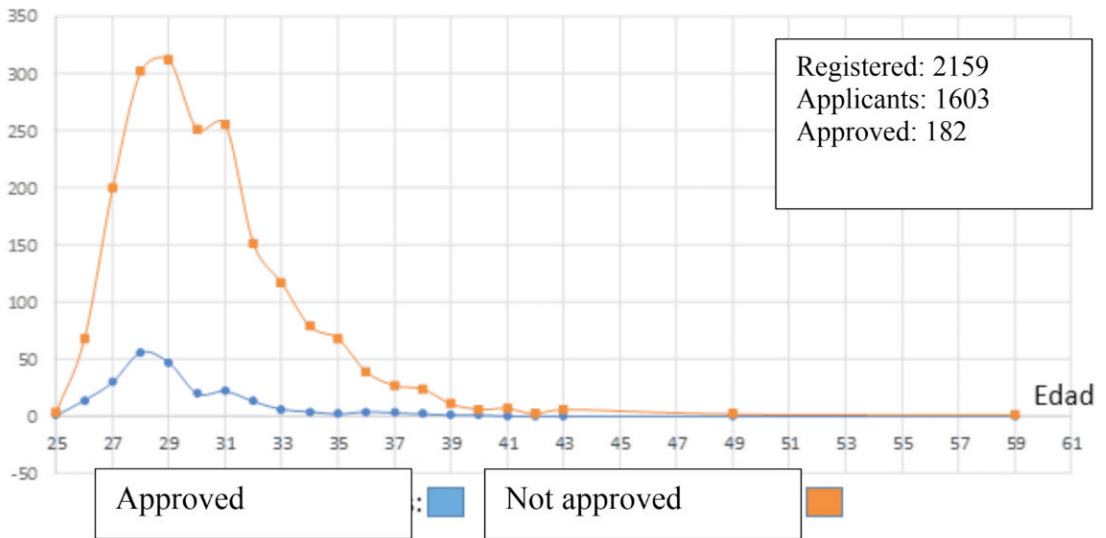
Source: PUCE archives.

Applicant variables analyzed	Average	%
Graduation Merit Index (IMG): 15	12,25	81,67
Posts: 3	0,29	9,67
Medical Upgrade: 3	1,79	59,67
Teaching assistantships: 3	0,126	4,20
Merits and/or research: 3	0,082	2,73
Full or half scholarships: 3	0,40	13,33
Medical residencies: 3	1,01	33,67
Research projects, speaker: 3.	0,74	24,67
Affirmative Action Measures: 2	0,085	4,25
Folder over 30	16,78	55,93
Exam over 70 points	41,68	59,54
Total	58,46	58,46

Table 3: Qualification of the Academic Variables of the Approved

Applicant variables analyzed	Not approved	%	Approved	%	p=
Graduation Merit Index (IMG): 15	11,86	79,07	12,25	81,67	p=0,559
Posts: 3	0,15	5,00	0,29	9,67	p=0,000 *
Medical Upgrade: 3	1,267	42,23	1,79	59,67	p=0,944
Ayudantías de cátedra: 3	0,06	2,00	0,126	4,20	p=0,000 *
Merits and/or research: 3	0,036	1,20	0,082	2,73	p=0,000 *
Full or half scholarships: 3	0,15	5,00	0,40	13,33	p=0,000 *
Medical residences: 3	1,028	34,27	1,01	33,67	p=0,054
Research projects, speaker: 3.	0,376	12,53	0,74	24,67	p=0,000 *
Affirmative Action Measures: 2	0,047	2,35	0,085	4,25	p=0,000 *
Folder on 30 points	14,97	49,90	16,78	55,93	p=0,031 *
Exam over 70 points	32,98	47,11	41,68	59,54	p=0,000 *
Total over 100 points	47,94	47,94	58,46	58,46	p=0,000 *

Table 4: Comparison of Academic Variables between Passed and Failed



Graph 2 Age of Approved and NOT Approved applicants for a postgraduate course in Medicine.

of prevention of Family Medical Professionals.

