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## PHYSICIAN BRAIN DRAIN IN SUB-SAHARAN AFRICA: THE CAREER PLANS OF RWANDA'S FUTURE DOCTORS

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### ABSTRACT

**Introduction:** Brain drain is defined as the migration of health personnel in search of the better standard of living and quality of life, higher salaries, access to advanced technology and more stable political conditions.

**Methods:** A novel survey was created and distributed to 97 sixth year medical students in Rwanda. The survey queried respondents regarding their likelihood to work abroad or to seek opportunities within NGO's to evaluate the impact of internal and external brain drain. The data were tabulated and analyzed using Microsoft Excel.

**Results:** More than half of students reported a strong desire to study or work abroad. When asked about employment and training after medical school, 29% answered that they will seek opportunities outside Rwanda. When asked on the will to work for NGOs/Public health oriented organization, 64.9% responded that they would do it collaboratively but still practice medicine. Respondents reported financial opportunity as the fifth motivations for their potential desire to depart from clinical care of patients if such opportunities emerged.

**Conclusion:** Our findings suggest that internal brain drain (work for NGO's) may potentially coexist alongside and external or international brain drain as an important contributing factor in the shortage of medical doctors in Rwanda and Sub-Saharan Africa.

**Keywords:** External, Internal, Brain drain, Medical, Student

### INTRODUCTION

Brain drain is defined as the migration of health personnel in search of the better standard of living and quality of life, higher salaries, access to advanced technology and more stable political conditions in different places worldwide [1]. Brain drain may either be external, such as when skilled workers immigrate to other countries, or, internal, such as when skilled workers leave their existing jobs for higher paying ones or with better working conditions. In the health sector, the brain drain consists of multiple flows. Within developing countries, internal migration flows generally from the primary level to hospitals, from rural to urban areas, from clinical and research positions to managerial posts, and from the government service to the private sector. Donor agencies, non-governmental organizations (NGO's), and governmental policies may lead to a "skimming off" of skilled health workers to support non-clinical work, but the phenomenon is poorly studied [2].

### RESUME

**Introduction:** La fuite des cerveaux est définie comme la migration du personnel de santé à la recherche du meilleur niveau de vie, la qualité de la vie, des salaires plus élevés, l'accès à la technologie de pointe et des conditions politiques plus stables.

**Méthodes:** Une nouvelle enquête a été créée et distribuée à 97 étudiants en médecine de sixième année au Rwanda. Le sondage interrogeait les participants au sujet de leur probabilité de travailler à l'étranger ou à rechercher des opportunités au sein des ONG pour évaluer l'impact de la fuite des cerveaux interne et externe. Les données ont été compilées et analysées en utilisant Microsoft Excel.

**Résultats:** Plus de la moitié des étudiants ont déclaré un fort désir d'étudier ou de travailler à l'étranger. Interrogé sur l'emploi et la formation après les études de médecine, 29% ont répondu qu'ils vont chercher des opportunités en dehors du Rwanda. Lorsqu'on leur a demandé sur la volonté de travailler pour les ONG / organisation axée sur la santé, 64,9% ont répondu qu'ils le feraient en collaboration mais continueraient de pratiquer la médecine. Les sondés ont signalé la possibilité financière comme cinquième motivation pour leur désir potentiel partant de soins cliniques des patients si ces opportunités sont apparues.

**Conclusion:** Nos résultats suggèrent que la fuite des cerveaux interne (travail pour les ONG) peut potentiellement coexister avec et la fuite des cerveaux externe ou internationale comme un facteur important dans la pénurie de médecins au Rwanda et en Afrique sub-saharienne.

