DOCTORS BEYOND BORDERS: DATA TRENDS AND MEDICAL MIGRATION DYNAMICS FROM SUB-SAHARAN AFRICA TO THE UNITED STATES

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TABLE OF CONTENTS

LIST OF TABLES AND FIGURES

TABLES

Paper One

Paper Two

FIGURES

Paper One

CHAPTER I

INTRODUCTION

The present dissertation contains three individual but complementary papers that explore a critical, contentious, and complex subject (Ratha et al., 2011): The large-scale migration of Sub-Saharan African (SSA) physicians to the United States. The subject is critical and controversial because it entails the transfer of scarce human resources for health (HRH) from developing countries with profound health needs and gaping shortages to a country that enjoys relative abundance of HRH and much better health outcomes (Ratha et al., 2011). The topic is complex because the field of international migration is highly dynamic and its object of study is both a human subject and a moving target. When migration data are released, they are sometimes dated by several years, and may be more informative about a past trend than a current pattern. Too often, migration data are collected in destination countries and may misrepresent emigration statistics from sending countries. This is likely the case for sending countries with high rates of emigration but limited capacity to systematically collect exit data and maintain an accurate database of their nationals living abroad (see, e.g., Stilwell et al., 2003). Moreover, data on skilled migration may differ significantly depending on selection criteria used by data collectors (see, e.g., Clemens & Pettersson, 2008). In the specific case of medical migration, data collection based on the birthplace of the migrating physicians often yields dissimilar estimates than data selection based on country of medical school.

The critical issue of international migration of health professionals from developing to developed countries has been brought to the fore in recent years by the World Health Organization (WHO, 2003; 2005; 2006; 2010). In its 2003 *World Health Report: Shaping the Future*, WHO

stated: “The most critical issue facing health care systems is the shortage of people who make them work” (p. 110). In its 2006 *World Health Report: Working Together for Health*, WHO reiterated: “A strong human infrastructure is fundamental in closing today’s gap between health promise and health reality and anticipating the health challenges of the 21st century” (p. xxiii). The above pronouncements invariably echo WHO’s overall concern regarding the estimated 4.3 million global shortage of trained health workers (WHO, 2006).

Notwithstanding the global scope of the problem, developing countries are most affected by the shortage of skilled health workers, and nowhere is the matter more profound, the need more acute, and the consequences more deleterious than in the SSA region. In its seminal report, WHO (2006) identified 57 countries with critical shortages of health workers with 36 countries located in SSA. To meet health-related targets of the Millennium Development Goals (MDG), Scheffler, Liu, Kinfu, and Dal Poz (2008) estimated a need for 420,000 physicians by 2015 in the WHO African region. Meanwhile, Kurowski, Wyss, Abdulla, Yemadji, and Mills (2004) estimated a deficit of 720,000 physicians for the provision of basic healthcare in SSA. Despite the above discrepancies, one fact is certain: There is an extreme need of physicians in the SSA region. The dearth of health workers in SSA is exacerbated by large-scale migration physicians and nurses (see, e.g., Docquier & Bhargava, 2007; Dumont & Zurn, 2007; Mullan, 2005), and further compounded by the extensive healthcare needs of the region. Despite having only 2% of the global supply of physicians, SSA has 10% of the world population, and bears 24% of the global burden of disease including 68% of the world’s HIV/AIDS infections (UNAIDS, 2010; Scheffler et al., 2008; WHO, 2006).

That physicians occupy a unique position in society appears to be a matter of fact too evident to merit extensive elaboration. They are intimate witnesses of life’s great mysteries, namely the joyful mystery of birth, the sorrowful mystery of death, and the struggle to find meaning in suffering (Groopman, 2006). Above all, physicians’ specialized skills and mastery of the medical

sciences are irreplaceable and make their contribution to public health essential. Using a large nationwide dataset containing almost 30 million records of inpatient admissions in US hospitals, Ricciardi et al. (2011) compared mortality rates among patients hospitalized during regular weekdays and those admitted during the weekend. After controlling for several variables including hospital characteristics and patient demographics, the authors reported significantly worse health outcomes for patients admitted during the weekend, that is, when health staffing shortage is at its highest. Controlling for socioeconomic variables namely per-capita income, poverty, and female literacy, Anand and Bärnighausen (2004) found a strong negative correlation between physicians' density and maternal mortality, infant mortality, and under-five mortality rates in 117 countries.

