

Factors influencing whether doctors intend to stay working in primary health care after completing residency in family and community medicine in Paraíba, Brazil

Item Type	Journal article
Authors	de Oliveira, José Danúzio Leite;de Luna, Fernanda Darliane Tavares;Machado, Ana Paula Ramos;de Fátima Diniz Souza, Élide;de Oliveira, José Olivandro Duarte;Nóbrega, Lauradella Geraldinne Sousa;Toscano, Maysa Barbosa Rodrigues;de Olinda, Ricardo Alves;Madruga, Renata Cardoso Rocha;Matheson, David;Beltrammi, Daniel Gomes Monteiro;Santos, Silvana
Citation	de Oliveira, J.D.L., de Luna, F.D.T., Machado, A.P.R. et al. (2025) Factors influencing whether doctors intend to stay working in primary health care after completing residency in family and community medicine in Paraíba, Brazil. Discover Health Systems, 4, Article no. 25. https://doi.org/10.1007/s44250-025-00200-2
DOI	10.1007/s44250-025-00200-2
Publisher	Springer Science and Business Media LLC
Journal	Discover Health Systems
Download date	2026-03-12 20:01:01
License	https://creativecommons.org/licenses/by/4.0/
Link to Item	https://wlv.openrepository.com/handle/2436/625931

Research

Factors influencing whether doctors intend to stay working in primary health care after completing residency in family and community medicine in Paraíba, Brazil

José Danúzio Leite de Oliveira¹ · Fernanda Darliane Tavares de Luna² · Ana Paula Ramos Machado¹ · Élide de Fátima Diniz Souza¹ · José Olivandro Duarte de Oliveira^{1,3} · Lauradella Geraldinne Sousa Nóbrega¹ · Maysa Barbosa Rodrigues Toscano^{1,4} · Ricardo Alves de Olinda⁵ · Renata Cardoso Rocha Madruga¹ · David Matheson⁶ · Daniel Gomes Monteiro Beltrammi¹ · Silvana Santos¹

Received: 18 September 2024 / Accepted: 5 March 2025

Published online: 18 March 2025

© The Author(s) 2025 **OPEN**

Abstract

Background In the last decade, there has been a 250% increase in the number of doctors trained in Family and Community Medicine (FCM) residency programs in Brazil; however, it is estimated that there is a need to train around 50,000 specialists to work in Primary Health Care (PHC) teams, especially in more remote regions with vulnerable populations. This study investigates the factors associated with the intention of doctors linked to the ten FCM residency programs in the state of Paraíba to continue working in PHC.

Methods This is a cross-sectional, analytical study with a quantitative approach and a census-type sample of 211 doctors, residents and preceptors. Data was obtained using an electronic questionnaire which we administered in the second half of 2023. Descriptive, bivariate (Chi-square and Fisher's exact) and logistic regression analyses were carried out. We found that the grouping variable "intention to continue working in PHC" was associated with sociodemographic and academic variables and that intrinsic and extrinsic factors that could influence doctors' decisions.

Results Most participants were female (61.6%), without a partner (57.3%), and without children (82%). 42 (19.9%) worked as preceptors and 169 (80.1%) as residents. 90.5% of the preceptors intended to continue in primary care, compared to 54.4% of the residents. There was an association between the grouping variable and being married or in a stable union ($p=0.031$), having children ($p=0.002$), having graduated from a public institution ($p=0.017$) and having experience in PHC ($p=0.049$). Most doctors make the decision to continue working in PHC during their undergraduate studies ($p<0.001$), while the period of experience in PHC contributes to the decision ($p=0.002$), as do more stable employment relationships, such as a permanent job ($p=0.015$), statutory requirements ($p<0.001$), or the offer of a master's degree ($p<0.001$).

Conclusion The intention of doctors linked to the ten FCM residency programs in the state of Paraíba to continue working in PHC was associated with their identification with the area, the decision having been made during graduation

Supplementary Information The online version contains supplementary material available at <https://doi.org/10.1007/s44250-025-00200-2>.

✉ Silvana Santos, silvanasantos@servidor.uepb.edu.br | ¹Mestrado Profissional em Saúde da Família (PROFSAÚDE), Universidade Estadual da Paraíba, Campus V – Cristo Redentor, Rua Horácio Trajano de Oliveira, S/N - Cristo Redentor, João Pessoa, PB 58071-470, Brazil. ²Hospital Universitário Júlio Bandeira - EBSEH, Universidade Federal de Campina Grande, Campina Grande, Brazil. ³Departamento de Medicina, Universidade Federal de Campina Grande, Cajazeiras, Brazil. ⁴Secretaria de Saúde de Mamanguape, Paraíba, Brazil. ⁵Departamento de Estatística, Universidade Estadual da Paraíba, Campina Grande, Brazil. ⁶School of Nursing, University of Wolverhampton, Wolverhampton, UK.



and strengthened with experience. More stable employment relationships, the offer of a master's degree in the area and the opportunity to act as a preceptor in the FCM residency program all contributed to the desire to remain in PHC throughout their professional career.

Keywords Primary health care · Family and community medicine · Medical residency

Abbreviations

SUS	Unified Health System (<i>Sistema Único de Saúde</i>)
ESF	Family Health Strategy (<i>Estratégia de Saúde da Família</i>)
PSF	Family Health Program (<i>Programa de Saúde da Família</i>)
PACS	Community Health Agents Program (<i>Programa de Agentes Comunitários de Saúde</i>)
PMM	More Doctors Program (<i>Programa Mais Médicos</i>)
PISUS	SUS Interiorization Program (<i>Programa de Interiorização do SUS</i>)
PITS	Work Interiorization Program (<i>Programa de Interiorização do Trabalho em Saúde</i>)
Pro-residency	Program to Support the Training of Specialist Doctors in Strategic Areas (<i>Programa Nacional de Apoio à Formação de Médicos Especialistas em Áreas Estratégicas</i>)
PROVAB	Program to raise the Value of Primary Care Professionals (<i>Programa de Valorização dos Profissionais da Atenção Básica</i>)
PMpB	Doctors for Brazil Program (<i>Programa Médicos pelo Brasil</i>)
PHC	Primary Health Care
FCM	Family and Community Medicine
R1	First year of residency
R2	Second year of residency
HEI	Higher Education Institutions
PROFSAUDE	Professional Master's Degree in Family Health
OR	Odds ratio
R CORE TEAM	R Statistical Software
SGTES	Labor Management and Health Education
TCLE	Free and Informed Consent Form

