

Professional trajectory and the impact of education on Fiocruz specialization graduates

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Abstract *This work aimed to analyze graduates' profiles, education's effects, and the professional trajectory of those who completed lato sensu courses at Fiocruz. A total of 1,620 graduates participated in 79 courses completed in the 2013-2020 period. A questionnaire was applied before the course and after its completion. A description of the absolute and relative frequency of the variables was realized. A binary logistic regression model was developed to identify variables associated with the positive impact of the course. The odds ratio and its 95% confidence interval were the measures used. Among graduates with a positive impact from the course, those with black/brown skin color are 40% more likely to have a positive impact from the course than those with white skin color; those who have other academic education before the course are 1.5 times more likely than those who have no previous education; those who changed their professional activity as a result of the course are 3.3 more likely than those who were not working; those who reported that the course was closely related to their professional activity were 5.7 more likely than those who reported that the course had poor or no relationship. Every one-year increase since graduation increased the likelihood of the course's positive impact by 14%.*

Key words *Lato sensu course, Specialization, Graduates, Evaluation, Health education*

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Introduction

Analyses of education processes within Brazilian postgraduate studies have become more frequent in recent decades, driven by strategic institutional interests and those of the Ministry of Education in knowing the impact of higher education on academic and professional life¹⁻⁵. However, undergraduate studies predominate, and graduate studies are the focus of analysis^{6,7} only to a lesser extent. Such studies are a practical opportunity to increase transparency about institutional results for the academic community and society. Furthermore, the continuing development of new professional skills assumes a strategic role in the agenda of postgraduate education institutions in the country. It gains prominence in the 2011-2020 National Postgraduate Plan (PNPG)^{8,9} implementation monitoring process. Thus, graduates are a strategic analytical category, whether for “follow-up” studies, which prioritize following some cohorts over time, or cross-sectional studies, which allow the analysis of the formative path seen from the present moment¹⁰.

Some aspects related to graduates’ academic and professional trajectory stand out among the different aspects of evaluating the Brazilian postgraduate education processes. While yet to be detailed, guidelines on the follow-up of graduates are found in the *lato* and *stricto sensu* education assessment agencies’ instruments. Recently, the Coordination for the Improvement of Higher Education Personnel (CAPES) established in its *stricto sensu* program evaluation form a question about investing in graduate studies. The MEC evaluation indicators are distributed over five main axes within the *lato sensu*, where the “Professional Development” axis includes indicators such as “Graduate follow-up actions policy” and “Performance of the institution’s graduates in the socioeconomic environment”.

When well conducted, the follow-up of graduates allows an understanding of the social and professional effectiveness of the knowledge acquired throughout the formative trajectory^{5,11}. It is impossible to infer a linear cause-and-effect relationship between education and incorporation into the labor market or professional performance. It is essential to analyze the socioeconomic contexts that affect the market, public administration management policies, trajectory, opportunities, and individual interests. In Specialization courses, this public is often already inserted in the world of work and faces complex situations in their daily lives that lead them to

seek new education. Thus, confronting the competencies developed during the course with those required in the professional practice can generate substantial subsidies for adjustments in the pedagogical structure, reviving intervening aspects of this process and, ultimately, providing transformations in the professional world.

As the leading non-university Brazilian health teaching institution, the Oswaldo Cruz Foundation (Fiocruz) plays a vital role in training highly specialized staff for the Science, Technology, and Innovation system and contributing to meeting the needs of the Unified Health System. It completed 120 years of existence in 2020 and has collaborated to train health staff throughout its history. It started offering public health education courses in 1908¹² and expanded and diversified its activities, broadening its operations in the national territory¹³ over the decades.