In the present study it was observed that both in the applicants and in those who accessed a postgraduate degree in medicine at the PUCE, the female gender predominates (57.9% and 53.8%). This data coincides with the female participation in higher education registered in the last Population Census of Ecuador, which showed that 14.7% of women at the national level accessed a postgraduate degree (compared to 13.6% of men), representing 52.6% of those who access this educational level. Women's participation is higher in urban areas (19.6%) and is significantly reduced in rural areas, with only 6.2%. (Ferreira et al., 2010)

The results of the study coincide with the data on the participation of women in the medical profession reported by the National Statistics System in Spain, which indicates that in 1985 in this country women represented 25% of medical professionals and a figure that increased in 2016 to 49.77% (Garay N., 2018).

When the preferred specialty of the applicants is reviewed, it can be seen that the vast majority prefer traditional specialties such as Pediatrics, Gastroenterology or Surgery, but it is also very important to show that 10% of doctors aspire to follow Family and Community Medicine. In the study it can be observed that the specialty that has the most preference in women in relation to men is Pediatrics (3.7 to 1), followed by Gastroenterology (1.8 to 1) and Family Medicine with (1.9 to 1). Conversely, the preference of men in surgical medical specialties is maintained (1.6 to 1).

The MIR report in Spain in 2015 indicates that 73% of the enrolled women opted for Family Medicine, according to the researchers: "There are more women because this area of Medicine allows for greater reconciliation" between work life and family and social life that female doctors prefer. This work also

indicates that, despite having a greater female representation in these specialties, this does not transcend the occupation of management positions, since only 18% of Heads of service are women (Garay N., 2018).

A recent study indicates that older adults in a hospital had lower mortality and readmission rates when cared for by female doctors, data that could validate criteria that patient-centered communications and feminine attitudes could have important clinical implications (Phillips, 2017).

Among the results of the socio-academic dimensions of the 2019 applicants to the PUCE postgraduate medicine courses, it is important to indicate that they are mostly Ecuadorian doctors, young people around 30 years of age, with an average of 3.4 graduates; and from the province of Pichincha in 50%.

The admitted physicians (182) show differences that can be considered decisive in the possibility of obtaining a specialty quota. Among the most relevant we can highlight the age and time of graduation. The other variables such as ethnicity, marital status, nationality, country or province of origin do not show significant differences between the approved applicants and those who did not reach a quota.

A relevant piece of information is the number of postgraduate students with scholarships, since in a sample of the last 4 years, of 1094 professionals, only 15.5% had a scholarship, a fact that implies that the vast majority have to finance their academic activity in addition to paying their normal living expenses, and leads to the need to seek significant family support, or have extra work that allows them to generate the economic resources that finance the activity. Surely this element of the process affects the physical, emotional, and social state and the integrity of the professionals who access a postgraduate degree and who are self-financed. The

main sponsors of scholarships were public institutions: the MSP and the IESS at 60%, followed by private institutions at 39% and the PUCE and others at 1%.

## **CONCLUSIONS**

Among the applicants, female professionals, of mixed ethnicity, prevail, the average age was identified as 30.3 years and with 4.3 years of graduation. As preferred specialties, it is evident that Pediatrics and Gastroenterology predominate, followed by Family and Community Medicine, as opposed to Critical and Emergency Medicine, which are scored as the least chosen. There is a significant difference between the selection of specialty by gender, with prevalence towards clinical areas, especially Pediatrics and Gastroenterology in women, when compared with the surgical areas chosen by men, who favor General Surgery, Traumatology, Critical and Emergency Medicine.