To adequately gauge the importance of physicians in any human resource-constrained countries such as those in SSA, we must also look at their function beyond the operating theater. As noted by Siegel (2009), the etymology of doctor speaks to the didactic role of physicians in society. The word doctor originates from the Latin *docere*, which means *to teach*. Thus, when doctors emigrate in large number from a given country, it is not just fragile health systems that are further destabilized; educational systems also suffer. Beyond their educational role as trainers of future health professionals, physicians' intellectual contribution to the institutional memory of society cannot be overlooked. A case in point is Frantz Fanon (1963), a physician by training and a leading Black intellectual of the twentieth century. From South Africa to South America, his intellectual influence loomed large over liberation movements and critical theory development (see, e.g., Montero & Sonn, 2009). Moreover, doctors are citizens of the polis, and as such, are important contributors to the building of civil society. Owing to their higher levels of education, they generate positive externalities on the communities in which they live (Özden & Schiff, 2006).[1] By virtue of

[1] "Among the positive externalities that are lost with the emigration of educated workers are (a) the positive effects on the productivity of colleagues employees and other workers; (b) the provision of key public services with positive

the salutary role of medicine and physicians' close proximity to human need deprivations and sufferings of their patients, physicians are often viewed as credible leaders in the community (see, e.g., Gruen, Pearson, & Brennan, 2004; Rothman & O'toole, 2002). Justifiably, physicians have been called upon to become the natural attorneys of the poor (Virchow, 1849).

Beyond the negative health outcomes associated with the shortage of physicians (WHO, 2006), it would be serviceable to view the emigration of physicians as a symbolic proxy for the emigration of the highly skilled, the middle class, the critical mass, and the talented tenth (Du Bois, 1903). When large-scale migration of physicians occurs, it is not only the lives of people that are threatened; it is also the promise of emerging civil society of the country of emigration that is nipped in the bud. In this regard, the information presented in this dissertation is not merely relevant to the field of global health, but also to the broader literature on social and economic development.

This dissertation is comprised of three complementary papers. Together, these three papers aim at exploring three broad questions related to data, theory, and policy on physician migration from SSA to the United States: How many SSA immigrant physicians are currently practicing medicine in the United States? How and why are they immigrating to the United States despite the extensive medical needs in SSA? What can the United States do to mitigate their increasing presence in the United States? Answers to the above questions are attempted separately by each paper.

The first paper provides a detailed and extensive descriptive analysis of the cross-section of SSA migrant physicians identified in the US physician workforce. This first paper was modeled on a nearly decade-old publication (Hagopian et al., 2004) which, although still widely cited in the medical migration literature, will benefit not simply from an update but also from analytical

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externalities, such as education and health, particularly for transmissible diseases; (c) the fiscal externalities associated with the fact that the taxes that they pay are larger than the value of the public services they consume and the public funds invested in their education; and (d) their contribution to the debate on important social issues and their impact on policy and institutions" (Ozden & Schift, 2006, p. 10).

improvement. While the first paper does not formally state any research hypotheses, many implicit questions are explored: Since 2002, the last year for which there was a systematic analysis of migration data on SSA-trained physicians practicing in the United States, how much change occurred in emigration rates and emigration stocks of SSA-trained physicians practicing in the United States? On average, how many years after graduation from SSA medical schools are African-trained physicians likely to migrate to the United States? And, for how long have they been present in the United States? What is the gender representation of the cohort of physicians who moved to the United States during the new millennium? What impact did structural adjustment programs have on the magnitude of medical migration from SSA to the United States? Did the rate of medical migration from SSA to the United States slow down after the tragic event of September 11, 2001 and subsequent US immigration restrictions? Answers to the above questions, and many more, are provided in the first paper. Of the three papers comprising this dissertation, the first is arguably the most critical because it sheds light on the magnitude of the problem of interest, and in doing so, it provides a broader context and a raison d'être for the following two papers.