The institution has been following the trajectory of its graduates in the context of postgraduate studies, although these records have been given by specific studies^{2,3,14,15}. In an institutional dimension, in 2019, Fiocruz established a regular mechanism to monitor the training process when it conducted a first survey of information with graduates. The proposal involved two significant phases. The first aimed to perform a survey of the situation of graduates from 2013 to 2019. The second focused only on graduates from 2020 and started by testing data collection strategies, instruments, and logistics for processing data and knowledge accumulated in the first phase to propose a system for continuous monitoring of graduates of a similar nature integrated into the academic management system. Such a system will generate easily accessible information and indicators to be used by managers in the field of education and will allow greater visibility for society, with integration with the T&IS Observatory and Fiocruz Virtual Campus. This study aims to analyze the profile of graduates, the effects of training, and the professional trajectory of those who completed face-to-face courses in Fiocruz *lato sensu* specialization.

Methods

Population

The study is nested in a universe of 3,514 graduates of 79 classroom specialization courses at Fiocruz completed between January 2013 and July 2020 and distributed in 15 Units of the insti-

tution in the country. The lists of graduates from each course/Unit were obtained through Fiocruz academic management system and updated after exhaustive verification with each academic secretariat.

A total of 1,620 graduates participated in this study, equivalent to 46.1% of the total number of guests at this course level at Fiocruz. The courses were organized under three significant areas of knowledge: (1) "Collective Health", which involves Law and Health, Primary Care Management, Public Health Planning and Budget, Public Health, and Health Surveillance courses; (2) "Medicine, Clinical, Biomedical, and Biotechnological Practices", which includes the Nursing courses in Infectious and Parasitic Diseases, Neonatal Nursing, Infectology for Foreign Doctors, and Clinical Nutrition applied to Infectious Diseases; and (3) "Education, Information, and Communication", with courses in Communication and Health, Dissemination and Popularization of Science, Health Education, Biosciences and Health Education, and Academic Management.

Measures used

A questionnaire was applied digitally using the Lime Survey software, which is an open-source software used for elaborating and applying online questionnaires. Based on the software's functionalities, each graduate received an access link by email that allowed them to access their questionnaire through an individual access key. A broad campaign was undertaken to publicize the research on the websites of the Units, Fiocruz Virtual Campus, social networks, WhatsApp lists, and by publishing in the *Revista Radis* of the National School of Public Health Sergio Arouca/Fiocruz.

New invitation emails were sent weekly for about three months to those who still needed to answer the questionnaire. Monitoring the percentage of respondents from each unit allowed the deputy directors of education to redouble their efforts to contact and mobilize graduates. Sensitization strategies were also undertaken by coordinators and advisors who personally contacted their former students. A specific email communication channel was created with former students and those interested in the research.

The questionnaire included variables in the literature on evaluating graduates and was prepared from discussions with program and course coordinators at the institution. The preliminary questionnaire version was submitted to a group

of teaching management and evaluation experts. It reached its final version, which was pre-tested and applied to a sample of 10% of the graduates from a Unit selected by convenience. On this occasion, there was a good understanding of the questions and a good completion time, ranging between 10 and 15 minutes.

The questionnaire consisted of 42 multiple-choice questions, divided into six thematic blocks: identification of the course graduates, professional activity before joining the course, professional activity and expectations right after finishing the course, employment status at the time of answering the questionnaire and effects of education, and evaluation of the educational trajectory. The questionnaire was publicized and made available for free access by Fiocruz institutional repository (ARCA) (<https://www.arca.fiocruz.br/handle/icict/36744>).

The following variables are studied in this paper: (1) *graduate profile*: gender; age; self-reported skin color; disability; inclusion by quota; country and state of residence; undergraduate education area per international classification¹⁶; having another academic background at the time of entry and expectations when completing the course; and (2) *professional inclusion before entering the course and after completion*: if working; occupation area; workplace; hiring regime; salary increase; the relationship of the professional activity with the course and the Specialization title effect.

A measure of the "course positive impact" was created from the variable "effect of the title on professional life", where a positive response to any of the following items was considered: "the course qualified for a better performance of the activities that they already exercised or for different activities" or "the course increased the prestige and recognition of the work before colleagues and superiors".

Data analysis

Initially, the authors described the absolute and relative frequency of the profile and professional inclusion variables performed before entering the course and after its completion. Subsequently, simple logistic regression models were employed to evaluate the relationship of variables related to professional inclusion after the end of the course by sex, skin color, and areas of knowledge of the Specialization courses, comparing the proportions through the chi-square association test at a significance level of 5%.