1 Background

The Unified Health System (*Sistema Único de Saúde* or SUS) in Brazil, provided for in the 1988 Federal Constitution and created by law in 1990, brought with it principles of universality, equity and comprehensive care, and led to a reorganization of health care. Primary Health Care (PHC) began as Basic Health Care, as part of the health reform movement, the precursor to the Community Health Agents Program (*Programa de Agentes Comunitários de Saúde* or PACS) in 1991, which evolved into the Family Health Program (*Programa de Saúde da Família* or PSF) in 1994 and the Family Health Strategy (*Estratégia de Saúde da Família* or ESF) in 2006. An ESF team is now made up of multiple professionals, including a doctor, nurse, nursing technician, dental surgeon, oral health assistant or technician and community health agents (*agentes comunitários de saúde* or ACS) [1–3].

With the implementation of the ESF, there was a change in the perspective of care, brought about by the assumption of comprehensive care for individuals and families across their life cycle and within their communities. The need therefore arose to train professionals, especially doctors, with specific skills and abilities to work in PHC. This made it necessary to offer specialisation or residency in the area to complement the training given at undergraduate level [2–5].

In the last decade, there has been a 246% increase in the number of specialists in Family and Community Medicine (FCM) in Brazil; in absolute numbers, this rose from 3,253 specialists in 2012 to 11,255 in 2022. This increase can be explained by the expansion of undergraduate places and residency courses in FCM, stimulated by the implementation of the More Doctors Program (*Programa Mais Médicos* or PMM) law [3, 6]. According to the latest data from the Ministry of Health, the number of specialists in this area, however, is still insufficient to meet the existing demand throughout the country of around 52,000 ESF teams. The lack of FCM specialists is one of the factors that hinders the supply and retention of doctors in PHC, especially in vulnerable regions located far from urban centres [4, 6–8].

Over the years, various policies and programs have been implemented to fill gaps in the supply of doctors to these vulnerable and remote regions. They include the SUS Interiorization Program (*Programa de Interiorização do SUS—PISUS*), the Health Work Interiorization Program (*Programa de Interiorização do Trabalho em Saúde—PITS*), the Program to Support the Training of Specialist Doctors in Strategic Areas (*Programa Nacional de Apoio à Formação de Médicos Especialistas em Áreas Estratégicas—Pró-Residência—pro-residency*), and the Program to raise the Value of Primary Care Professionals (*Programa de Valorização dos Profissionais da Atenção Básica—PROVAB*). This last is considered to be the embryonic form of the PMM, which was first launched in 2013 and relaunched ten years later; coexisting with the Doctors for Brazil Program (*Programa Médicos pelo Brasil—PMpB*) which was launched in 2019 [3, 9–12].

From its relaunch, the PMM has continued to encourage the opening of undergraduate medical courses at private Higher Education Institutions (HEIs), as long as they were in strategic locations. In addition, it extended the length of the scholarship from three to four years, offering financial advantages for working in remote areas as well as incentives for specialisation in FCM and *stricto sensu* postgraduate studies. For doctors who complete a residency in FCM, the program maintains a 10% bonus in the score for subsequent selections for another specialty [10, 12–14]. However, what remains unknown is how these provision policies influence medical training during undergraduate or postgraduate studies, and how they affect the choice to specialise in FCM, as well as the decision to remain in PHC.

The aim of the present study was to investigate the factors associated with the intention of resident doctors and preceptors linked to FCM residency programs in the state of Paraíba in Brazil to continue working in PHC, to provide evidence for improving and/or revising public policies aimed at training doctors in FCM for PHC.

2 Methods

2.1 Type of study and population

This is a cross-sectional, analytical study with a quantitative approach. In total, all 275 doctors linked to FCM residencies were contacted to take part in the survey (census-type sample); however, those who were on sick leave or on vacation, and those who did not sign the consent form, were excluded. In all, 211 doctors linked to the 10 FCM residency programs in the state of Paraíba answered the questionnaire (77% of the total), 169 of whom were resident doctors and 42 preceptors. The distribution of participants in the ten programs is described in Supplementary Table I.

The inclusion criterion was being a resident regularly enrolled in an FCM residency program in the state. The exclusion criterion was those who were on vacation, on sick leave or who did not answer the questionnaire. Data was collected using an electronic questionnaire between July and December 2023, either in person or via the Google Meet digital communication platform.

2.2 Variables

The grouping variable in this study was “intention to continue working in PHC”, and participants had to choose whether to answer “no” or “yes”. The independent variables included socio-demographic aspects such as gender, age (in years), marital status, whether they have children and the number of children.

The variables that related to training and professional activity were:

- position in the program
 - residents in the first or second year of residency (R1 and R2, respectively) or preceptor
- year of graduation
- institution of graduation
 - whether public or private (with or without public funding);
- length of experience in PHC
- intention to continue working in PHC after completing FCM residency, and
- whether they intended to complete another residency after completing FCM residency.

The variables that explored motivations were:

- the time of the decision to work in PHC
- the most attractive relationship for continuing to work in PHC
- the factors that motivate or demotivate the participant to continue or not to continue working in PHC after completing their residency
- the reasons for doctors staying in PHC, and
- how public policies encourage doctors to stay in the service, such as offering a master's degree after completing residency or training courses to work as a preceptor.

We also investigated what the participants thought were the main reasons for the turnover of doctors in PHC. They were also asked which municipality they lived in, currently work in, how many municipalities they have worked in, and which they liked best and why. The participants identified which of the state's three macro-regions they work in and were able to choose between: Macro-region I, which covers the coastal region around João Pessoa; Macro-region II, which is the region around Campina Grande; and Macro-region III, which covers the municipalities in the hinterland and high hinterland of the state of Paraíba.

