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Puerto Rican physician's recommendations to mitigate medical migration from Puerto Rico to the mainland United States

Adrián J. Santiago-Santiago [a,*], Joshua Rivera-Custodio [a], Claudia A. Mercado-Ríos [a], Yoymar González-Font [a], Sheilla R. Madera [b], Nelson Varas-Díaz [b], Mark Padilla [b], Alíxida Ramos-Pibernus [a], Kariela Rivera-Bustelo [c], John Vertovec [b], Armando Matiz-Reyes [b], Kevin Grove [b]

[a] Ponce Health Sciences University, Ponce, Puerto Rico
[b] Florida International University, Florida, United States
[c] University of Puerto Rico, Medical Sciences Campus, San Juan, Puerto Rico

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ABSTRACT

Puerto Rico (PR) is a United States (US) territory with a history of colonial violence, poverty, and government corruption. Due to these sociopolitical factors and natural disasters (e.g., hurricanes and earthquakes), there has been a sharp increase in PR residents migrating to the mainland US. Local media and professional health organizations focus on the impact of medical migration on the PR health system (e.g., health personnel shortages and long waiting periods for critical care). According to the PR College of Physicians and Surgeons, 365–500 physicians have left annually since 2014, which represents a crisis of access to health services. However, few studies have focused on ways to mitigate medical migration from PR to the US mainland. This article describes the recommendations provided by migrating and non-migrating Puerto Rican Physicians (PRPs) to mitigate medical migration from PR to the US mainland. We focus on qualitative data from a mixed-methods NIH-funded study (1R01MD014188) to explore factors that motivate or mitigate migration among migrating (n = 26) and non-migrating (n = 24) PRPs. Interviews were analyzed following thematic analysis guidelines. Results show the following themes: 1) strategies to retain early-career medical residents living in PR; 2) recommendations for local government on future health policy; and 3) work environment initiatives for health institutions to mitigate physician migration. Findings suggest multilevel efforts are required to mitigate medical migration in PR.

1. Introduction

While the number of physician graduates worldwide has doubled between 2008 and 2018, the health workforce is poorly distributed, with most professionals located in high-income countries [13]. Approximately one-fifth of the physician workforce comprises physicians who migrated from low-income to high-income countries [26,40]. This represents a problem for the health system as it exacerbates disparities generated in physician distribution across regions and shortages in the Global South even as overall numbers of health professionals are growing. The migration of physicians is particularly critical since these personnel represent an integral, highly trained part of global health systems. A lack of physicians, especially in remote areas, can impact other segments of the medical workforce, leading to burnout, excessive workloads, inefficient work processes, and subsequent work-home conflicts [47]. It has also been documented that physician shortages affect patient service and vulnerable populations, reducing the quality of care, producing prolonged wait times, and resulting in higher prices for consultation [43].

Physician migration from Puerto Rico (PR) to the United States (US) mainland has particular nuances that further shape the crisis of care. PR, an archipelago in the Caribbean, is a US territory with a long history of colonial violence, poverty, and government corruption [8]. Due to these continuous sociopolitical factors and recent natural disasters (e.g., hurricanes and earthquakes), there has been an increase in the number of PR residents migrating to the US mainland [15], including physicians. According to the PR College of Physicians and Surgeons (PRCPS), only 9,000 practicing doctors are available to assist a population of 3.2 million in the archipelago[32]. This translates to 3.06 physicians per 1,000 of the population, just above the 2.3 health workers per 1,000

* Corresponding author.

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suggested by the World Health Organization (WHO)[45]. These numbers are similar to those in other places like the US (2.61 physicians/1,000 population), yet slightly superior to other Global South and Caribbean countries (e.g., Dominican Republic: 1.45 physicians/1,000 population, Jamaica 0.53 physicians/1,000 population, Bahamas: 1.94 physicians/1,000 population) [45]. Nonetheless, PRCPS data indicates that 365–500 physicians have left PR every year since 2014. If this pattern continues, PR will not be able to meet WHO's recommended per capita ratio of physicians, exacerbating the current physician shortages and further weakening its health system [2,21]. Physician migration accelerated in the aftermath of Hurricane Maria in 2017. The storm, coupled with long-term divestment in the health sector, led to the death of thousands of people and a generalized collapse of the health system [29,49]. Indeed, the already-existing shortage of physicians willing and able to provide services in disaster situations contributed to the collapse [38].