The analyzed sample consisted of 1,521 graduates who self-declared white, brown, and black and those who completed the course between 2013 and 2018 to identify the variables associated with the course's positive impact. This option was due to the small number (1.9%) of participants who self-identified as yellow or indigenous, which would hamper statistical analysis, and the difficulty in aggregating them to other ethnic-racial profiles. Moreover, the 2019 and 2020 graduates were not asked to answer questions about professional inclusion because they had just left the course and had yet to express their impact on their professional careers. A binary logistic regression model was performed with the automatic selection Backward Stepwise Likelihood Ratio method. The following independent variables were considered: gender (man; woman); age (≤ 30 years; 31-50 years; > 50 years); skin color (white; black, or brown); significant areas of knowledge of the course (Collective Health; Medicine, Clinical, Biomedical and Biotechnological Practices; Education, Information and Communication); course completion time (in years); any postgraduate education (professional qualification/improvement or specialization or residency or professional/academic master's or doctorate; no); work contract regime after completion of the course (Consolidated Labor Laws (CLT) or temporary contract as an individual/cooperative, commissioned or self-employed position, or scholarship holder; Single Legal Regime or temporary contract as a legal entity or own company); number of jobs (none; one or more); area of expertise (care; management; education; research – yes; no; not working); work activity place (public; private; self-employed or third sector; not working); change of professional activity (yes; no; not working); relationship of the professional activity with the course (strong relationship; reasonable relationship; poor relationship or not related; not working); and salary increase after completing the course (yes; no; not working). Initially, all variables were tested from a significance level of 25%, and only the significant variables were used for the logistic analysis. The odds ratio and its respective 95% confidence interval were used. All analyses were performed using the IBM® SPSS® Statistics software, version 24.

Ethical precautions - confidentiality

This study was designed as a survey at a management level. The data used are from a public

database, thus waiving its submission to the Research Ethics Committee. However, it should be noted that all ethical precautions aimed at confidentiality and participation autonomy were assured under the current Resolutions of the National Health Council.

Results

Table 1 presents the profile of the participating graduates, most of whom are female (77.5%), aged 31-40 years (44.2%), self-declared white (52.4%), with no disability (97.5%) and residing in Brazil (98.2%), predominantly in the State of Rio de Janeiro (59.5%). Seventeen graduates (1.1%) entered the Specialization course through quota, ethnicity, or disability criteria. "Health and wellness" is the graduation area of half of them (50.0%), where nursing (16.4%) stands out, followed by social assistance (9.9%), psychology (9.3%), pharmacy (6.4%), and medicine (5.9%). As an academic background, even before starting the course, 46.9% already had another Specialization course, and among those who had other education, 22.7% took the course at Fiocruz. Working in the public service in a more qualified way (45.9%) and continuing studies (40.0%) are the expectations most desired by graduates as soon as they complete the course.

Table 2 shows the characteristics of the professional inclusion of graduates before entering the specialization course and after its completion. Most are engaged in professional activity, either before (83.0%) or after the end of the course (93.9%). Also, most work in care (28.8%) and management (25.9%); and the public institution is the prevailing workplace before (61.5%) or after the course (64.8%). The Consolidated Labor Laws (CLT) (22.3%) stands out among the work regimes of graduates upon entering the course, while the single legal regime (26.6%) stands out after having completed it. Furthermore, 21.6% of graduates claim to have had a salary increase after completing the course, significantly an increase of up to 25% (13.4%); 19.8% of the graduates changed their professional activity as a result of the course, and 48.8% said their current work is closely related to the course (against 5.6% who reported no such relationship).

In general, the comparative findings between the stage before the course and after its completion reveal a more significant number of graduates with increased income and work conditions after completing the course, which is evidenced

Table 1. Profile of Fiocruz specialization courses' graduates.