2.3 Statistical analysis

The database was analysed using R statistical software (R CORE TEAM, 2023), consisting of descriptive, bivariate and multiple data analysis. The bivariate analysis used Pearson's chi-square test, Fisher's exact test in cases where one of the frequencies was less than 5, and the selected measure of association was the odds ratio (OR). For multiple analysis, the initial logistic regression model was obtained with all the variables using the OR and 95% confidence intervals (95% CI) as measures of association. The adjustment variables with a p -value ≤ 0.20 in the initial model were included in the final multiple analyses and the interpretation of the results considered a p -value < 0.05 to be a statistically significant association (Wald test).

3 Results

Of the 211 doctors who took part in this study, 42 (19.9%) worked as preceptors and 169 (80.1%) as FCM residents. The majority were female (61.6%), had no partner (57.3%) and no children (82%). A higher proportion of preceptors than residents were married or in a stable union (69%) and had children (40.5%). The average age of the preceptors was 36.0 years (± 7.0) and of the residents 30.0 years (± 5.0); the preceptors had graduated 9.0 years previously (± 7.0) and the residents 3.0 years previously (± 3.0). While 52.4% of the preceptors completed their medical degree at a public institution, this fell to 30.2% of the residents. Most of them were in the interior, with 35 (16.6%) doctors working in Macro-region II (Campina Grande region) and 84 (39.8%) in Macro-region III (hinterland and high hinterland). There was a significant difference in the proportion of preceptors (90.5%) compared to residents (54.4%) who intend to continue working in PHC ($p < 0.001$), as shown in Table 1.

Table 2 shows the results of the bivariate analysis. Regarding sociodemographic variables, there was an association between being married or in a stable union ($p = 0.031$), having children ($p = 0.002$), having graduated from a public institution ($p = 0.017$) and experience in PHC ($p = 0.049$) with the intention to continue working in PHC, when considering the entire study population. Of the 88 doctors whose main reason for doing a residency in FCM was that they identified with the area, 79 (89.8%) said they were interested in continuing to work in PHC ($p < 0.001$). Most of the doctors who intended to continue in PHC made this decision during their undergraduate studies ($p < 0.001$) while the period of experience in PHC also may contributed to their decision ($p = 0.002$).

On the other hand, of the 84 who cited as their main motivation the bonus in the selection process to study another specialisation, only 30 (35.7%) intend to continue working in PHC. When the remuneration factor was evaluated, an inverse association was observed, since of the 157 doctors who did not cite remuneration, 104 (66.2%) showed an interest in continuing in PHC ($p = 0.018$). Bonus and remuneration, when they are the reasons for entering residency, were associated with the intention to give up a career in PHC ($p = 0.018$) (Table 2).

After completing the FCM residency, the main motivations for continuing in PHC were associated with identification with the area ($p < 0.001$) and the workload compatible with leisure, sports and family ($p = 0.038$). On the other hand, in relation to the main demotivating factors, no significant associations were observed in the entire sample. The most

Table 1 Descriptive and bivariate analysis showing association of sociodemographic and academic variables in relation to position in the Family and Community Medicine residency program

	Total (N=211)		Resident (N=169)		Preceptor (N=42)		Test p	
	n	%	n	%	n	%		
Sex								
	Female	130	61.6	108	63.9	22	52.4	0.170
	Male	81	38.4	61	36.1	20	47.6	
Marital status								
	Single, divorced or widowed	121	57.3	108	63.9	13	31.0	<0.001
	Stable union or married	90	42.7	61	36.1	29	69.0	
Children								
	No	173	82.0	148	87.6	25	59.5	<0.001
	Yes	38	18.0	21	12.4	17	40.5	
Undergraduate institution								
	Public	73	34.6	51	30.2	22	52.4	0.01*
	Private with funding	97	46.0	80	47.3	17	40.5	
	Private no funding	41	19.4	38	22.5	3	7.1	
Intention to continue working in PHC								
	No	81	38.4	77	45.6	4	9.5	<0.001
	Yes	130	61.6	92	54.4	38	90.5	
Experience in PHC								
	< 1 year	45	22.5	45	26.6	0	0.0	<0.001
	from 1 to 3 years	110	55.0	101	59.8	9	29.0	
	from 4 to 10 years	30	15.0	17	10.1	13	41.9	
	More than eleven years	15	7.5	6	3.6	9	29.0	
Intention of another postgraduate degree								
	No	25	11.8	15	8.9	10	23.8	0.026
	Yes	138	65.4	115	68.0	23	54.8	
	Maybe	48	22.7	39	23.1	9	21.4	
Interest in a master's degree								
	No	83	39.3	80	47.3	3	7.1	<0.001
	Yes	125	59.2	89	52.7	36	85.7	
	I've already done my master's degree	3	1.4	0	0.0	3	7.1	
Master's degree offer motivates to continue working in PHC								
	Does not intend to work in PHC	49	23.2	49	29.0	0	0.0	<0.001
	No, just continue with the assistance	36	17.1	30	17.8	6	14.3	
	Yes, combining care with the gym	126	59.7	90	53.3	36	85.7	
Resident's interest in acting as a preceptor								
	No	48	30.0	48	30.0	0	0.0	N/A
	Yes	112	70.0	112	70.0	0	0.0	
Macro of the municipality in which it operates								
	Macro I	92	43.6	75	44.4	17	40.5	0.639
	Macro II	35	16.6	26	15.4	9	21.4	
	Macro III	84	39.8	68	40.2	16	38.1	
Works in the municipality where you live								
	No	62	29.4	46	27.2	16	38.1	0.167
	Yes	149	70.6	123	72.8	26	61.9	

Table 1 (continued)

	Total (N=211)		Resident (N=169)		Preceptor (N=42)		Test p
	n	%	n	%	n	%	
Number of municipalities where you have worked in PHC	54	25.6	50	29.6	4	9.5	0.011*
1 a 3	138	65.4	107	63.3	31	73.8	
3 a 5	14	6.6	9	5.3	5	11.9	
> 5	5	2.4	3	1.8	2	4.8	
The municipality you most enjoyed working in is the same municipality where you work and live	173	87.8	138	88.5	35	85.4	0.591
Yes	24	12.2	18	11.5	6	14.6	
No	24	11.4	24	14.2	0	0.0	0.001*
Justification for choosing the municipality where you most enjoyed working	98	46.4	84	49.7	14	33.3	
Personal reasons	14	6.6	11	6.5	3	7.1	
Financial motivation	37	17.5	25	14.8	12	28.6	
Good relationship with the work team	38	18.0	25	14.8	13	31.0	
Good relationship and dialog with management							