**Mots-clé:** Externe, interne, fuite des cerveaux, Médical, étudiants

Australia, Canada, UK and US together account for 72% of foreign-born nurses and 69% of foreign-born doctors working in the Organization for Economic Co-operation and Development [3]. In the 2011 the American Medical Association reported that 17,376 physicians were born or trained in Africa [4]. The problem seems to be most common in Low Income Countries (LICs) especially in the Sub-Saharan Africa (SSA). This region faces double jeopardy due to the reality that there are disproportionately higher numbers acutely ill patients in sub-Saharan Africa (SSA), and fewer health workers to care for them. Sub-Saharan Africa has 25% of the global disease burden but only 3% of the world's healthcare workers [5]. Further making such matters worse is the fact that a great proportion of citizens in such areas tend to live in the rural areas whereas most Health Community Workers (HCW) tend to work in the urban areas [6].

Experts at the World Health Organization (WHO) and previous authors have estimated that LIC's need a minimum of 23 HCW (doctors, nurses and midwives) per 10,000 populations to provide adequate primary care...

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and reach Millennium Development Goals 4 and 5 to provide universal access to reproductive healthcare and reduce under-five & maternal mortality [7,8]. Fifty-seven countries worldwide do not meet this minimum standard, including 32 of the 46 countries in SSA [9].

It should perhaps not come as a surprise that young, well-educated, healthy individuals seem to be the most likely workers to migrate, especially in pursuit of higher education and economic improvement [10,11]. In fact, higher education is one of the principal conduits of permanent emigration [12]. Previous authors have described the flight of young doctors born in LIC's who leave their country of origin to acquire specialized and postgraduate professional qualifications in a northern or western host countries. Half of the foreign-born graduate students in France, UK and USA remain there after completing their studies [13].

Currently no published data on the burden of brain drain in Rwanda and no study has ever been done to assess future possibility of brain drain among medical students. This manuscript investigates the possibility that the career plans of Rwandan medical students may be shaped by the perceived existence of opportunities to study / work abroad after graduation, or to remain in Rwanda and to take on high paying jobs provided by many NGO's.

**GOAL**

To assess possible different contributors to the brain drain among future Rwanda medical doctors.

**OBJECTIVES**

The objectives of this study were to assess;

- 1) Intentions of medical students to study/work abroad
- 2) Medical students' intentions to work in public health institutions/NGOs
- 3) Factors that influence their career choices.

**METHODS**

A novel survey was created and distributed to 97 sixth year medical students at University of Rwanda. Data were collected on basic demographics of the respondents. Additional questions were asked regarding the likelihood of respondents to work abroad or to seek opportunities within NGO's after completing medical school / and / or internship to evaluate the potential impact of internal and external brain drain.

The questions on brain drain included questions about the desire and likelihood to study/work abroad, feelings about a career in public health, plans to work in Rwanda or abroad, types of employment being sought after training is complete, and willingness to work for an NGO or a district hospital in Rwanda. Additionally, Factors influencing career choice were questioned using Likert scales with sliding levels of importance. Analysis was either based on simple percentages or questions were coded, assigning values to qualitative opinion answers for

analytic purposes and cross tabulations were performed. The data were tabulated and analyzed using Microsoft Excel.

Formal, written ethical approval was obtained from the Human Investigation Committees of the Kigali University Teaching Hospital and the University of Virginia Social and Behavioural Sciences Institutional Review Board before distribution of the survey.

**RESULTS**

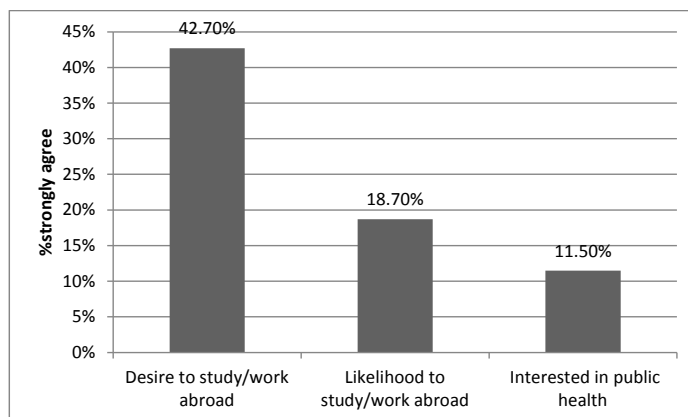
All respondents were born between 1980 and 1990 with a median year of birth of 1986. Of the 97 surveyed the majority were male, comprising 83.2 % (79) of those surveyed (**table 1**).