The second paper is arguably the most complex because it addresses a fundamental but elusive question: Why do SSA physicians migrate to the United States despite the profound dearth of human resources for health and extensive medical needs of their native countries? The task at hand, therefore, is to identify the gamut of factors that give rise to migratory behaviors. Unlike the first paper which is purely empirical and quantitative, the second article is qualitative and theory-driven. It uses a transdisciplinary framework seldom applied in the field of international migration research, the eco-psychopolitical validity paradigm (Christen & Perkins, 2008; Prilleltensky, 2008), which frames migration as a liberatory process involving three distinct yet interrelated dynamics: oppression, empowerment/liberation, and wellness. Applied to medical migration from SSA, the eco-psychopolitical validity paradigm suggests that African physicians immigrate to the United

States to empower themselves (e.g., through specialization, board certification, and continuing education), promote their wellbeing (e.g., through increased income and commodity), and/or escape structural oppression (e.g., limited social mobility, corruption, patronage). Through in-depth interviews of both migrant and non-migrant native SSA physicians, the paper uncovers a host of factors that exacerbate and mitigate the onset of medical migration.

The third paper is a call for action. It draws from findings in the two previous papers to make policy suggestions. Building on the concepts of *global health equity* and *right to health*, the paper argues for the necessity to restrict admission into US residency programs of SSA-trained physicians immigrating to the United States. Each of the three free-standing papers comprising this dissertation targets a specific journal and is formatted slightly differently. By focusing respectively on data, theory, and policy, they bring to the fore the complementary relationship between theory and practice, and fulfill ipso facto the broader agenda of research and action promoted by the doctoral program from which this author is seeking credentials.

CHAPTER II

PAPER ONE

DOCTORS BEYOND BORDERS: NEW DATA AND TRENDS ON THE PHYSICIAN BRAIN DRAIN FROM SUB-SAHARAN AFRICA TO THE UNITED STATES

Abstract

Background: The large-scale emigration of physicians from developing countries with low human development and collapsing health systems to Western nations has been a growing cause for alarm. However, data on the topic are still limited, and available data are not updated frequently. This paper presents new data and describes recent trends on the migration of physicians from Sub-Saharan Africa (SSA) to the United States.

Methods: Data on all physicians trained or born in SSA countries and currently incorporated in the US physician workforce were obtained from the 2011 American Medical Association Physician Masterfile. Using data from the Global Health Observatory Data Repository, I computed emigration rates for SSA countries represented in the AMA Physician Masterfile. Then, I used immigrant physicians' graduation and residency records to estimate time of entry in the United States, years of service prior to emigration, and length of time in the United States.

Results: A total of 17,376 African immigrant physicians appeared in the 2011 AMA Physician Masterfile. Among these immigrants, 10,377 *potentially active* physicians were born or trained in SSA countries. In the last decade, the number of physicians emigrating from "traditional" countries of medical migration such as Nigeria, Ghana, and Ethiopia increased by at least 50%, while the number of South African physicians in the United States decreased by 8%. With 77% of

its physicians in the AMA Physician Masterfile, Liberia is most affected, while Cameroon and Sudan emerged as SSA countries with the fastest growing levels of medical migration. On average, physicians trained in SSA practiced for 6.5 years before migrating to the United States. Nearly one half migrated during the implementation years of the structural adjustment programs (conditional loans), and on average, they have been in the United States for 16 years.

Conclusion: The SSA physician brain drain is real, and the United States is playing an increasingly bigger role in this human resource crisis. It is unlikely that the observed trends will decrease in the near future unless some radical actions are taken by the United States and SSA countries most affected by this crisis.