Physician shortage detrimentally impacts the public health of the entire population, but can be especially devastating among sectors suffering from chronic conditions requiring regular care[41]. In PR, approximately 49 % of adults have chronic health conditions [14]. The Archipelago faces health disparities in chronic conditions such as diabetes, asthma, high cholesterol, arthritis, cancer, HIV, and cardiovascular diseases [7,24]. Vulnerable populations (e.g., older adults and socioeconomically disadvantaged individuals) lack adequate health services to address these conditions [44,42]. A vivid example of this can be seen in Vieques, one of the two eastern municipal islands of the Archipelago, where the only hospital has been closed for more than four years and medical personnel are scarce [16]. Most of the residents of Vieques have to wait for hours to catch a ferry that transports them to the *Isla Grande* (main island) and then make a one-hour trip to see a doctor in the capital city of San Juan [1], where they typically find long wait times to see an available physician who can treat their condition [48]. In other instances, many patients have had to wait months for their appointments with their specialists and others many days for surgeries [3]. This type of situation is not unique to Vieques but is experienced regularly by residents of the Isla Grande, particularly in remote rural areas. For example, despite the local government assigning regional hospitals to serve as anchors and assist amidst emergencies, the Susoni and Pavía hospitals in Arecibo and Aguadilla municipalities, respectively, declared that they are not prepared to admit critical patients [44]. While such cases are caused by multiple factors (e.g., natural disasters, austerity measures, government negligence, and deterioration of health infrastructure in clinics and hospitals), they are aggravated by shortages in physicians and other healthcare professionals. Therefore, in disaster situations, overall structural precariousness in health services is further exacerbated [44,18].

Although the problem of physician migration has been frequently described, effective measures to mitigate it are rare [31,51]. Regarding health policies intended to mitigate physician migration, the local government issued an executive order (EO) on February 21, 2017, through Act 14–2017, or the "Incentives Act for the Retention and Return of Medical Professionals." This measure was passed under the Ricardo Rosselló government to incentivize qualifying medical professionals to stay in PR or move to PR and practice medicine locally [12]. The EO consisted of a tax exemption decree issued by the Secretary of Economic Development and Commerce, reducing the physician income tax rate from 33 % to only 4 % on eligible income [33]. With this provision, physicians could maintain tax exemptions for 15 years or even longer. It also established that for physicians to maintain this benefit, they must have practiced medicine in PR for at least 15 years [20]. Nonetheless, enrollment in Act 14–2017 was time-limited, as physicians had only until December 31, 2020 to apply for this exemption. This left many of them, especially recent graduates, unable to partake in this economic benefit [34].

While many locations worldwide have suffered from medical shortages and migration patterns (e.g., Nigeria, Zambia), prior research has focused mainly on studying the implications of these phenomena amongst medical personnel and the health system overall [40]. Studies have rarely focused on gathering recommendations directly from medical providers themselves, nor have they often addressed the political and multilevel initiatives necessary to tackle the physician migration crisis. Therefore, this article describes the recommendations provided by a unique sample of migrating and non-migrating Puerto Rican physicians (PRPs) regarding how to mitigate medical migration from PR to the US mainland.

1.1. The advocacy strategy framework

Our project was guided by the theoretical approach of the Advocacy Strategy Framework (ASF), which was created by Julia Coffman & Tanya Beer (2015) [10]. Informed by social reform theory, it was developed to formulate useful tactics to impact public policy by taking into account multiple levels of change and audiences. The framework posits that focused strategies must target specific audiences to create effective public policy and pursue social reform.

Therefore, advocacy efforts must be implemented to achieve changes based on science-based recommendations until they result in transformations via three specific levels: *awareness*, *will*, and *action*. Advocacy targeting *awareness*, for example, involves making the audience knowledgeable about the situation. *Will* describes the stage where *awareness* transforms into a sense of urgency and agency by the audience. Finally, the last level of change is *action*, which refers to facilitating audience initiatives for change. Furthermore, the framework recognizes that multiple audiences must be included in the process (i.e., the public sector, influencers, key decision-makers) to foster policy changes.