Chi-Square Test or (*) Fischer's Exact Test. Statistically significant p-values are highlighted in bold

R1 First-year resident

R2 Second-year resident

PHC Primary Health Care

Table 2 Bivariate analysis showing different factors associated or not with the intention of doctors in Family and Community Medicine (FCM) residency programs to continue working in Primary Health Care (PHC) or not

	Intention to continue working in PHC						Test p	
	No		Yes		Total			
	n	%	n	%	n	%		
Sociodemographic variables								
Sex								
	Female	50	38.5	80	61.5	130	61.6	0.978
	Male	31	38.3	50	61.7	81	38.4	
Marital status	Single, divorced or widowed	54	44.6	67	55.4	121	57.3	0.031
	Stable union or married	27	30.0	63	70.0	90	42.7	0.002
Children	No	75	43.4	98	56.6	173	82.0	
	Yes	6	15.8	32	84.2	38	18.0	0.017
Undergraduate institution	Public	20	27.4	53	72.6	73	34.6	
	Private. with funding	47	48.5%	50	51.5	97	46.0	
	Private. no funding	14	34.1	27	65.9	41	19.4	
Experience in PHC	< 1 year	18	40.0	27	60.0	45	21.3	0.049*
	from 1 to 3 years	51	46.4	59	53.6	110	52.1	
	from 4 to 10 years	7	23.3	23	76.7	30	14.2	
	More than eleven years	3	20.0	12	80.0	15	7.1	
Main motivation for doing a residency in FCM								
Identification with the area	Doesn't identify with the area	72	58.5	51	41.5	123	58.3	<0.001
	Yes, identifies with the area	9	10.2	79	89.8	88	41.7	
Obtaining a bonus for another postgraduate degree and/or qualification for a competitive examination	No	27	21.3	100	78.7	127	60.2	<0.001
	Yes	54	64.3	30	35.7	84	39.8	
Proximity to family members	No	61	39.9	92	60.1	153	72.5	0.473
	Yes	20	34.5	38	65.5	58	27.5	
Remuneration	No	53	33.8	104	66.2	157	74.4	0.018
	Yes	28	51.9	26	48.1	54	25.6	0.130
Experience with vulnerable populations	No	66	41.3	94	58.8	160	75.8	
	Yes	15	29.4	36	70.6	51	24.2	0.815
Experience in PHC during undergraduate studies	No	53	39.0	83	61.0	136	64.5	
	Yes	28	37.3	47	62.7	75	35.5	
Moment of decision to pursue a career as an FMC in PHC								
Career in PHC	Yes. You want to stay at PHC	31	20.0	124	80.0	155	73.5	<0.001
	No. You don't want to stay at PHC	50	89.3	6	10.7	56	26.5	
During graduation	No	70	47.6	77	52.4	147	69.7	<0.001
	Yes	11	17.2	53	82.8	64	30.3	

Table 2 (continued)

	Intention to continue working in PHC						Test p
	No		Yes		Total		
	n	%	n	%	n	%	
While working in PHC	65	45.8	77	54.2	142	67.3	0.002
	16	23.2	53	76.8	69	32.7	
During the residency	77	40.7	112	59.3	189	89.6	0.062*
	4	18.2	18	81.8	22	10.4	
If you stay in the PHC, a more attractive employment relationship	37	22.6%	127	77.4	164	77.7	< 0.001 *
No bond is attractive. because	44	93.6	3	6.4	47	22.3	
Want a career in PHC	62	41.9	86	58.1	148	70.1	0.109
Doesn't want a career in PHC	19	30.2	44	69.8	63	29.9	
Fellow of probation programs or other residencies	73	42.2	100	57.8	173	82.0	0.015
Contract according to Brazilian Labor Code (CLT)	8	21.1	30	78.9	38	18.0	
Statutory	73	45.9	86	54.1	159	75.4	< 0.001
	8	15.4	44	84.6	52	24.6	
Fixed-term contract	79	39.5	121	60.5	200	94.8	0.157*
	2	18.2	9	81.8	11	5.2	
After completing your residency, what motivates you to stay at PHC?	34	21.5	124	78.5	158	74.9	< 0.001
No motivation to continue at PHC	47	88.7	6	11.3	53	25.1	
Motivated	73	46.2	85	53.8	158	74.9	< 0.001
No motivation	8	15.1	45	84.9	53	25.1	
Identification with the area	78	38.2	126	61.8	204	96.7	0.805*
Remuneration	3	42.9	4	57.1	7	3.3	
Workload compatible with other jobs	76	39.2	118	60.8	194	91.9	0.427
	5	29.4	12	70.6	17	8.1	
Workload compatible with master's and doctoral degrees	80	39.2	124	60.8	204	96.7	0.182*
	1	14.3	6	85.7	7	3.3	
Workload compatible with leisure, sports and family	73	41.7	102	58.3	175	81.2	0.038
	8	22.2	28	77.8	36	18.8	
Good relationship with staff/population	77	40.1	115	59.9	192	91.0	0.103*
	4	21.1	15	78.9	19	9.0	
Good relationship and dialog with the municipal administration	81	38.8	128	61.2	209	99.1	0.262*
	0	0.0	2	100.0	2	0.9	
Yes							

Table 2 (continued)