Table1: Demographic Table

	(years+/-sd)
<b>Average age</b>	27.4
<b>Gender</b>	N (%)
Male	79(83.2)
Female	16(16.8)
<b>Finished Surgery clerkship</b>	N (%)
< 2 months ago	64(66.6)
>2 month ago	32(33.4)
<b>Year of medical school</b>	Sixth year

Almost half of respondents (42.7 %) affirmed a strong desire to work abroad. When asked to respond to the statement "I likely will study/work abroad", 18.7% were strongly affirmative. Eleven percent strongly agreed to the statement "I am interested in a career in public health" (**figure 1**).

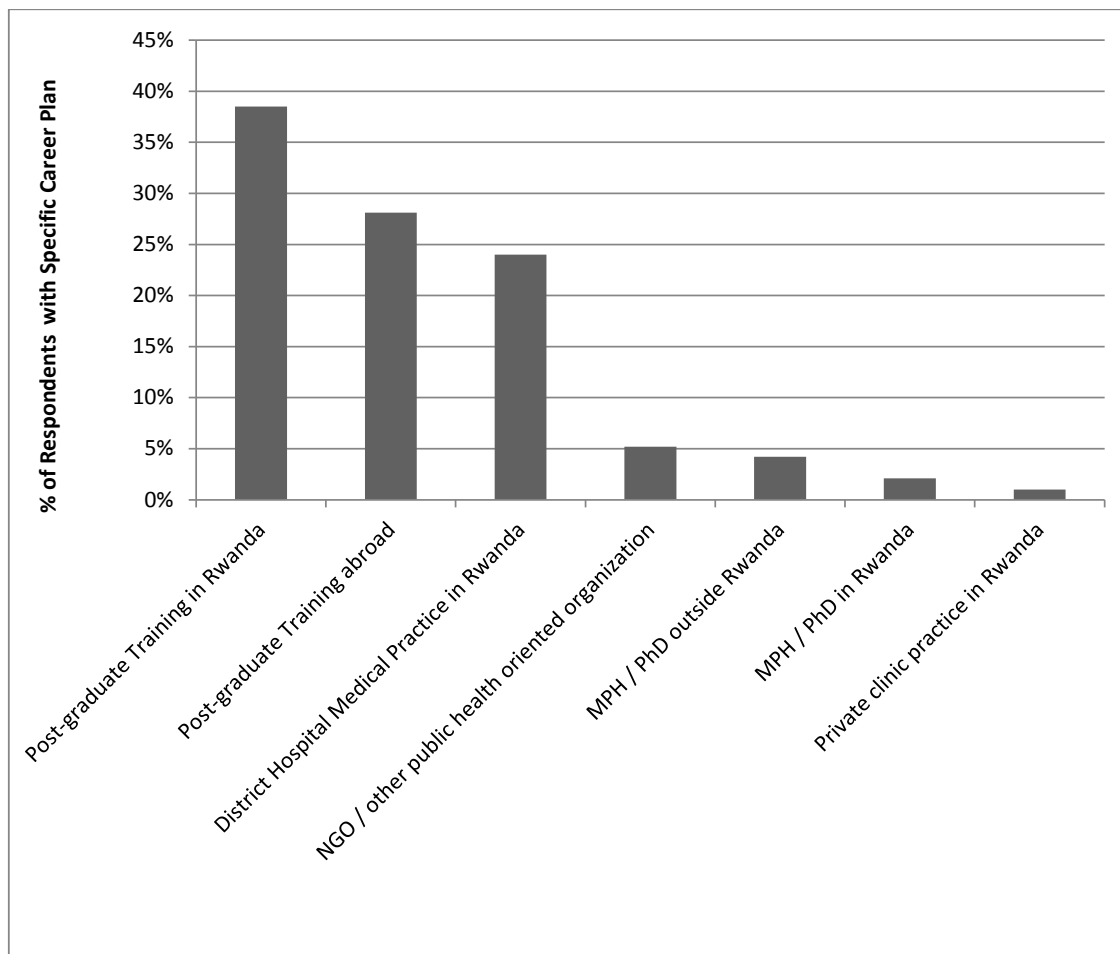
Figure 1. Intentions and career plans of future graduates