In this paper, the research team presents findings that can help increase *awareness* of an ongoing problem and to highlight the recommendations of physicians themselves as steppingstones for the mitigation of medical migration. This requires targeting direct audiences such as local government officials and institutions to comprehend and map physicians' recommendations onto political strategies that can help mitigate medical migration from PR to the US mainland. Furthermore, we posit that for these advocacy steps to be effective and practical, they must be contextualized and theoretically informed by the realities of the context in which research takes place and in which the desired changes aim to occur. Thus, in the case of Puerto Rico, coloniality, understood as the long-lasting effects of the colonial enterprise [25,35], takes center stage and serves as the backdrop for any potential advocacy strategies.

PR's health infrastructure is afflicted by deterioration, attributable in part to recurrent natural disasters (i.e., hurricanes, earthquakes), as well as the privatization of healthcare delivery, political corruption, and the politicization of the health system. These events take place as the unincorporated territory of the US is treated differently than the states in terms of health funding and infrastructure revitalization [36,39]. It is no surprise, then, that physicians who leave frequently link their decision to the overarching decline of social conditions within the Archipelago, the neglect of its health system, and the influence of colonial politics [50]. Those who leave have felt in their bones the consequences of stigmatization due to their place of precedence. Physicians report being described as less prepared and able than US-based professionals [30]. Because of PR's colonial particularities, and following other scholars who have argued that advocacy theories must shift in response to variable social and political contexts [10], we endeavored to implement a study and analyze the data gathered through a grounded version of the ASF that took into consideration how physician migration is driven by coloniality.

2. Materials and methods

2.1. Design

This article is based on an NIH-funded study (5R01MD01488-03) that implemented an exploratory sequential mixed methods approach to document the implications of physician migration on the PR health system. We used in-depth semi-structured interviews (ISIs), surveys, and institutional ethnographic observations as data-gathering techniques. The present article will focus solely on the qualitative data from the in-depth semi-structured interviews with physicians.

2.2. Procedure

Data was collected from November 2020 to February 2021 during the COVID-19 pandemic. Once we obtained authorization from the Florida International University's IRB (Protocol Approval #108848), we identified potential participants through the PRCPS collaboration. We included a purposive sampling approach[6] for participant recruitment to ensure the diversity of the sample in terms of the area of specialty in medicine and the region in which physicians provide services (i.e., US-based versus PR-based; rural versus urban locations). The team members contacted physicians by phone at their offices to explain the nature of the study and inquire about their interest in participating. Those who agreed to participate were invited to meet virtually for informed consent and the semi-structured interview. Trained research assistants (RAs) conducted the interviews via a secure videoconference platform (i.e., Zoom) as a strategy to (1) mitigate COVID-19 risks among participants and (2) facilitate communication between participants living in diverse geographical locations (i.e., PR and US mainland). The interviews lasted between 25 and 60 min. Participants received a $75 Amazon gift card for their participation in the study.

2.3. Participants

The total number of participants was 50, divided among non-migrating physicians living in PR (n = 24) and migrating physicians residing in the US mainland (n = 26). The sample size was chosen to increase the probability of reaching analytic saturation while also remaining small enough for in-depth qualitative analysis of participant narratives [17]. The inclusion criteria for non-migrating PRPs were: 1) be a licensed physician and have practiced in PR during the past decade, and 2) currently practicing medicine in PR. The inclusion criteria for migrating physicians were: 1) be a licensed physician who migrated from PR to the US mainland during the past decade, and 2) currently practicing medicine in the US. Most non-migrating physicians identified as female (54 %) and lived in the PR capital city of San Juan (54 %). See Table 1 for a full description of non-migrating participants' characteristics. Similarly, most migrating physicians identified as female (58 %) and reported residency in Florida (46 %), a US state with a high Latinx population. See Table 2 for a full description of migrating participants' characteristics.

2.4. In-depth semi-structured interview guide

For the in-depth semi-structured interviews (ISIs), we developed a guide with questions related to 1) professional career development, 2) factors that motivate or mitigate physician migration, 3) circulating ideas about PR, 4) initiatives to mitigate physician migration, and 5) a sociodemographic data questionnaire. Due to the population, the ISIs guide was developed in English and Spanish. In Table 3, we present sample questions from the interview guide.