Variables	N	%	Variables	N	%
Sex (N=1,620)			Undergraduate education area (OECD) (N=1,620)		
Female	1,256	77.5	Health and Wellness	810	50.0
Male	362	22.4	Social Sciences, Communication, and Information	287	17.7
Other	2	0.1	Business, Administration, and Law	148	9.2
Age (N=1,620)			Natural sciences, mathematics, and statistics	141	8.7
≤30 years	297	18.3	Other areas	234	14.4
31 a 40 years	716	44.2	Other academic education upon admission to the course (Multiple responses accepted - N=1,620 for each response)		
41 a 50 years	376	23.2	Professional qualification or improvement	339	20.9
51 a 60 years	170	10.5	Specialization	759	46.9
≥61 years	37	2.3	Residency	163	10.1
Not informed	24	1.5	Professional Master's	99	6.1
Self-declared skin color (N=1,620)			Academic Master's	284	17.5
White	849	52.4	Academic Doctorate	55	3.4
Brown	518	32.0	Professional Doctorate	-	-
Black	222	13.7	Post-doctorate	-	-
Yellow	19	1.2	Expectations at the end of the course (Multiple responses accepted - N=1,620 for each response)		
Indigenous	12	0.7	Work in the public sector with a higher qualification	744	45.9
Disability (N=1,620)			Continue to study	648	40.0
Yes	41	2.5	Continue to study after organizing the professional life better	430	26.5
No	1,579	97.5	Achieve better income	376	23.2
Quota-based inclusion (N=1,620)			Work in a research group	339	20.9
Racial	14	0.9	Enter the public sector	297	18.3
Disability	3	0.2	Work as a professor in the undergraduate or graduate program	291	18.0
No	1,603	98.9	Work in the private sector with better qualifications	129	8.0
Country of residence before the course (N=1,620)			Be promoted	117	7.2
Brazil	1,591	98.2	Enter the private sector	79	4.9
Uruguay	9	0.6	Work in the private sector more competitively	65	4.0
Peru	4	0.2	No expectations	11	0.7
Other countries	16	1.0			
State of residence before the course (N=1,620)					
Rio de Janeiro	964	59.5			
Amazonas	118	7.3			
Federal District	111	6.9			
Pernambuco	47	2.9			
Tocantins	44	2.7			
Rio Grande do Sul	41	2.5			
Other states	266	16.4			
Not informed	29	1.8			

it continues

Source: Authors.

by the lower number of unemployed; greater inclusion in management, education, and research; work prevailing in the public service and with a single legal regime employment relationship.

The analysis of professional inclusion after course completion by gender, skin color, and

area of knowledge identified that more women were out of the labor market after finishing the course (17.9% against 10.8% of men). More men (12.4%) changed activity and institution after the course (against 9.2% of women). They also worked mainly in the same professional activity

Table 2. Professional inclusion of graduates from specialization courses (N=1,620).

Variables	Before the course		After the course	
	N	%	N	%
Was working				
Yes	1,345	83.0	1,521	93.9
No	275	17.0	99	6.1
Working area*				
Assistance	468	28.9	466	28.8
Management	374	23.1	419	25.9
Education	240	14.8	312	19.3
Research	117	7.2	152	9.4
Communication	56	3.5	44	2.7
Production of inputs	36	2.2	22	1.4
Social activism	28	1.7	30	1.9
Production of goods and services	18	1.1	28	1.7
Work location				
Public institution	996	61.5	1,050	64.8
Private institution	172	10.6	160	9.9
Third sector/civil society/NGO/OS	97	6.0	79	4.9
Self-employed	-	-	53	3.3
Other	80	4.9	-	-
Not working or did not inform	275	17.0	278	17.2
Recruitment regime				
Consolidated Labor Laws (CLT)	361	22.3	327	20.2
Single legal regime	332	20.5	431	26.6
Individual temporary contract	138	8.5	101	6.2
Scholarship holder	106	6.5	100	6.2
Commissioned position	75	4.6	54	3.3
Self-employed	62	3.8	59	3.6
Own business	14	0.9	15	0.9
Legal entity temporary contract	8	0.5	15	0.9
Cooperative	7	0.4	4	0.2
Other	242	14.9	236	14.6
Not working or did not inform	275	17.0	278	17.2
Salary increase				
Yes	-	-	350	21.6
No	-	-	958	59.1
Can not say	-	-	34	2.1
Not working or did not inform	-	-	278	17.2
Professional activity change because of the course				
Yes	-	-	321	19.8
No	-	-	322	19.9
Can not say	-	-	67	4.1
Did not change because of the course	-	-	632	39.0
Not working or did not inform	-	-	278	17.2
Relationship between the professional activity and the course				
Strong relationship	-	-	790	48.8
Reasonable relationship	-	-	322	19.9
Poor relationship	-	-	139	8.6
No relationship	-	-	91	5.6
Not working or did not answer	-	-	278	17.2