Doctors Beyond Borders: New Data and Trends on the Physician Brain Drain from Sub-Saharan Africa to the United States

Although recognition for immigrant physicians' individual aspirations is important, the large-scale emigration of physicians from SSA to more developed countries of the Western hemisphere threatens the basic tenets of global health equity and has significant deleterious effects not only on the quality and delivery of health services in the resource constrained countries of emigration, but also on these countries' overall development goals. To effectively address these larger global health equity issues, it is important to delineate recent trends and understand patterns of physicians emigrating from SSA. In the present work, I closely examined data from the 2011 American Medical Association Physician Masterfile (hereafter AMAPM) to determine historical patterns and recent emigration trends among SSA physicians practicing in the United States. The paper begins with background on medical migration that provides context for the study. Then, I describe methodological procedures and present findings mainly through tables and figures. Finally, I discuss the main findings and their implications for research and policy followed by a brief conclusion which sets the stage for the qualitative study that complements this paper.

Background

In multiple pronouncements culminating with its 2006 *World Health Report: Working Together for Health*, the World Health Organization (WHO) has consistently emphasized the centrality of human resources for health for the effective functioning of health systems. Likewise, in its yearly assessment of development, the United Nations Development Program (UNDP) stresses the importance of healthcare by including health outcomes (operationalized as life expectancy at birth) in the computation of the *Human Development Index* (HDI). As Ibrahim (2009) fittingly

observed, “everywhere in the world, the engine of economic prosperity runs on human capital and innovation, and nothing impacts human capital and innovation more than health” (p. 1162). When people are too sick to learn, they cannot obtain the minimal literacy and numeracy skills necessary for educational success and subsequent economic and social achievements (Ruger, Jamison, Bloom, & Caning, 2006). Healthier students are likely to learn better and faster, and healthier workers are likely to think more clearly, work harder and longer, thereby producing and earning more (Weil, 2009). For the effective delivery of health services, an adequate number of qualified healthcare personnel is necessary. As the late WHO Director, Lee (2006) noted, “it takes a considerable investment of time and money to train health workers,” and when the latter emigrate, he further observed, “there is a loss of hope and a loss of years of investment” (p. xiii). Beyond loss of investment and hope, the large-scale emigration of health workers from low human development countries ultimately leads to loss of lives as fragile health systems further deteriorate (WHO, 2006).

Snapshot of the SSA Physician Workforce Crisis

The data presented in Table 1 shed some light on the depth of the crisis of human resources for health in many SSA countries. They suggest that, in the past four decades, the growth in physician density has been negative or negligible in many African countries south of the Sahara. The case of Liberia, the first independent country in SSA, is noteworthy. With only one medical school—see *The Sub-Saharan African Medical School Study* (Mullan et al., n.d.)—and a population of nearly four million, Liberia had a total of 51 physicians in 2008 (WHO, 2011). Yet, there were more than two-and-a-half times (n = 132) more physicians in Liberia in 1973 (WHO, 1976). Adjusting for the increase in population from 1.7 million people in 1973, it becomes evident that in 2008, Liberia regressed to a deficit of physicians six times lower than 35 years earlier. The profound dearth of human resources for health in Liberia can partly be attributed to the long and

ruinous civil wars that wreaked havoc in the country during the 1990's (see, e.g., Barclay, 2002). However, civil war does not explain the negative growth of physician density in relatively peaceful, politically stable, and steadily democratizing polities like Mozambique, Tanzania, or Zambia, all of which are considered "emerging countries" with economic growth rates per capita averaging 5.3%, 3.0%, and 1.8% respectively between 1996 and 2008 (Radelet, 2010).

Table 1

Change over time of Physician Densities and Number of Medical Schools in Selected Countries