Age and graduation time showed significant differences between those who were admitted to a postgraduate course in medicine at PUCE, as well as the presentation of research papers, publications, and exam scores, constituting determining variables that favor admission

to a postgraduate course in medicine at PUCE. As an additional finding, it can be mentioned that the issue of sponsorship for postgraduate studies is still very limited, only 15.5% in the last 4 years had a scholarship, the main sponsors being the MSP and the IESS. The specialties with the greatest number of scholarships are Pediatrics, Critical Medicine, Geriatrics, Family Medicine and Gynecology.

## **CONFLICTS OF INTERESTS**

The authors declare that they have no conflict of interest. The funders had no role in the design of the study; in the collection, analysis or interpretation of data; in the writing of the manuscript or in the decision to publish the results



## REFERENCES

- Basantes, A. C. (2020). *Más médicos en Ecuador pero menos calidad en la salud*. GK City. <https://gk.city/2020/02/09/medicos-ecuador/>
- Breilh, J. (2013a). **Entrevista a Jaime Breilh \***: Primera parte. *Revista Archivos de Medicina Familiar y General*, 10, 37–40.
- Breilh, J. (2013b). **La determinación social de la salud como herramienta de ruptura hacia la nueva salud pública (salud colectiva) (Epidemiología crítica latinoamericana: raíces, desarrollos recientes y ruptura metodológica)**. *VIII Seminario Internacional de Salud Pública: Saberes En Epidemiología En El Siglo XXI*, 1–45. [http://repositorio.uasb.edu.ec/bitstream/10644/3524/1/CON-107-Breilh%2C J.-La determinacion.pdf](http://repositorio.uasb.edu.ec/bitstream/10644/3524/1/CON-107-Breilh%2C J.-La%20determinacion.pdf)
- Ferreira, C., García, K. G., Leiva, L. M., Avellaneda, A. P., & Tomsich, C. (2010). *Mujeres y Hombres del Ecuador en cifras III* (E. Ecuador (ed.)). file:///C:/Users/Alejandro/Downloads/Mujeres\_y\_Hombres\_del\_Ecuador\_en\_Cifras\_III.pdf
- Garay N. (2018). **La mujer supone el 50% de la plantilla médica, pero solo el 20% está en puestos de dirección** - El médico interactivo \_ El médico interactivo. *FEB*. <https://elmedicointeractivo.com/la-mujer-supone-el-50-de-la-plantilla-medica-pero-solo-el-20-esta-en-puestos-de-direccion/>
- Mosquera, D. (2016). *El mercado aún determina los posgrados en Medicina*. Ediciónmédica. <https://www.edicionmedica.ec/secciones/profesionales/-las-especialidades-m-dicas-a-n-las-decide-el-mercado--87329>
- MSP, SENESYT, IFT,CES, I. (2017). *Oferta de posgrados de especializaciones médicas – Ministerio de Salud Pública*. MSP. <https://www.salud.gob.ec/oferta-de-posgrados-de-especializaciones-medicas/>
- MSP. (2013). *Ministerio de Salud entregará 10 mil becas a través de convenio tripartito – Ministerio de Salud Pública*. <https://www.salud.gob.ec/ministerio-de-salud-entregara-10-mil-becas-a-traves-de-convenio-tripartito/>
- Phillips, D. (2017). *Médicas frente a médicos: ¿Quiénes tienen mejores resultados?* [https://espanol.medscape.com/verarticulo/5901081#vp\\_2](https://espanol.medscape.com/verarticulo/5901081#vp_2)
- Ponce, F. (2020). *PUCE Cuenta y razón. Rendición de cuentas del período 2019*.
- Salud, C. O. del T. L. de D. S. de la salud. (2007). *Taller Latinoamericano sobre Determiantes Sociales de la Salud*. ALAMES. <https://doi.org/10.1017/CBO9781107415324.004>
- Sánchez, F. J. (2019). *2000 Médicos ecuatorianos al año no tienen oportunidad de especializarse*. Noticiero Médico. <https://www.noticieromedico.com/post/2000-medicos-ecuatorianos-al-año-no-tienen-oportunidad-de-especializarse>