*Multiple-response questions.

Source: Authors.

and institution where they worked before joining the course (66.0% against 57.7% of women). Change of institution and professional activity did not show a statistically significant difference by skin color and areas of knowledge of the courses (Tables 3 and 4).

Complementarily, Table 3 shows the marked difference between sexes regarding the number of jobs after the end of the course, where more women were currently unemployed (12.7% against 8.5% of men) and, conversely, more men had two or more jobs. Concerning the area of knowledge, we have more unemployed among “Education, Information and Communication” (19.1%) course graduates than in other areas (15.6% in “Collective Health” and 15.3% in “Medicine, Clinical, Biomedical, and Biotechnological Practices”). In contrast, more graduates with two

or more jobs come from “Medicine, Clinical, Biomedical, and Biotechnological Practices” (34.8%) and “Collective Health” (24.3%) courses (Table 4). There is no statistically significant difference in the number of jobs by skin color.

The “Collective Health” area stands out among the graduates of courses closely related to the current professional activity (60.8% against approximately 56.0% of the other areas). On the other hand, “Medicine, Clinical, Biomedical and Biotechnological Practices” is the field that most appears as a lack of relationship between the course and professional work (11.5% against 7.5% for “Education, Information, and Communication” and 4.7% of “Collective Health”).

Table 5 shows the result of the logistic regression that seeks to identify the variables associated with the positive impact of the course among

Table 3. Professional inclusion of graduates after the end of the course by gender and skin color.

Variable ¹	Sex		Skin color				p-value		
	Male		Female		White			Black/ brown	
	N	%	N	%	N	%		N	%
Professional inclusion immediately after the end of the course									0.001 ²
Not working	39	10.8	225	17.9	138	16.3	119	16.1	0.127 ³
Worked in another professional activity, different from the one in which they worked before taking the course and started to work in another institution	45	12.4	116	9.2	96	11.3	63	8.5	
Worked in another professional activity, different from the one in which they worked before taking the course, but continued at the same institution	11	3.0	61	4.9	30	3.5	40	5.4	
Worked in the same professional activity and in the same institution where they worked before taking the course	239	66.0	725	57.7	498	58.7	451	60.9	
Worked in the same professional activity in which he worked before taking the course but went to another institution	28	7.7	129	10.3	87	10.2	67	9.1	
Number of jobs at the time they answered the questionnaire									0.031 ²
None	29	8.5	150	12.7	94	11.8	82	11.8	0.846 ³
1	214	62.6	730	62.0	491	61.5	437	62.9	
2-3	91	26.6	286	24.3	204	25.6	166	23.9	
More than 3	8	2.3	11	0.9	9	1.1	10	1.4	
Current professional activity related to the course									0.369 ²
Strong relationship	172	55.0	616	60.0	396	56.3	378	61.7	0.160 ³
Reasonable relationship	86	27.5	236	23.0	186	26.4	132	21.5	
Poor relationship	34	10.9	105	10.2	75	10.7	60	9.8	
No relationship	21	6.7	70	6.8	47	6.7	43	7.0	

¹Different sample sizes in the different crossings, primarily because of multiple-answer questions; ²Sex; ³Skin color.

graduates, evaluated for better performance in activities and prestige/recognition. Initially, all variables studied in the multiple model showed statistical significance at the 25% level, except for gender and primary areas of knowledge of the course, not included in the following analysis. The final model shows the following profile among graduates with a positive impact from the completed Specialization course: those with black or brown skin colors are about 40% more likely to have a positive impact from the course than those with white skin color; those who have another academic background before joining the course are 1.5 times more likely than those who have no other previous education; those who changed their professional activity due to the course are

3.3 more likely than those not working; those who reported that the course was closely related to their professional activity are 5.7 times more likely than those who reported that the course had little or no relationship; and each one-year increase in the time since graduation increases by 14% the likelihood of the course's positive impact.