2.5. Data analysis

Descriptive statistics (i.e., frequencies, means) were conducted for the sociodemographic data. ISIs were audio-recorded using the Zoom platform and were later transcribed by the team. Each transcript was assigned a unique identification code and a pseudonym. The qualitative analysis consisted of systematic thematic coding of the interview transcripts using a three-stage technique [4,5]. We used N-Vivo software to code the transcripts. For the first stage, the team developed a focused codebook using an "in vivo" coding technique on five randomly selected transcripts. In the second stage, we applied the focused codes to all the transcripts by pairing coders to the same transcripts independently. These coders compared their coding decisions to ensure consistency. Finally, in the third stage, the entire team discussed analytic summaries created by the coders for reflection until a consensus of the codes was reached. For this article, the goal of the coding queries was to extract and refine themes related to medical migration mitigation recommendations from migrating and non-migrating PRPs.

In this paper, we present and discuss both migrant and non-migrant physicians' recommendations together, rather than segmenting them by migration history, as all expressed a deeply shared commitment to the people of PR and championed the goal of improving its health system [23]. In addition, our analysis found no difference between groups in terms of the content of their recommendations.

Table 1
Sociodemographic data of Non-migrating Physicians.

Variable	Frequency	%
Gender		
Men	11	46 %
Women	13	54 %
Marital status		
Single	5	21 %
Married	16	67 %
Living with partner	1	4 %
Divorced	1	4 %
Widow	1	4 %
Religious group		
Catholics	11	46 %
Protestants	1	4 %
Christian	5	21 %
Agnostic	7	29 %
Medical practice		
General Medicine	3	13 %
Pediatric	3	13 %
Cardiology	1	4 %
Emergency Medicine	2	8 %
Family Medicine	2	8 %
ENT	1	4 %
Internal Medicine	1	4 %
OBGYN	1	4 %
HIV Medicine	2	8 %
Endocrinology	1	4 %
Integrative Medicine	1	4 %
Town in PR where they practice medicine		
San Juan (Urban)	13	54 %
Carolina (Urban)	3	12.5 %
Caguas (Urban)	3	12.5 %
San German (Urban)	1	4 %
Guánica (Urban)	1	4 %
Ponce (Urban)	1	4 %
Bayamón (Urban)	1	4 %
Las Piedras (Urban)	1	4 %

*Note. n = 24.

3. Results

Findings were gathered into three main themes: 1) strategies to retain early-career medical residents living in PR; 2) recommendations for local government on future health policy; and 3) work environment initiatives for health institutions to mitigate physician migration.

Table 2
Sociodemographic data of Migrating Physicians.

Variable	Frequency	%
Gender		
Men	11	42 %
Women	15	58 %
Marital status		
Single	8	31 %
Married	16	62 %
Living with partner	1	3 %
Divorced	1	3 %
Religious group		
Catholics	12	46 %
Protestants	3	12 %
Christian	1	3 %
Agnostic	9	35 %
Medical practice		
Neurology	3	12 %
Psychiatry	2	7 %
Family Medicine	1	4 %
Endocrinology	2	7 %
Internal Medicine	1	4 %
OBGYN	6	23 %
Surgery	1	4 %
Orthopedics	1	4 %
Ophthalmology	1	4 %
Internal Medicine Intern	1	4 %
Neurological Resident	1	4 %
Fellowship in Neonatology	1	4 %
Pulmonology & Critical Care	1	4 %
Pain Management	2	7 %
Surgical emergency Intervention	1	4 %
Radiology Pediatric Intervention	1	4 %
States where they practice medicine		
Florida	12	46 %
Texas	4	15 %
New Jersey	2	8 %
New York	1	4 %
Colorado	1	4 %
Louisiana	1	4 %
Indiana	1	4 %
Ohio	1	4 %
Pennsylvania	1	4 %
Delaware	1	4 %

*Note. n = 26.