When asked regarding what type of employment / training they hoped to seek after medical school respondents were presented with 5 options in Rwanda and the same 5 abroad: Post-graduate training (MMed program, residency or equivalent), MPH or PhD, District hospital medical practice, Private clinic medical practice, and NGO/other public health oriented organization. The majority of respondents, 66.6% (64), hoped to seek post-graduate training (MMED program or equivalent) with 38.5% hoping to seek this training in Rwanda and 28.1% outside of Rwanda (**figure 2**). The second most popular option for future employment / training was

district hospital medical practice in Rwanda with 24% (23) respondents choosing this employment after medical school. Approximately one in twenty respondents (5.2%) reported plans to pursue jobs in NGO/other public health oriented organizations. Four respondents reported that they seek to continue their studies with an MPH or PhD outside Rwanda, while 2 reported a desire to complete this training in-country. A single respondent reported a plan to immediately seek a private practice opportunity. Seven percent of respondents reported that they do not plan to work in Rwanda after completing training.

Figure2. Employment/Training Sought After Medical School



The most influential factor in career choice was personal interest (figure 6) which demonstrated an average rating of 4.32 on a 5-point Likert scale, with 62.6% of respondents rating personal interest as "very important" (figure 6). The second most important factors were satisfactions/Personal fulfilment and Clerkship experience with an average rating of 3.95 for both. Almost half (47.7%) responded that personal fulfilment/satisfaction was very important. Further 43.6% responded that Clerkship experience was very important, with only 2.1% reporting that it was "not important at all". Financial rewards came as the fifth among the factors influencing the medical students deciding their career with an average rating of 3.29, with 34.7 % reporting this factor as "very important" while 22.8% reported that it was not important at all.

Figure 3. Desire to work in district hospitals

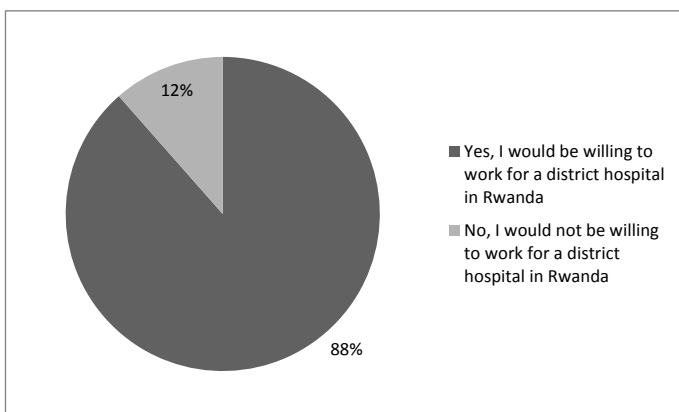


Figure 4: Do you eventually plan to work in Rwanda?