Discussion

The more significant female presence probably reflects the predominance of women in health services^{7,17-19}, corroborated by previous education in "Health and wellness". Historically, some professions, such as those in Education and some

Table 4. Professional inclusion of graduates after the end of the course by knowledge area.

Variable ¹	Collective Health		Medicine, Clinical, Biomedical and Biotechnological Practices		Education, Information, and Communication		p-value
	N	%	N	%	N	%	
	Professional inclusion after the end of the course						
Not working at the end of the course	141	15.6	57	15.3	66	19.1	
Worked in another professional activity, different from the one in which they worked before taking the course and started to work in another institution	98	10.9	35	9.4	28	8.1	
Worked in another professional activity, different from the one in which they worked before taking the course, but continued at the same institution	37	4.1	15	4.0	20	5.8	
Worked in the same professional activity and in the same institution where they worked before taking the course	548	60.8	218	58.4	200	58.0	
Worked in the same professional activity in which he worked before taking the course but went to another institution	78	8.6	48	12.9	31	9.0	
Number of Jobs							0.000
None	96	10.9	34	10.3	49	15.6	
1	568	64.8	181	54.8	197	62.7	
2-3	208	23.7	104	31.5	65	20.7	
More than 3	5	0.6	11	3.3	3	1.0	
Current professional activity related to the course							0.000
Strong relationship	475	60.8	166	56.1	149	56.2	
Reasonable relationship	193	24.7	56	18.9	73	27.5	
Poor relationship	76	9.7	40	13.5	23	8.7	
No relationship	37	4.7	34	11.5	20	7.5	

¹Multiple answers, thus, different sample sizes in the crossings presented.

Table 5. Explanatory logistic model of the positive impact of Specialization courses among Fiocruz graduates (N=1,521).

Variable	Crude Odds ratio	95%CI Lower Limit	95%CI Upper Limit	Adjusted Odds ratio	95%CI Lower Limit	95%CI Upper Limit
Skin color/ethnicity						
Black or brown	1.287	1.002	1.654	1.397	1.042	1.873
White	-	-	-	-	-	-
Other academic education before taking the course						
Yes	1.702	1.299	2.230	1.494	1.084	2.058
No	-	-	-	-	-	-
Paid employment in the Assistance field						
Yes	3.670	2.502	5.385	1.283	0.658	2.501
No	3.087	2.196	4.339	1.102	0.585	2.077
Not working	-	-	-	-	-	-
Change of activity because of the course						
Yes	14.066	7.847	25.211	3.300	1.869	5.829
No	1.615	1.106	2.357	0.789	0.549	1.134
Did not change activity	3.282	2.294	4.697	-	-	-
Not working	-	-	-	-	-	-
Professional activity relationship with the course						
Strong relationship	6.735	4.618	9.824	5.718	3.812	8.578
Reasonable relationship	3.033	2.024	4.546	2.948	1.932	4.497
Poor or no relationship	.863	.582	1.280	-	-	-
Not working	-	-	-	-	-	-
Salary increase after the course						
Yes	6.242	3.974	9.805	-	-	-
No	2.677	1.917	3.738	0.624	0.403	0.968
Not working	-	-	-	-	-	-
Course conclusion time (years)	1,118	1.051	1.189	1.141	1.060	1.228
Constant	-	-	-	0.747	-	-

Source: Authors.

in Health, are characterized by female work. According to Estevam and Guimarães²⁰, when a profession or course becomes feminized, it tends to be accepted as an extension of women's work. It begins to occupy a less privileged position than other professions. Gender inequalities, such as the fact that more women are out of the job market after finishing the course, were observed in this study. Furthermore, the predominance of white graduates highlights the importance of investing in quota policies to reduce racial inequalities and the effects of structural racism²¹.