3.1. Theme 1. Strategies to retain early-career medical residents living in PR

Participants in our study often commented that one main reason physicians leave PR is their early-career struggles and relative lack of support in their professional growth on the Archipelago in contrast to the US mainland. As part of these struggles, some participants recounted their inability to partner with insurance companies regarding billing. As a participant noted:

> Young people get frustrated because they can't charge their bills, they can't get paid. Then they finish residency and open an office with an overhead, with an investment, and they cannot bill the medical plans for up to three or four months… I think that the government could help a little there, and then a person like that doesn't have to go through so much work and so many hurdles and can say: "I have my plans approved, I can open tomorrow, I can start billing I will have money eventually." (Non-migrating physician, Female, Neurology, 61 yrs).

As a measure to ease these struggles, most participants stated that public (e.g., government hospitals) and private sector (e.g., clinics) should provide incentives and financial support for medical graduates. As an example of this, a participant stated:

> To retain young people, we need good economic conditions, and I understand that many of our young people would stay here. We need

Table 3
Questions from the interview guide.

Dimensions	Questions
Section 1 – Questions for physicians who migrated.	
Geographical locations in which participant has practiced medicine before and after migrating from PR:	–When did you move from PR?
Professional career development	–Can you briefly summarize your career trajectory in PR and the US?
Context of medical practice	–Describe the context where you currently (or most recently) practice medicine in PR. –How would you describe the area you worked in PR? Was it urban, rural, or suburban? –Why do you describe it that way? –Have you practiced your profession in other places (including cities or states) than the one you have previously described?
Descriptions of work settings	–How would you describe your experience working in the PR healthcare system? –Describe the populations to which you mostly provided medical services in the PR. –What kind of health conditions did you treat most frequently in PR? –Are you currently licensed to practice medicine in PR? Is the license active? Why did you decide to let [your license lapse or maintain your license]? –How would you describe your experience working in the US health system? How is it different or similar to your experience in PR? –Describe the populations to which you mostly provide medical services in the US. –What kind of health conditions do you treat most frequently in the US?
Factors that motivate or mitigate physician migration	–Why did you decide to move from PR? –What do you think are the general opinions people in the US have of PR? Provide some examples. –Why did you decide to move to the US specifically? –Do you understand there is a current physician migration problem affecting PR? –What factors do you think drive the current physician migration from PR? –What factors do you understand keep physicians in PR from migrating elsewhere? How do you propose we curtail this migration pattern? –Are you aware of efforts carried out by the PR government to retain physicians on the island? [If yes] Please describe them. [If no] What do you think could be done? –Have you ever considered returning to PR for practicing medicine? Why yes? Why not? –What other initiatives could you recommend to address the problem of physician migration from PR
Section 2 – Questions for physicians who have not migrated.	
Geographical locations in which participant has practiced medicine in PR:	–How long have you practiced medicine in PR?
Career summary in PR	–Can you briefly summarize your career trajectory in PR?
Context of medical practice in PR	–Describe the context where you currently (or most recently) practice

(*continued on next page*)

Table 3 (*continued*)

Dimensions	Questions
	medicine in PR. −Have you practiced your profession in places other than the one you have previously described (including US cities or states)? [If so] When and where? Please describe these experiences.
Description of work settings	−How would you describe your experience working in the PR healthcare system? −Describe the populations to which you mostly provide medical services in the PR. −What kind of health conditions do you treat most frequently in PR?
Factors that fostered their permanence in PR / ideas about migration	−Have you ever thought about leaving PR to practice medicine elsewhere? Why or why not? −What do you think are the general opinions people in the US have of PR? Provide some examples. −Why did you decide to stay in PR?
Initiatives to mitigate physician migration.	−Do you understand there is a current physician migration problem affecting PR? How can you tell? −Do you know physicians who have migrated? −What factors do you think drive the current physician migration from PR? −What factors do you understand keep physicians in PR from migrating elsewhere? −How do you propose we curtail this migration pattern? −Are you aware of efforts carried out by the PR government to retain physicians on the island? [If yes] Please describe them. [If no] what do you think could be done? −What other initiatives could you recommend to address physicians' migration?
Section 3 − Sociodemographic data questionnaire	−How old are you? −With what gender do you identify? −What is your sexual orientation? −What is your race/ethnicity? −What is your place of birth? −Where do you currently live? What is the zip code where you reside? −How would you describe the area where you live? −Would you describe this area as urban, suburban, or rural? −What is your marital status? −What religious group do you identify with?
Section 3	−What is your approximate yearly income? −What is your area of specialty in medicine? −Where did you study medicine? −How many years have you practiced your profession? −What is your employment status? −How many years have you practiced your profession? −Is the site where you work public (government), community-based, private (e.g., private hospital), private practice, or other?

to improve working conditions so they can pay their loans. (Non-migrating physician, Female, Pediatrician, 64 yrs).