	Circa 1970*				Circa 2010**				Change over time	
	Population (in 1000)	MDs (n)	MD density^	Medical schools (n)	Population (in 1000)	MDs (n)	MD density	Medical schools (n)	MD density	Medical schools (n)
Djibouti	180	52	2.9	0	849	140	1.6	1	-1.2	1
Liberia	1,397	132	0.9	1	3,793	51	0.1	1	-0.8	0
Zambia	4,248	527	1.2	1	12,620	649	0.5	1	-0.7	0
Guinea-Bissau	620	55	0.9	0	1,575	78	0.5	1	-0.4	1
Sierra Leone	2,789	149	0.5	0	5,560	95	0.2	1	-0.4	1
Tanzania	14,354	576	0.4	1	43,739	300	0.1	5	-0.3	4
Mozambique	9,304	510	0.5	1	22,383	548	0.2	4	-0.3	3
Zimbabwe	5,515	1,035	1.9	1	12,463	2,086	1.7	2	-0.2	1
Somalia	3,667	193	0.5	1	8,926	300	0.3	2	-0.2	1
Congo	1,272	163	1.3	1	3,615	401	1.1	1	-0.2	0
Senegal	4,318	281	0.7	1	12,211	741	0.6	4	0.0	3
Angola	5,606	383	0.7	1	18,021	1,165	0.6	7	0.0	6
Lesotho	1,067	50	0.5	0	2,049	89	0.4	0	0.0	0
Niger	4,841	109	0.2	1	14,704	288	0.2	1	0.0	0
Gambia	485	19	0.4	1	1,660	62	0.4	1	0.0	0
Rwanda	3,769	77	0.2	1	9,721	221	0.2	1	0.0	0
Burundi	3,522	74	0.2	1	8,074	200	0.2	1	0.0	0

Data source: *World Health Statistics Annual, 1973 – 1976; ** World Health Organization Global Health Observatory; US Census International Database 2010. ^MD density is the ratio of MD per 10000 people ,that is, (Total MDs/Total population)*10000.

The very low physician densities recorded in the above countries are exacerbated by the large-scale migration of their human resources for health. Findings from Clemens and Pettersson (2008) suggest that Mozambique, Tanzania, and Zambia respectively have 75%, 52%, and 57% of their physicians abroad. While the international destination of healthcare workers is becoming

increasingly diverse (see, e.g., Castles & Miller, 2009), available research (see, e.g., Clemens & Pettersson, 2008; Docquier & Bhargava, 2007; Dumont & Zurn, 2007; Mullan, 2005) suggests that a handful of OECD[2] countries led by the United States and the U.K. are the most important beneficiaries of SSA human resources for health.

Survey of Relevant Research

Hagopian, Thompson, Fordyce, Johnson, and Hart (2004) reported that in 2002, over 23% of the US physician workforce completed their medical education outside the United States, with a large majority (64%) of these international medical graduates (hereafter IMGs) hailing from low-income and lower middle-income countries. They identified a total of 5,334 US-based physicians trained in medical schools located in the SSA region, mainly in Nigeria, South Africa, Ghana, and Ethiopia (I will often refer to these physicians as SSA-IMGs). Hagopian et al. further identified 2,151 SSA-IMGs in Canada and estimated the combined figure of SSA-IMGs practicing in North America to represent a little over 9% of the stock of physicians available in the entire region of SSA at the time. While the paper was released in December 2004, Hagopian et al. identified these physicians in the 2002 AMAPM. In other words, 10 years of increased physician migration have elapsed since entry of these data.

Similarly, Mullan (2005) computed "the metrics of the physician brain drain" by using the 2004 AMAPM. He identified 208,733 IMGs in the U.S., representing 25% of the US physician workforce at the time. Of this number, over 60% represented IMGs from low-income countries. Mullan identified 13,272 SSA migrant physicians after aggregating the number of SSA-IMGs appearing in the AMAPM (United States), the National Health Services (U.K.), the Southam

[2] OECD stands for the Organization for Economic Cooperation and Development. It comprises 30 countries including the following top five doctor-receiving countries from SSA: The United Kingdom, the United States, France, Portugal, Canada (Clemens & Pettersson, 2008).

Medical Database and Canadian Post-MD Education Registry (maintained respectively by the Canadian Institute for Health Information and the Association of Faculties of Medicine of Canada), and the Australian Institute of Health and Welfare (Australia). He observed that the SSA region had the highest emigration factor when compared to other regions of the world with much larger physician emigration stocks (e.g., India, Pakistan, The Philippines, or the Caribbean).

It is noteworthy that records on graduation year obtained from the 2011 AMAPM suggest that there were *at least* 1,626 SSA-born US medical graduates in the United States in 2004 when Mullan (2005) computed his metrics of the physician brain drain, and *at least* 1,517 in 2002 when Hagopian et al. (2004) examined the AMA data. Emphasis is added on the qualifier "at least," because the *birth country* variable contains a very high percentage of missing data among SSA-IMGs appearing in the AMAPM. Hagopian et al. (2004) reported a missing data rate of 68% while the 2011 AMAPM suggests an even higher rate of missing data (70.2%). The number of records with missing data on birth country among SSA-born physicians trained outside SSA is unknown, but could also be significant.