The results of this study align with previous findings regarding the predominant public nature of the bond of Fiocruz graduates^{2,15}. In general, the relationship between professional activity and the course subject is evident in all areas

of knowledge, showing good alignment between the training offer and professional practice.

The work and education association is also highlighted in the main expectations listed by the survey respondents. Also, most graduates already have some educational background at the *lato* or *stricto sensu* postgraduate level when they enter the course. This situation reflects the need perceived by those specializing in seeking new knowledge in the face of complex and constant changes that require a continuous education process consistent with state-of-the-art and in tune with societal needs. New technologies emerge daily in Health, and as in other areas of human activity, we live under continuous innovation. Aciole²² reminds us of characteristics of contemporary society, such as multiculturalism and

interdisciplinarity. It highlights current pillars of education as a human development element, which makes it a permanent need and not just a stage of life marked by the school environment.

In this sense, some studies point to various favorable aspects regarding postgraduate education for developing skills and work qualifications. A common element is high satisfaction with the training, the application of knowledge in the work universe, the satisfaction with the personal and professional growth arising from experience, and, on the other hand, the negligible impact on wages^{2,20}. Generally, a negligible effect is perceived in remuneration, and more significant repercussions are described in professional education, the networks of established relationships, and personal and professional growth.

As for the higher likelihood of a positive impact of Specialization courses on black or brown graduates, we can hypothesize that, given the significant social and educational disadvantages of black people in educational access and school trajectory, from Primary Education, the provision of quality education and educational policies have a more significant influence on this population than white people, with lower accumulated disadvantages²¹.

Other factors identified as being more likely to have a positive impact on the course are strongly related to the graduates' education path and professional experience, such as having another academic background before joining the course, those who changed their professional activity due to the course, those who reported that the course was closely related to their professional activity, and a longer time since graduation.

A limitation would be that generalization of the findings is not assured, despite having achieved a satisfactory response rate, especially concerning online surveys. The exclusion of yellow and indigenous participants from the logistic analysis indicates the need to apply other methodological approaches to ethnic-racial minority groups to deepen socio-cultural peculiarities. In contrast, the study brings unprecedented reflections on the subject in the country, using well-designed methodological strategies in a poorly studied group and with the approach of a relatively sufficient period after the end of the study. This setting allows for a longer-term follow-up and raises hypotheses that can guide the improvement of postgraduate education in the country and support the decision-making of teachers and education managers.

Collaborations

IF Delgado and SF Deslandes participated in the work's conception, planning, analysis, interpretation, and writing. JQ Avanci and CLT Andrade worked on the work's design, statistical analysis, interpretation, and writing. All four authors approved the final version.