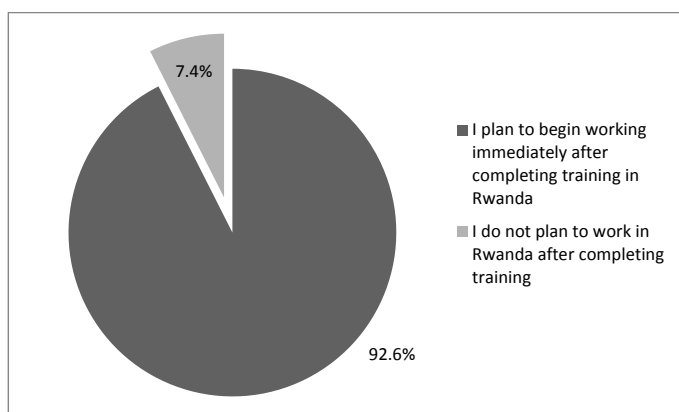
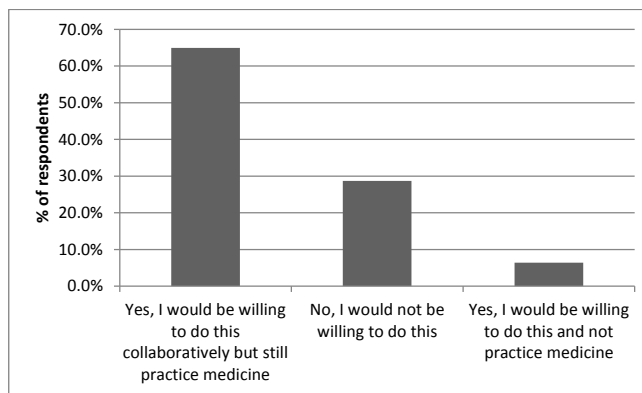
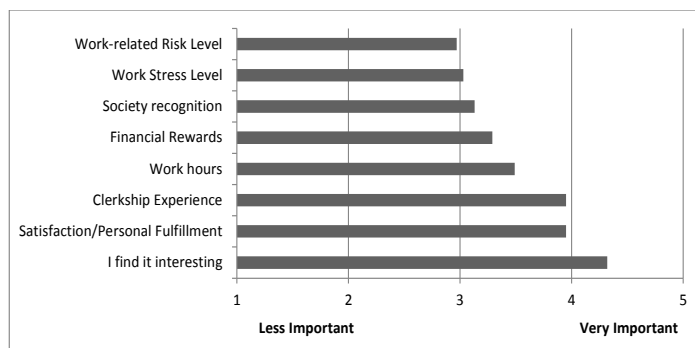


Figure 5: I would be willing to work for a NGO / public health oriented organization



In response to the statement 'I would be willing to work for an NGO (non-governmental organization) / other public health oriented organization in Rwanda instead of practicing clinical medicine', nearly two-thirds (64.9%) respondents reported that they would be willing to do this collaboratively but still practice medicine, while 6.4% responded that they would be willing to do this and not practice medicine, and 28.7% responded no desire to work for an NGO or public health organization (figure 5).

Figure 6: How important were the following factors in influencing your chosen career path?



DISCUSSION

Origins and sources of internal brain drain

Among other challenge facing many African countries, including Rwanda, is the role of national and international non-governmental organizations (NGO's) in domestic healthcare decision-making. These NGOs often emphasize the need to strengthen the government-run national healthcare systems, but have the potential to overly rely on governance and financial instruments outside the country and the local ministerial infrastructure. The rapid growth and expansion of NGOs over the last 25-50 years has likely led what previous authors have described as "internal brain drain" from the public sector (working for the national healthcare system) by luring workers away to higher paying jobs and other employment benefits working on public health problems that were prioritized by external donors [14] This is the converse to the more widely appreciate problem of "external brain drain" where healthcare professionals are drawn to other countries that provide economic and personal incentives for emigration.

In our study when medical students were asked whether they agreed with the statement that "I would be willing to work for an NGO/public health oriented organization" most respondents answered that they would be willing to do this work if able to also practice clinical medicine. Although this kind of employment (commonly referred to as a dual practice) might not remove the physician entirely from public service, this type of practice inevitably reduces the commitment to clinical practice and the education of the next generation of Rwandan physicians. To assess the effect of Brain Drain and distortions of Health Workforce in Mozambique a study revealed that among those leaving the public sector for employment within Mozambique 66.4 percent worked for NGOs, followed by bilateral and multilateral donors 21.2 percent and the private sector 12.4 percent [15].