Thus, the major limitation of the two aforementioned studies is their exclusion of the substantial number of African-born physicians trained internationally and practicing in the United States. This all-too-common omission (see also, Docquier & Bhargava, 2007; Dumont & Zurn, 2007) implies that all Western-educated African physicians who provide services in the Western countries to which they immigrated do not represent a loss of scarce resources or an opportunity cost for their native countries[3]. It is worth stressing that there are also Western-educated physicians who practice, teach, and conduct research in medical schools across Africa. Just like their domestically-trained counterparts, these Western-educated African physicians are included in the

[3] Clemens (2007, 2011) is one of the most prominent exponents of this thesis. See, "Do visas kill? Health effects of African health professional emigration" and "Financial effects of high-skill emigration: New data on African professional abroad."

national physician counts reported by WHO and used as the basis for computation of physician emigration rates reported by all the above authors. Thus, counting Western-educated physicians as Africans when they practice in Africa and failing to count them as Africans because they practice in the United States seems inconsistent.

Clemens and Pettersson (2008) attempted to address the above limitation in their "New Data on African Health Professionals Abroad." Contrary to previous studies, which used country of medical school as a proxy for country of origin, Clemens and Pettersson (2008) identified the country of origin of medical expatriates by their place of birth. They observed that almost 65,000 African-born physicians and nearly 70,000 African-born professional nurses practice abroad. Excluding the regional medical migration to South Africa, these figures included 35,219 physicians and 53,059 professional nurses from SSA, representing one-fifth of SSA-born physicians and one-tenth of SSA-born professional nurses available in the entire world. In other words, of the estimated 3% of the world's health workers from SSA (WHO, 2006), about 17.5 % emigrate. Clemens and Pettersson's findings indicate that the U.K. claims the lion's share of SSA medical migrants with 10% (n=13,350) of SSA-born physicians and 4% (n=20,372) of SSA-born nurses. In the United States, the authors identified 6.4% (n=8,558) physicians and 4% (n=19,545) nurses from the SSA region (Clemens & Pettersson, 2008).

It is noteworthy that the United States consistently reports significantly more African physicians than the U.K. when the unit of analysis is *country of medical education*. Hagopian et al. (2004) reported 3,451 SSA-trained physicians in the U.K. while Mullan (2005) estimated that number to be 3,904. But, when *country of birth* is the selection criterion the trend appears to be reversed as evidenced above by Clemens and Pettersson's (2008). This suggests that many African physicians may have entered the U.K. at a much younger age—likely as students—and decided later on to live and practice in the U.K. Meanwhile, most African migrant physicians come to the

United States at much older ages primarily to work or specialize after completing medical education and working for a few years in their home countries. Hence, despite the relatively larger population of SSA physicians and nurses in the U.K., the transfer of medical skills from SSA to the United States may be more significant than the transfer of medical skills from SSA to the U.K. due to the increased level of education and professional experience that would-be migrants to the United States possess at time of emigration.

Clemens and Pettersson's (2008) focus on country of birth as opposed to country of medical education is significant because it provides a more extensive vista of the emigration of health workers from Africa. At the same time, country of birth is not without limitations, especially in the case where emigrants leave their countries of birth to resettle in their country of medical education at a very early age. Moreover, as Clemens and Pettersson rightly pointed out, a measurement of the effect of medical brain drain solely based on the countries of birth of the émigrés may over-estimate the fiscal consequences of healthcare workers' emigration because some émigré medical professionals may have benefitted very little from any public funding for their education. Nonetheless, the lack of information about the age at emigration of foreign-trained African physicians and the source of funding of their medical education cannot justify their exclusion from medical migration estimates.