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References

1. Andriola WB. Estudo de egressos de cursos de graduação: subsídios para a autoavaliação e o planejamento institucionais. *Educar Rev* 2014; 54:203-219.
2. Engstrom EM, Hortale VA, Moreira COF. Trajetória profissional de egressos de Curso de Mestrado Profissional em Atenção Primária à Saúde no Município de Rio de Janeiro, Brasil: estudo avaliativo. *Cien Saude Colet* 2020; 25(4):1269-1280.
3. Hortale VA, Leal MC, Moreira COF, Aguiar AC. Características e limites do mestrado profissional na área da Saúde: estudo com egressos da Fundação Oswaldo Cruz. *Cien Saude Colet* 2010; 15(4):2051-2058.
4. Nuto SAS, Vieira-Meyer APGE, Vieira NFC, Freitas RWJF, Amorim KPC, Dias MSA, Vasconcelos MIO, Machado MFAS. Programa de Pós-Graduação em Saúde da Família no nordeste brasileiro: repercussões no exercício profissional dos egressos. *Cien Saude Colet* 2021; 26(5):1713-1725.
5. Lima LA, Andriola WB. Acompanhamento de egressos: subsídios para a avaliação de Instituições de Ensino Superior (IES). *Avaliacao* 2018; 23(1):104-125.
6. Moreira ML, Velho L. Trajetória de egressos da pós-graduação do Instituto Nacional de Pesquisas Espaciais: Uma ferramenta para avaliação. *Avaliacao* 2012; 17(1):257-288.
7. Maciel CA, Escarce AG, Motta AR, Teixeira LC. Percurso acadêmico e competências profissionais na percepção de egressos de Fonoaudiologia. *Codas* 2021; 33(4):e20200130.
8. Coordenação de Aperfeiçoamento de Pessoal de Nível Superior (Capes). *Relatório Final da Comissão Especial de Acompanhamento do PNPG-2011-2020*. Brasília: Capes; 2016.
9. Coordenação de Aperfeiçoamento de Pessoal de Nível Superior (Capes). *Proposta de Aprimoramento do Modelo de Avaliação da PG. Documento Final da Comissão Nacional de Acompanhamento do PNPG 2011-2020 - 10/10/2018*. Brasília: Capes; 2018.
10. Santos JS. *Atuação profissional e participação no desenvolvimento do campo científico em Ciência da Informação: estudo dos egressos do Programa de Pós-graduação em Ciência da Informação da UFMG, 1992-2005* [dissertação]. Belo Horizonte: Universidade Federal de Minas Gerais; 2006.
11. Meira MDD, Kurçgant P. Avaliação de curso de graduação segundo egressos. *Rev Esc Enferm USP* 2009; 43(2):481-485.
12. Fundação Oswaldo Cruz (Fiocruz). *Plano de Desenvolvimento Institucional da Fiocruz (PDI-Fiocruz 2016-2020)*. Brasília, Rio de Janeiro: MS, Fiocruz; 2016.
13. Fundação Oswaldo Cruz (Fiocruz). *Plano de Desenvolvimento Institucional da Educação da Fiocruz (PDIE-Fiocruz 2021-2025)*. Brasília, Rio de Janeiro: MS, Fiocruz; 2020.
14. Conde MVE, Araujo-Jorge TC. Modelos e concepções de inovação: a transição de paradigmas, a reforma da C&T brasileira e as concepções de gestores de uma instituição pública de pesquisa em saúde. *Cien Saude Colet* 2003; 8(3):727-741.
15. Hortale VA, Moreira, CO, Bochner R, Leal MC. Trajetória profissional de egressos de cursos de doutorado nas áreas da saúde e biociências. *Rev Saude Publica* 2014; 48(1):1-9.

16. Instituto Nacional de Estudos e Pesquisas Educacionais Anísio Teixeira (Inep). *Classificação Internacional Normalizada da Educação: áreas de formação e treinamento 2013 (Cine-F 2013): descrição das áreas detalhadas*. Brasília: Inep; 2017.
17. Santos LS, Souza TE, Souza CE, Monteiro MC, Prado MRMC, Prado-Junior PP, Ayres LFA, Passos CM. Perfil social-profissional de enfermeiros e médicos da Atenção Primária à Saúde de uma microrregião geográfica. *Enferm Bras* 2019; 18(4):552-560.
18. Lima EJF, Lima PJSF, Andrade PHA, Castro LM, Fernandes AS. Perfil e trajetória dos egressos de programas de residência das áreas básicas: um corte transversal. *Rev Bras Educ Med* 2021; 45(1):e9405.
19. Maciel ELN, Figueiredo PF, Prado TN, Galavote HS, Ramos MC, Araujo MD, Lima RCD. Avaliação dos egressos do curso de especialização em Saúde da Família no Espírito Santo, Brasil. *Cien Saude Colet* 2010; 15(4):2021-2028.
20. Estevam HM, Guimarães S. Avaliação do perfil de egressos do Programa de Pós-graduação *stricto sensu* em Educação da UFU: impacto na formação docente e de pesquisador (2004-2009). *Avaliacao* 2011; 16(3):703-730.
21. Artes A, Rocoldi AM. Acesso de negros no ensino superior: o que mudou entre 2000 e 2010. *Cad Pesqui* 2015; 45(158):858-881.
22. Aciole GG. Rupturas paradigmáticas e novas interfaces entre educação e saúde. *Cad Pesqui* 2016; 46(162):1172-1191.

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