Some referred to these incentives as forgiving student loans and granting stipends to open their own private practices, as expressed in the following excerpt:

> Besides that, I imagine opportunities where you can create your own practice and set something up. Something economical that can help me grow the practice. (Migrating physician, Male, Orthopedic, 41 yrs.)

Others suggested that medical students could benefit from other incentives to match residency programs to areas facing marked health disparities. As one participant highlighted:

> There are other places that give incentives to medical students to "match" in certain programs so that they stay in a certain country, municipality, or state where there are almost no doctors. They pay them and their loans. (Migrating physician, Male, Intern, 41 yrs.)

As seen, some recommended that physician educators receive an additional stipend for their training roles. Most participants believed medical students, recent graduates, and general early career physicians should be provided economic support for their career development. An example of this can be seen in the following:

> "Something as simple as giving you a low-interest loan so that you can open a practice, give you a space … give you some help, at least forgive your student loans or pay you something or help you pay your malpractice insurance…" (Migrating physician, Male, Obgyn, 37 yrs.)

Many physicians highlighted how, despite the different organizations involved in their professional growth, the local government should take action to address these recommended strategies with a focused strategy.

3.2. Theme 2. Recommendations for local government on future health policy

Participants explained that another reason for their migration is the lack of government action to create public initiatives aimed at improving work conditions. In line with the ASF, many offered recommendations to raise awareness among local politicians and administrators regarding governmental approaches to improve their work environment and legal medical registrations. An example of this includes the desire for less red tape in document requirements and shorter waiting periods for license renewals, as expressed in the following narrative:

> I think that if the pay improves in Puerto Rico and the processes for acquiring your license are facilitated, people will stay. Here [in the US], for the renewal of my license, I did everything online, and in two weeks, they gave me their answer, approved it and sent it to me. In Puerto Rico, it's like a whole bureaucracy. (Migrating physician, Female, ObGyn, 35 yrs.)

Other examples included public sector assistance for their positions and more governmental surveillance and action on insurance programs. In addition, participants suggested that the government should fine medical insurance companies that do not fulfill their contracts or delay the process for them to become approved providers. Regarding the latter, one participant stood out:

> [T]he government should impose fines on insurers. They should require that if a doctor submits his papers on time and all is correct, in less than a certain amount of time, let's say one month, two months at most, everything must be resolved. (Migrating physician, Male, Pediatric interventional radiologist, 34 yrs.)

Other physicians observed that Act 14–2017 did not fulfill their needs or contribute to their settling in PR. Some even call the act "a scam" due to the hassle and money invested to participate in it, and thus questioned the government's will to implement sound policies:

… the process exceeds what I think are $5,000 for you to enter into that agreement. Everything that I am going to save, I am going to have to pay back. (Non-migrating physician, Female, General Medicine, 55 yrs.)

Participants generally felt excluded in terms of public policy and decision-making. They recommended that the government should be invested in public policy regarding physician migration. Additionally, participants suggested that public policy (e.g., treatment costs) should acknowledge and involve physicians directly so that they can propose policy measures directly to key decision-makers. This is demonstrated in the following quote:

I believe that it should be that each specialist sets up a meeting and says: "I believe that this is a reasonable price to charge for such a procedure." And that's it. Not that the insurance company tells you, "I'm going to pay you $20 for that procedure". (Migrating physician, Female, Obgyn, 46 yrs.)

Participants stressed that challenging work conditions contributed to their day-to-day demands and struggles and provided many recommendations regarding work environments that might mitigate physician migration, as described below.

3.3. Theme 3. Work environment initiatives for health institutions to mitigate physician migration

Apart from early career residency struggles and lack of governmental public policy, participants felt that other reasons for their migration included daily work, occupational well-being, and satisfaction. In light of this, some physicians recommended that health institutions and the general health systems should take affirmative and concrete actions to modernize and move to electronic health records. One participant highlighted the following:

…maybe updating the current healthcare system would be a start…a small one at that… (Migrating physician, Female, Psychiatry, 28 yrs.).