	Intention to continue working in PHC						Test p
	No		Yes		Total		
	n	%	n	%	n	%	
Other reason (location or other)	76	39.2	118	60.8	194	91.9	0.427*
	5	29.4	12	70.6	17	8.1	
Factors that most discourage people from staying at PHC	71	37.2	120	62.8	191	90.5	0.262
Lack of identification with the area or other justification	10	50.0	10	50.0	20	9.5	
Lack of professional prospects	53	41.4	75	58.6	128	60.7	0.263
	28	33.7	55	66.3	83	39.3	
Low pay	73	40.1	109	59.9	182	86.3	0.198
	8	27.6	21	72.4	29	13.7	
Job insecurity	69	37.9	113	62.1	182	86.3	0.721
	12	41.4	17	58.6	29	13.7	
Precarious employment relationship	73	38.8	115	61.2	188	89.1	0.706
	8	34.8	15	65.2	23	10.9	
Conflict or difficulty in dealing with management	71	36.6	123	63.4	194	91.9	0.071
	10	58.8	7	41.2	17	8.1	
Vulnerability of populations	76	37.8	125	62.2	201	95.3	0.439*
	5	50.0	5	50.0	10	4.7	
Main reason for doctor turnover in PHC	67	36.2	118	63.8	185	87.7	0.083
Lack of support from municipal management	14	53.8	12	46.2	26	12.3	
Job offers with better pay	47	39.8	71	60.2	118	55.9	0.628
	34	36.6	59	63.4	93	44.1	
Offer of another position with a better location	76	37.6	126	62.4	202	95.7	0.279*
	5	55.6	4	44.4	9	4.3	
Job offers with better working conditions	68	39.8	103	60.2	171	81.0	0.395
	13	32.5	27	67.5	40	19.0	
Precarious employment contracts	72	40.2	107	59.8	179	84.8	0.195
	9	28.1	23	71.9	32	15.2	
Lack of public tenders	76	37.6	126	62.4	202	95.7	0.279*
	5	55.6	4	44.4	9	4.3	
Working in vulnerable regions	80	38.3	129	61.7	209	99.1	0.734*
	1	50.0	1	50.0	2	0.9	

Table 2 (continued)

	Intention to continue working in PHC						Test p	
	No		Yes		Total			
	n	%	n	%	n	%		
Policies to retain doctors in PHC								
Interest in a master's degree								
	No	47	56.6	36	43.4	83	39.3	<0.001
	Yes	33	26.4	92	73.6	125	59.2	
Master's degree offer motivates to continue working in PHC								
	I've already done my master's degree	1	33.3	2	66.7	3	1.4	<0.001*
	Does not intend to work in PHC	42	85.7	7	14.3	49	23.2	
	Assistance only	6	16.7	30	83.3	36	17.1	
	Assistance and teaching	33	26.2	93	73.8	126	59.7	
Resident's interest in acting as a preceptor								
	No	31	64.6	17	35.4	48	22.7	0.001
	Yes	40	35.7	72	64.3	112	53.1	

Chi-Square Test or (*) Fischer's Exact Test. Statistically significant p-values are highlighted in bold

R1 First-year resident

R2 Second-year resident

PHC Primary Health Care

demotivating factors cited by the participants were lack of professional prospects ($n = 83$), followed by low pay ($n = 29$) and precarious work ($n = 29$) (Table 2).

When respondents were asked to explain the main reasons for the turnover of doctors in PHC, there was also no significant association with an intention to pursue a career in PHC. The factors most frequently mentioned by doctors to justify turnover in PHC were the offer of a job with better pay ($n = 93$), followed by a job offer with better working conditions ($n = 40$) and a precarious work contract ($n = 32$). Regarding the most attractive employment relationship, of the 38 who said they were employed on a permanent basis in a probationary program, 30 (78.9%) intend to continue working in PHC ($p = 0.015$); of the 52 who said they were employed on a statutory basis, 44 (84.6%) intend to continue working in PHC ($p < 0.001$) (Table 2).

When the strategies for retaining doctors in PHC were evaluated, respondents were interested in reconciling their academic careers with their work in PHC. The majority wanted to do a master's degree ($n = 125$) and considered the opportunity to do a master's degree to be one of the factors motivating them to continue in PHC ($n = 126$), with a highly significant association in both cases ($p < 0.001$). This association is reinforced when we consider the resident's interest in acting as a preceptor: of the 112 who want to be preceptors, 72 (64.3%) intend to continue in PHC ($p = 0.001$) (Table 2).

Table 3 shows the results of the crude and adjusted binary logistic regression. Those who identified with the field of FCM were 9.34 times more likely to continue working in PHC than those who did not ($p < 0.001$). Proximity to family members, having children and the experience of working with vulnerable populations, both factors related to the FCM profile, were also associated with the intention to continue in PHC. On the other hand, those who did the residency because of the bonus offered had no intention of continuing in PHC ($p < 0.001$). In all, 40 (95.2%) of the preceptors said that residents who want to continue in PHC are more dedicated to their residency studies and committed to the service.

4 Discussion

This study revealed that the intention of doctors linked to the ten FCM residency programs in the state of Paraíba, Brazil, to continue working in PHC was strongly associated with their identification with the area, and that this decision had been made since graduation and was strengthened by experience in PHC. Our findings corroborate other studies in the literature, the results of which have shown that early, high-quality and continuous placement of medical students in PHC internship scenarios, as well as professional experience in PHC after graduation, contributes to identification with the area of FCM [1, 13, 15–18, 26]. However, it should be emphasised that the design of these studies does not allow causality to be established.

In the population of FCM residents in Paraíba during the period studied, around 40% stated that they did their FCM residency to obtain a bonus with the intention of studying another specialisation. Bonus policies may encourage professionals to remain in PHC until they are approved for another medical specialisation, creating a culture of temporary work with less symbolic value. Bonuses are a contradictory element in recruitment policies, as they attract professionals who have no intention of staying in PHC [13, 16, 19]. However, more studies are needed to gain a deeper understanding of how the lack of identification with the area can influence the resident's performance in the service.

In the new edition of the PMM, extending the time of the scholarship, the economic advantages and the possibility of taking Master's and Doctorate courses may be more positive strategies than the bonus to attract doctors identified with PHC. A longer period working in PHC, combined with a better training process, with *stricto sensu* post-graduate courses, could add value to the professionals who remain in PHC, contributing to the option of continuing a professional career in the SUS.

Another strategy that can motivate doctors to stay in PHC is to improve the training experience during residency. In a study conducted to evaluate the use of active methodologies in a medical course in Goiás, Brazil, it was observed that doctors acquired a series of competencies and skills by experiencing real day-to-day problems in the communities where they worked during their training. Active methodologies and a more qualified experience in PHC contributed to the training of professionals with a humane, reflective and ethical attitude, who were more motivated to work in FCM [20].