Clemens and Pettersson's (2008) study has additional limitations. For one, it used information obtained from the 2000 US Census, data that is more dated than the figures provided by Hagopian et al. (2004). Also, the SSA-trained physicians who immigrated to the United States after completion of the 2000 US Census are not captured. Likewise, responses to the US Census data are self-reports and collected every 10 years, and as such, should be treated with some caution when examining a highly dynamic field such as international medical migration. All foreign-born respondents who self-identified as physicians in the US Census are not necessarily licensed to

practice in the United States. Hence, the US Census does not provide an accurate account of the number of foreign-born physicians who have actually integrated into the US healthcare workforce as full-fledged licensed physicians or resident physicians.

Although the immigration of SSA physicians to the United States may be interpreted as a loss of physicians from their respective African countries of origin, it cannot automatically be interpreted as an addition to the US healthcare system. Theoretically, a loss of a medical doctor due to emigration that does not translate into a gain of a physician in the receiving country can be considered a case of "brain waste" (Mattoo, Neagu, & Özden, 2008). Empirical findings from Mattoo et al. (2008) suggest that skilled émigrés from developing countries where English is not the language of education suffer the most from "under-placement" or low transferability of skills following their US immigration. Thus, it is expected that immigrant physicians from non-English-speaking African countries are more likely to experience brain waste in the United States when compared to their African counterparts from Anglophone countries.

As part of the residency admission process in the United States, all international medical graduates are required to take the three-step United States Medical Licensing Examination (USMLE). This exam is highly competitive and serves as a significant barrier to many foreign physicians who hope to practice in the United States. As noted by the Educational Commission for Foreign Medical Graduates (ECFMG, n.d.), "during the 20-year period between 1986 and 2005, more than 267,000 international medical students/graduates applied to take their first examination with ECFMG; of this number, only 57.2% ultimately achieved certification." The above suggests that a significant number of SSA-trained physicians who immigrate to the United States do not succeed in satisfying requirements for residency admission. In other words, the number of SSA-IMGs identified in the US physician workforce may represent roughly 60% of all SSA-trained physicians who immigrated to the United States.

Statement of Purpose

The present study focuses on a cross-section of SSA émigré physicians who have successfully completed or are currently completing graduate medical education and certification in the United States (i.e., licensed and resident physicians). The purpose of this study is to provide a more rigorous and updated count of émigré physicians trained in SSA or outside SSA who are integrated into the US physician workforce and to describe trends among recent cohorts. With this updated data, this study seeks to contribute to the larger discussion on physician brain drain from SSA and its broader impact on global health equity.

Methods

Database: The AMA Physician Masterfile (AMAPM)

The AMAPM is an extensive database created in 1906 to provide comprehensive biographic data on all US physicians. It is owned by the American Medical Association (AMA) and reportedly updated on a monthly basis[4]. However, the annual data collection effort reaches its peak between mid-May (following receipt of new residency placements data from the National Residency Matching Program) and late September, with 95% of the updates completed between July and December of each year (AMA, n.d). The AMA collects demographic, academic, and professional data on all physicians who reside in the United States, including AMA members and nonmembers, US medical graduates (USMGs) and foreign/international medical graduates (IMGs). The annual data collection involves the voluntary cooperation of several health-related agencies, institutions and organizations including: US medical schools, post-graduate medical training programs, state licensing agencies, the National Board of Medical Examiners (NBME), the

[4] Personal communication with an AMA data licensee from which AMAPM dataset was purchased.

Educational Commission for Foreign Medical Graduates (ECFMG), and the American Board of Medical Specialties (ABMS). In other words, records from the AMA database are the best available representation of the universe of the US physician workforce.

Procedures

Currently, there are currently six independent health data management corporations that have the license to distribute, for a fee, AMA physician lists for research, business, or mailing purposes. The contact information of these licensees is listed on the AMA website.[5] I contacted one of the AMA licensees[6] and ordered the list of all IMGs who received their medical education in any school located within Africa. I also ordered the data list for all medical graduates who were born in Africa and trained outside Africa. However, the second list may be incomplete given the high percentage (70.2%) of missing data on *birth country* observed among SSA-IMGs. While North Africa is an integral part of Africa, North African countries (Algeria, Egypt, Libya, Morocco, and Tunisia)[7] have much lower disease burdens, much higher life expectancies, and higher physician-population ratios than most SSA countries (WHO, 2011) and therefore are not included in this analysis.