Much progress has been made over the last decade on improving the structure of foreign aid to enhance local infrastructure and training. In fact, the Organization for Economic Collaboration and Development's Paris Declaration, Accra Accords, and the Busan High Level Forum on Aid Effectiveness have already transformed decision-making, as evidenced recently by many new funding pilots. The key principles outlined by the aforementioned policy agreements include: Ownership of development priorities by developing countries; a focus on results; Partnerships for development; Transparency and shared responsibility [16,17,18].

Another major step forward occurred during the Global Health Council 35th Annual conference on May 29, 2008 when multiple Non-governmental organizations signed the NGO code of conduct for Health systems strengthening, an international standardized code of conduct that would strengthen the health systems in different countries especially the developing ones by committing NGO's to invest in education and training rather than pure care or service delivery and coordinate well with the local ministries of health [19,20]. Voluntary adherence to this new norm might eventually serve to increase the number of health workers and staff in the countries that they operate in and the promotion of local sustainable solutions to regional problems.

Though the code of conduct was originally signed by 22 organizations, if there is no system to monitor this, and no larger movement to promote adoption and adherence, the impact will be minimal. Hence local ministries of health, and, perhaps even the World Health Assembly, should consider re-enforcing this by setting up monitoring bodies.

The Human Resources for Health (HRH) Program in Rwanda, a 7-year initiative to expand healthcare capacity and training, serves as an exciting new example of the sort of initiative prescribed by the recent work of the Organization for Economic Cooperation and Development. Key features of the HRH initiative include expanded local ownership & management, and an agenda-set by the Rwandan Ministry of Health. Indeed, this initiative funds the Ministry of Health Directly, which then contracts directly with the participating United States Universities and equipment purveyors to achieve programmatic goals [21].

Private and public sector NGO-directed activities, on the other hand, such as mass health screenings, circumcisions, and dual practices have the potential to take many doctors from clinical activities at district and referral hospitals where workforce training and clinical care are delivered. These diversions of human resources reduce the workforce in primary care, without reducing the number of healthcare providers within the country.

### **A desire for further study as a potential cause of external brain drain**

Studying abroad as a healthcare professional often leads to benefits such as the acquisition of knowledge and skills that could not be acquired in their country of origin. However, studies have shown that students who go for further studies abroad tend to stay there [22]. Medical students in Rwanda are not exempt from this desire to go abroad for medical education. There is also strong evidence for the future possibility of external brain drain if these students do not return to Rwanda after their international educational experiences. Even more worrisome is the 7.4% (n=7) of respondents who reported that they do not plan to work in Rwanda after they complete their training. Further studies are required to elucidate what is motivating these students to leave Rwanda and how can the Ministry of Health work to improve the percentage of Rwandan healthcare professionals who return after training internationally.

### **Unintended secondary effects**

Whereas filling high paying jobs for NGO's with local citizenry would seem to make a lot of sense in economic and capacity-building dimensions, it must be acknowledged that policies that encourage the hiring of young local physicians (away from residency training and practice) may have undesired and severely negative effect downstream when those NGO's leave for their next project or humanitarian disaster leaving young physicians unemployed and without the clinical skills needed for direct patient care. What will they do when all the white land cruisers have been auctioned off and the people in the villages still have no doctors to look after them.

### **CONCLUSION**

The findings of our study raise concerns for possible internal and external brain drain among future Rwandan medical doctors. Internal brain drain indicated by a proportion of medical students intending to combine both clinical work and public health related jobs. External brain drain indicated by the proportion of medical students intending to pursue their further training abroad, with the established link in literature between studying a broad and external brain drain, this raises concern. In a country where doctor-patient ratio is still so low, steps are required to be taken to retain the best brain in the medical field.

### **RECOMMENDATION**

The recommendations include providing a conducive working environment to decrease the desire to work abroad. More programs like HRH need to be promoted and improved to curb the need to study abroad.

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