The results of this study indicate an association between more stable employment relationships and the intention to continue working in PHC. Similar data was found in a study on attractive factors and the permanence of doctors in PHC in the south-central region of the state of Rio de Janeiro, which found that most doctors working in PHC had statutory contracts [21]. In another study evaluating doctors' perceptions of factors that attract them to and keep them in remote and underserved areas, it was concluded that the stability provided by a statutory contract was valued by doctors who had been working in the profession for a long time and did not want to do another specialisation [19]. It is worth noting,

Table 3 Crude and adjusted logistic regression showing the variables associated with the intention of doctors linked to Family and Community Medicine (FCM) residency programs to continue working in Primary Health Care (PHC)

	Intention to continue working in PHC			
	Crude OR (95%CI)	p value	Adjusted OR (95%CI)	p (Wald)
Sociodemographic variables				
Children	1	0.003	1	0.002
	4.08 (1.62,10.27)		9.65 (2.24,41.67)	
Main motivation for doing a residency in FCM				
Identification with the area	1	<0.001	1	<0.001
	12.39 (5.7,26.96)		9.34 (3.16,27.61)	
Obtaining a bonus for another postgraduate degree and/or qualification for a competitive examination	1	<0.001	1	<0.001
	0.15 (0.08,0.28)		0.13 (0.05,0.36)	
Proximity to family members	1	0.473	1	0.014
	1.26 (0.67,2.37)		3.73 (1.31,10.63)	
Experience with vulnerable populations	1	0.132	1	0.001
	1.69 (0.85,3.32)		7.15 (2.15,23.82)	
If you stay with APS, a more attractive position				
No bond is attractive, because	50.34 (14.78,171.46)	<0.001	52.59 (10.77,256.83)	<0.001
	1		1	
Lack of professional prospects	1	0.264	1	0.002
	1.39 (0.78,2.47)		5.43 (1.83,16.19)	

however, that the most frequently mentioned contract, in absolute numbers, in our study, was that of “scholarship holder in a provision program”, a modality adopted by the PMM. In its most recent version, this program’s scholarship is offered for a period of at least four years and is considered attractive in view of the lagging salaries in the municipalities, especially in the north-northeast region of Brazil [12, 13]. These findings indicate an association between retention in PHC and sustained employment, even though causation cannot be verified because of the studies’ designs.

The doctors taking part in our survey pointed out that the lack of professional prospects and the absence of a career plan are the factors that most discourage them from staying in PHC. Low pay and the low prestige of FCM compared to other specialties, which tend to have a more technological and scientific profile, were also observed in another study as demotivating factors. In a survey of 6th year undergraduate medical students from four HEIs in the state of Minas Gerais, it was found that the second and third most common reasons for not working in PHC upon graduation were, respectively, the lack of a career plan and poor pay [3, 17, 22].

Since the implementation of the SUS in 1990, specialists and managers have proposed the creation of a job and career plan for the system’s health professionals. With the creation of the Secretariat for Labor Management and Health Education (SGTES) in 2003, the Ministry of Health has shown interest in improving aspects of labour management [23]. More recently, for the category of Family and Community Doctors, there has been a proposal to create a career in PHC with doctors selected through a public selection process and hired on a contractual basis, with the prospect of progression based on length of service [24, 25]. It is understood that it is important to promote the introduction of job and career plans at federal, state and municipal level, something that is still incipient. More attractive career plans could also contribute to the retention of doctors in PHC in Brazil.

Another contradictory element related to FCM residency is the remuneration which, at first, acts as an attraction factor; however, after completing residency, it can discourage professionals from continuing in PHC. On entering residency, the doctor receives the grant offered by the Ministry of Education of around four thousand reais, like any other resident in any area. However, as established in the PMM policy, the municipality that receives the resident must supplement the grant, the amount of which is generally the same as that paid to the doctor hired directly by the municipality. In other words, during the residency, the doctor receives around ten thousand reais, 40% of which is a scholarship. When they finish their residency, if they remain contracted by the municipality to work as an FCM in PHC, their remuneration will be reduced by at least 40%, without considering the amounts deducted for social security and income tax. This reduction in remuneration after completing residency can be a demotivating factor for continuing to work in PHC, especially for those doctors who don’t identify with FCM.

In the state of Paraíba, 61.6% of resident doctors and preceptors were female. Among graduates of FCM residencies in São Paulo, women accounted for 58.1% [22]; and among graduates in Palmas, this proportion rose to 77.4% [17]. Among doctors with FCM degrees in Brazil, 54.2% were women [6]. A study conducted in Minas Gerais found that female medical students were 2.9 times more likely to choose a career in PHC [3]. These findings point to a trend towards feminization in FCM.

The ongoing process of feminization in FCM may be related to other factors associated with the intention to continue in PHC, such as starting a family, having children and the need to be close to family members or have a support network, something that specialisation in FCM can provide. When we consider the sample of preceptors, a more experienced group, we find that the majority are already married or in a stable union, a considerable number have children and most are female, corroborating these associations.

Regarding undergraduate training, the majority of FCM residents in this study are young and come from private institutions, while most preceptors are more experienced doctors, and come from public institutions. This finding reflects the public policies to stimulate the training of doctors over the last 10 years, the result of the PMM in its training axis [3]. The expansion of medical school places in private universities has not necessarily contributed to reducing inequalities in access to health care in vulnerable regions. Studies indicate that the percentage of doctors incorporated into the SUS medical workforce has decreased over time [14].

Our results show that just over 40% of FCM residents are in the metropolitan region of João Pessoa, where six different programs are offered. As such, the largest number of FCM residency vacancies are distributed throughout the interior of the state. The process of internalisation of FCM residencies in Paraíba differs from other regions, given that a significant number of municipalities offer residency places with a high occupancy rate in the interior of the state [11]. The availability of FCM residencies in the region where the doctor lives encourage them to settle in regions far from urban centres [13].

The results of this study also showed that when it comes to policies for retaining doctors in PHC, the offer of a master’s degree in the area and the opportunity to act as a preceptor in the FCM residency strongly contribute to the doctor’s intention to continue working in PHC, a fact corroborated by other studies [11, 13]. In a joint action with the federal

government, the latest call for applications for the Professional Master's Degree in Family Health (PROFSAUDE/2023) allocated 50% of the places on offer to PMM doctors, PMpB mentors and residents in their second year of FCM residency [12]. Our findings show that public policies that encourage postgraduate training and preceptorship can contribute to doctors staying in PHC.