In addition, participants highlighted that the workload, especially in hospital settings, is very high and demanding compared to other work environments. They mentioned that health institutions could ease employee struggles by establishing policies that allowed the government to pay for their liability insurance in order to help mitigate financial matters, as others in the mainland US do. An example of this is when a participant stated:

The liability insurance… In the United States they pay you that liability insurance. (Non-migrating physician, Female, Emergency Medicine, 37 yrs.).

Some participants added that these healthcare institutions could also support employees by adding general benefits such as a signing bonus and expanding work positions. As an example of this, a participant noted:

… some places offer you something like, they pay you, as they say, a certain amount when you sign. (Non-migrating physician, Female, Resident in Psychiatry, 37yrs.).

Others also recommend that these institutions assist in providing for basic needs, such as food, and offer moving expenses for returning physicians. This was evidenced when a participant stated:

At least pay for his food and books and give him something so that he has a place to sleep at night, a house. (Non-migrating physician, Male, ObGyn, 37 yrs.).

Additionally, physicians suggested reconsidering higher salaries that reflect their heavy workload and compensating them for demanding schedules. As expressed in the following excerpt:

For example, neurosurgeons, you are loading them with excessive work and paying them *shit* and making them fight with the insurance companies when there are hospitals [in the US] that would pay anything to have them. Food is included, and they have the incentives of the signing bonus, which is usually a lot of money that they give you for having signed. … On top of that, they cover the moving expenses. (Non-migrating physician, Female, Fellowship in Neonatology, 34 yrs.)

In sum, participants have called for an improvement of PR's health system by offering multiple recommendations to mitigate physician migration from PR to the US mainland. Their voices advocate on behalf of their professional class and the people of PR by providing public and private entities with strategies to retain early-career medical residents, suggestions for local government to invest in future health policy, and a call to better the work environments at health institutions.

4. Discussion

Our previous research has documented reasons why physicians decide to leave PR, highlighting the deterioration of political context (i.e., governmental economic crisis, salary disparities, lack of adequate security), the politicization of the health system (i.e., selection of political allies and party supporters to lead healthcare agencies), and challenges to physicians in training (i.e., lack of specialty residencies, economic discrepancies, and massive student loans) [50]. We have also documented reasons for staying in PR, such as family ties, connection to the Puerto Rican culture, and their desire to serve the Puerto Rican people [23]. Finally, we have documented that globally circulating and stigmatizing meanings attached to PR's health system since the beginning of the US colonial occupation may add pressure on physicians who may strive for biomedical 'modernity' abroad [30]. Considering the ongoing socio-political (e.g., governmental corruption) and economic crises (e.g., the massive governmental debts PR has faced in the last years) [8], which are also heightened by natural disasters (i.e., hurricanes, earthquakes), in this paper the research team aimed to document the recommendations from migrating and non-migrating Puerto Rican physicians on strategies to mitigate medical migration from PR to the US mainland. Both migrating and non-migrating groups were in agreement with their recommendations to address sociopolitical and economic issues affecting physicians. These included: income and salary adjustments, minimizing difficulties with insurance companies and licensing, alleviating student loan burden, and addressing early career struggles with billing, training, and professional development. Considering their shared lived experiences, their emotional bond to PR, and their commitment to the PR health system, it is no surprise that both groups of physicians advocated for the mitigation of physician migration by offering congruent recommendations. This is in line with previous research documenting alignment between migrating and non-migrating physicians' recommendations regarding their current living situation [27]. Consistent with previous research developed in other global settings, these findings suggest migration decision-making is guided by a plethora of broader sociopolitical, economic, and institutional factors (e.g., poor healthcare infrastructure, deterioration of political context leading to lack of job security, career opportunities and occupational safety, high workload levels, poor management support and career problems such as limited training opportunities and professional development) [19,22,27,46]. Despite there being an emotional and affective attachment to PR and its culture, physicians recognize the urgent need for a health system reform, better work conditions, and the implementation of public measures to mitigate migration in search for better labor opportunities [23,27].