Our study indicated that experience in PHC during undergraduate studies may have an influence on the doctor's decision to continue working as an FCM. We suggest that the Paraíba State Health Department, through the School of Public Health, should seek to engage in dialogue and raise awareness among the state's higher education institutions, both public and private, to encourage undergraduate medical courses to learn more about and stimulate work in PHC. In doing so, it should take as a reference the precepts of the National Curriculum Guidelines for Undergraduate Medical Courses. Furthermore, considering that doctors tend to remain working in the region where they specialize, it is necessary to maintain the supply of FCM residency places distributed across the various regions of the state of Paraíba, in partnership with various municipalities and training institutions. Our data indicates the need to include specialization in FCM as a prerequisite in public selections for doctors who will work in PHC, as has already been suggested by the Brazilian Society of Family and Community Medicine.

The literature shows that it is necessary to guarantee doctors professional and peer support, including during their first training experiences [27–29]. Professional support includes opportunities for career progression, professional development, mentoring and specialist support. This can include strategies to retain senior colleagues as mentors; facilitating specialist support networks and reception facilities; offering career progression opportunities and pathways, qualification opportunities; and strategies to build supportive collegial work teams [27]. The findings highlight the importance of continuous professional development, which includes training new staff, implementing effective recruitment and retention mechanisms, optimizing the skills mix and promoting well-being in the workplace. These elements are essential to fostering a well-trained and resilient PHC workforce [27–29].

The limitations of this study are related to its design. It is a cross-sectional study whose data describe the intention of doctors to continue working in PHC in the state of Paraíba. The findings may not be applicable to Brazil's diverse regions, and it is not possible to establish cause and effect relationships. Although all residents of the Paraíba were invited to participate in the study, the sample is still small (N = 211) and this may have contributed to some distortion in the probabilities of the results of the logistic regression analysis. Additionally, the potential for response bias is introduced by the reliance on self-reported intentions to continue in PHC, as participants may respond favourably in accordance with professional or social expectation. Some variables, such as geographical location in terms of access to professional opportunities or local infrastructure, were not investigated and may have influenced the results as confounding variables. These limitations impact the generalizability of the findings.

Our findings point to the need for future qualitative studies to understand issues related to doctors' personal experiences that may be influencing their decision to remain in PHC, providing richer insights into these challenges. There is a need for further reflection on the influence of current provision policies on medical training during undergraduate and postgraduate studies, as well as the influence of these policies on the choice to specialize in FCM, in addition to the decision to remain in PHC. Future research is needed to investigate the relationship that exists (or not) between more motivated and better performing residents and the impact on both the residency program in which they are being trained and the people they care for and the ESF teams where they work.

5 Conclusion

The intention of physicians linked to FCM residency programs in the state of Paraíba in Brazil to continue working in PHC is associated with their identification with the area; the decision was made during their undergraduate studies and strengthened with experience. More stable employment relationships, the offer of a master's degree in the area and the opportunity to act as a preceptor in the FCM residency program all contribute to the desire to remain in PHC.

Acknowledgements The authors would like to thank all the Coordinators of the Residency in Family and Community Medicine in the state of Paraíba who facilitated this research, as well as the participants for their willingness to transparently share their personal and professional experiences related to self-care.

Author contributions JDLO, DGMB and SS: study conception, study design, acquisition of data, analysis and interpretation of data, and drafting the manuscript. APRM, EFDS, JODO, LGSN, MBRT: acquisition of data, analysis and interpretation of data. RAO: statistical analysis. RCRM

and FDTL: revision of the analysis and the manuscript. DM: revision of the manuscript. All the authors read, commented on and approved the final manuscript.

Funding No funding.

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

Declarations

Ethics approval and consent to participate This study is part of an umbrella project entitled “Educational intervention: competency-based training in Family and Community Medicine residency and Multiprofessional Family Health residency in the state of Paraíba” approved by the Research Ethics Committee of the State University of Paraíba (CAEE 73484623.5.0000.5187). The study complied with the Criteria for Ethics in Research with Human Beings, in accordance with resolutions CNS 466/2012, CNS 510/2016 (articles 15, 16 and 17) and Operational Standard 001/2013 of the National Health Council. Potential participants signed the electronic Informed Consent Form (ICF).

Consent for publication Not applicable.

Competing interests The authors declare no competing interests.

Open Access This article is licensed under a Creative Commons Attribution 4.0 International License, which permits use, sharing, adaptation, distribution and reproduction in any medium or format, as long as you give appropriate credit to the original author(s) and the source, provide a link to the Creative Commons licence, and indicate if changes were made. The images or other third party material in this article are included in the article's Creative Commons licence, unless indicated otherwise in a credit line to the material. If material is not included in the article's Creative Commons licence and your intended use is not permitted by statutory regulation or exceeds the permitted use, you will need to obtain permission directly from the copyright holder. To view a copy of this licence, visit <http://creativecommons.org/licenses/by/4.0/>.

References

1. Campedelli-Lopes AM, Bicudo AM, Antonio MARGM. The evolution of medical students' interest in primary care during graduation. *Rev Bras Educ Med.* 2016;40(4):621–6. <https://doi.org/10.1590/1981-52712015v40n4e00732015>.
2. Machado CDB, et al. Medical education in Brazil: a historical analysis of academic and pedagogical training. *Rev Bras Educ Med.* 2018;42(4):66–73. <https://doi.org/10.1590/1981-52712015v42n4RB20180065>.
3. Miranda CZ, et al. Factors associated with career intention in primary health care among medical students. *Rev Bras Educ Med.* 2021. <https://doi.org/10.1590/1981-5271v45.3-20200439>.
4. Gusso G, et al. Treatise on family and community medicine: principles, training and practice [electronic resource]. 2 ed. 2 v
5. Oliveira FP, Santos LMP, Shimizu HE. Social responsibility of medical schools and social representations of medical students in the context of the More Doctors Program. *Rev Bras Educ Med.* 2019;43(1):473–83. <https://doi.org/10.1590/1981-5271v43suplemento1-20190074>.
6. Scheffer M, et al. Medical demography in Brazil 2023. São Paulo: FMUSP, AMB; 2023.
7. Brasil. Civil House. Law No. 12.871, of October 22, 2013. Establishes the More Doctors Program, amends Laws No. 8.745, of December 9, 1993, and No. 6.932, of July 7, 1981, and makes other provisions
8. Scheffer M, et al. Medical demography in Brazil 2020. São Paulo: FMUSP, CFM; 2020.
9. Kemper ES, et al. More doctors program: overview of scientific production. *Cien Saude Colet.* 2016;21(9):2785–96. <https://doi.org/10.1590/1413-81232015219.17842016>.
10. Oliveira APC, et al. Challenges to ensure the availability and accessibility of medical care in the Unified Health System. *Cien Saude Colet.* 2017;22(4):1165–80. <https://doi.org/10.1590/1413-81232017224.31382016>.
11. Barrêto DS, et al. More doctors program and family and community medicine residencies: articulated strategies for expanding and internalizing medical training. *Interface (Botucatu).* 2019. <https://doi.org/10.1590/Interface.180032>.
12. Brasil. Office of the Chief of Staff. Law No. 14.621, of July 14, 2023. Establishes the National Strategy for the Training of Health Specialists within the scope of the More Doctors Program; and amends Laws No. 12.871, of October 22, 2013, No. 13.959, of December 18, 2019, and No. 13.958, of December 18, 2019, to create new incentives and rules within the scope of the More Doctors for Brazil Project and the National Examination for the Revalidation of Medical Diplomas Issued by Foreign Higher Education Institutions (Revalida) and to transform the Agency for the Development of Primary Health Care (Adaps) into the Brazilian Agency to Support SUS Management (AGSUS)
13. Melo Neto AJ. Factors associated with the intention to remain working in primary health care among Brazilian doctors in the Mais Médicos Program in Paraíba [dissertation]. João Pessoa: Federal University of Paraíba, Medical Sciences Center; 2019.
14. Figueiredo AM, et al. Evaluating medical education regulation changes in Brazil: workforce impact. *Hum Resour Health.* 2021;19:33. <https://doi.org/10.1186/s12960-021-00580-5>.
15. Leitão MHA. An evaluation of the More Doctors Project in the context of medical labor provision in the state of Paraíba. Recife, PE: Aggeu Magalhães Institute, Oswaldo Cruz Foundation; 2018
16. Cortez LR, et al. The Provab supervisor's perception of physician retention in primary health care. *Rev Bras Educ Med.* 2019;43(2):48–57. <https://doi.org/10.1590/1981-52712015v43n2RB20180161>.

17. Cavalcante GRRV, et al. Family and Community Medicine residency: perceptions of graduates about their training and work process. *Interface (Botucatu)*. 2022. <https://doi.org/10.1590/interface.210610>.
18. Rotta MFO, Nascimento DDG. Professional perspectives and motivations of medical students to work in the Family Health Strategy. *Interface (Botucatu)*. 2020. <https://doi.org/10.1590/Interface.190531>.
19. Stralen ACSV, et al. Doctors' perception of attraction and settlement factors in remote and underserved areas: routes of scarcity. *Physis*. 2017;27(1):147–72. <https://doi.org/10.1590/S0103-73312017000100008>.
20. Santiago RC, Moraes VA, Almeida RJ. Perception of medical students on the use of the problematization methodology during graduation. *Rev Bras Educ Med*. 2020. <https://doi.org/10.1590/1981-5271v44.4-20200083>.
21. Ferreira IAM. Challenges for attracting and retaining doctors in the Family Health Strategy in the municipalities of the Center-South Region of the State of Rio de Janeiro [thesis]. Rio de Janeiro: Rio de Janeiro State University, Hesio Cordeiro Institute of Social Medicine; 2022. 87 p
22. Rodrigues ET, et al. Profile and professional trajectory of Family and Community Medicine residency graduates in the State of São Paulo. *Rev Bras Educ Med*. 2017;41(4):604–14. <https://doi.org/10.1590/1981-52712015v41n4RB20160084>.
23. Vieira SP, et al. Career, position and salary plans within the Unified Health System: beyond limits and testing possibilities. *Saude Debate*. 2017;41(112):110–21. <https://doi.org/10.1590/0103-1104201711209>.
24. Brazil. Acts of the Legislative Branch. Law No. 13.958, of December 18, 2019. Establishes the Doctors for Brazil Program, within the scope of primary health care in the Unified Health System (SUS), and authorizes the Federal Executive Branch to establish an autonomous social service called the Agency for the Development of Primary Health Care (Adaps)
25. Wolmann L, D'Avila OP, Harzheim E. The doctors for Brazil Program: merit and equity. *Rev Bras Med Fam Comunidade*. 2020;15(42):2346. [https://doi.org/10.5712/rbmfc15\(42\)2346](https://doi.org/10.5712/rbmfc15(42)2346).
26. Ferreira MJM, et al. New National Curriculum Guidelines for medical courses: opportunities to reframe training. *Interface (Botucatu)*. 2019. <https://doi.org/10.1590/Interface.170920>.
27. Wieland L, Ayton J, Abernethy G. Retention of general practitioners in remote areas of Canada and Australia: a meta-aggregation of qualitative research. *Aust J Rural Health*. 2021;29(5):656–69. <https://doi.org/10.1111/ajr.12762>.
28. Endalamaw A, Khatri RB, Erku D, et al. Barriers and strategies for primary health care workforce development: synthesis of evidence. *BMC Prim Care*. 2024;25:99. <https://doi.org/10.1186/s12875-024-02336-1>.
29. Riley ED, Chur E, Gandhi M, Fuchs JD, Saucedo JA, Sterling LA, Johnson MO. Lessons for expanding virtual mentoring in academic medical institutions: a qualitative study among senior mentors. *BMC Med Educ*. 2024;24(1):934. <https://doi.org/10.1186/s12909-024-05852-x>.

Publisher's Note Springer Nature remains neutral with regard to jurisdictional claims in published maps and institutional affiliations.