As suggested by the ASF, the findings of this study point to the fact that mitigating medical migration in the colonial-impacted context of PR requires multilevel approaches supported by the different audiences of the PR health system (i.e., local government, insurance companies,

institutions of health education, health administrators, health providers). The recommendations posed forth by physicians are, in essence, a call to *action* to change the PR's health system's status quo. PR physicians expressed *awareness* of the central issues concerning physician migration, as their interviews strongly suggest that many of them were open to collaborating on the development of social reforms and were prepared to advocate for specific target strategies. Their recommendations stress the urgency of coalescing *will* among key players, including politicians, health care leadership, and groundbreakers from medical training sites, to implement these recommendations. What also stems from their recommendations is that although *awareness* of the problem is significant, the *will* to engage in concrete *action* to change migrating-inducing policies is scarce. These complex interrelations between awareness, will, and action, and the perceived lack of desire to move from the former to the latter, must take into account that some actors in PR's sociopolitical context have little interest in seeing this problem change as it can negatively impact foreign health insurance companies' income and even close the PR-to-US pipeline of minority and multilingual physicians which are so needed in the US mainland.

In the case of PR, to initiate the needed changes, local government, healthcare institutions, and higher education entities must:1) prioritize developing retention programs tailored toward physicians in early career development, 2) develop regulations that standardize the pay between health insurance companies and providers, and 3) involve key influencers to communicate the aforementioned advocacy strategies to the medical community. The local government could benefit from harmonizing socioeconomic conditions to guarantee better salaries and incentives to achieve a more balanced distribution of the physician workforce, especially in rural areas [11,28]. These reforms should be supported by private work settings (e.g., private clinics and hospitals). In addition, the local government should reduce bureaucratic processes by modernizing and reducing bureaucratic barriers (e.g., excessive paperwork and long wait periods) for early-career physicians to obtain their medical license [37].

Conversely, the US national media has advocated for enhancements to the PR health system. They suggest that the US federal government could achieve this by prioritizing transparency in billing procedures, streamlining the acceptance of medical professionals by insurance companies, enforcing reasonable costs and coverage plans, and acting as a mediator in negotiations between providers and insurers [9]. Other analyses call for the US federal government to support PR physicians with equal funding to Medicaid as it does with the 50 states [31]. Our analysis provides further support for these calls at the US federal level. It stresses the strong sentiment among physicians that the local government could develop regulations to standardize pay between health insurance companies and providers. Finally, the local and federal government and private work entities should consider student loan forgiveness and financial support to accredited residency programs in the Archipelago as mechanisms to mitigate medical migration. Multilevel policy initiatives such as these may be required to slow or reverse the accelerating physician migration crisis in PR.

5. Limitations

Among the study limitations, the research team must highlight the COVID-19 pandemic, which made recruiting physicians for qualitative interviews difficult, and only favored using the Zoom platform as the primary option available to perform the ISIs. The latter made it problematic for some physicians to manage the platform, which resulted in occasional connection and internet complications. Similarly, since the medical population has such a hectic schedule, interviews had to be flexible (e.g., they had to be conducted outside of work hours). Lastly, these qualitative results cannot be generalized to other populations or health providers. Still, they raise issues that may be relevant for similar Global South nations experiencing health professional migration.

Future studies should explore the recommendations of other health workers to understand strategies to mitigate migration among diverse health sector employees. Furthermore, agencies should implement policy recommendations, conduct participatory workshops with key stakeholders in the health care system, and implement a targeted dissemination plan to inform key audiences of the physician migration crisis in PR and assist both the local and federal governments in developing strategies to address it.

6. Conclusions

In conclusion, results show that both migrating and non-migrating PRPs clearly understand the efforts required to mitigate medical migration in the PR context, marked by a deteriorated health system impacted by natural disasters, colonial neglect, and sociopolitical crises. PRPs were able and willing to offer concrete change strategies based on their own experiences. Policymakers could benefit from developing coalitions across the health sector, insurance companies, and local government as a strategy to create and implement the initiatives identified in this study. The recommendations provided in the current research have precedents in other global contexts [19,22,46]. The research team supports the call to action from PR physicians to implement strategies that promote health providers to stay in the Archipelago. If not now, when?

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Declaration of competing interest

The authors declare that they have no known competing financial interests or personal relationships that could have appeared to influence the work reported in this paper.

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