Prior to placing the order for the first list of physicians, I used the interactive database services made available to all potential researchers to run counts for various selections of target physicians. Initially, I counted all active physicians who were present in the 2011 AMAPM. Using a combination of selection criteria (i.e., medical school code, birth country, omit/include US graduates, omit/include inactive, retired, semi-retired), I identified all physicians who completed

[5] See: http://www.ama-assn.org/ama/pub/about-ama/physician-data-resources/ama-database-licensing/more-about-ama-database-licensing.page?
[6] Redi-Mail Direct Marketing, Inc (www.redidata.com).
[7] This segmentation is to some extent arbitrary given that the WHO also includes Djibouti, Somalia, South Sudan, and Sudan in the Middle East & North Africa (MENA) region while excluding Algeria (listed with SSA countries).

medical school outside the United States. Within this group, I identified all those who completed their medical education in countries located in Africa. Last, I counted all physicians who were born in Africa but completed medical school outside Africa. To control for any potential inaccuracy in the results of my query, I used the interactive database of two different AMA database licensees.[8] This process enabled me to compare aggregate data from two distinct sources before purchasing raw/granular data from the preferred company.[9]

Aggregate data obtained from the two AMA database licensees were comparable, and the decision to order data from the preferred data management company was purely based on affordability. The records obtained initially included *name, gender, medical school attended and year of graduation, year of birth, birth country, professional address, telephone number*, and *primary specialty*. In order to estimate a proxy for year of immigration to the United States, I placed a second order for residency information including *residency program, date of entry in residency,* and *date of residency completion*. However, the AMA does not collect information on date of residency admission. Only the names of the residency programs and the dates of residency completion were provided.

I closely examined all the records contained in the ordered datasets to identify and exclude potential outliers. Such outliers included medical graduates of the Kigezi International Medical School of Kabale (KIMSOK), St. Christopher's College of Medicine (SCCOM), and St. Luke School of Medicine (SLSOM). These three schools were listed as located in Uganda, Senegal, and Liberia respectively, but their actual locations and real existence are problematic (see, e.g., allAfrica, 2010; Chapman, 2010; FAIMER, n.d., St. Luke School of Medicine, n.d.). I also

[8] Medical Marketing Service (www.mms.com), and Redi-Mail Direct Marketing, Inc (www.redidata.com)
[9] Ordering the complete records of the 2011 AMAPM would have been ideal, but impractical due to financial constraints.

identified a significant number of physicians well beyond the conventional retirement age of 65 years. While I initially present the entire population of African physicians identified in the 2011 AMAPM (Table 3 in the Results section), any physicians beyond 70 years (*N*=442) are not included in most of the subsequent analyses.

Does Counting 70 Year-old Physicians Overshoot the Target?

This study mainly targets physicians 70 years of age or younger, that is, all *potentially active* immigrant physicians. However, it could be argued that the 70-year limit is set too high when age 65 is the conventional retirement age threshold for Social Security and Medicare benefits eligibility. At the same time, it is unlikely that all physicians retire by age 65, especially in the case of immigrant physicians who may have come to the United States relatively late and may not have practiced long enough to garnish adequate personal saving accounts and retirement funds. Alternatively, being 65 years or older and retired does not necessarily imply being inactive or incapable of providing meaningful assistance, especially in times of crisis. Given the limited amount of health workers and the prevailing healthcare crisis affecting many African countries, the service of émigré physicians who retire from US medical practice may still be of high value in their native African communities.

A recent survey of the impact of the current economic recession on physicians' retirement plans suggested that a little over 50% of those sampled intended to work beyond the age initially set for their retirement (Jackson & Coker, 2011). While the investigators failed to specify the initial retirement age indicated by the respondents, it is reasonable to posit that it was around 64-65 years, which is, the conventional retirement age for family and general practitioners in the United States (see, e.g., Jewett, Brotherton, Ruch-Ross, 2011; Mills et al., 2011). Similarly, physician re-entry into medical practice after retirement is gaining increasing traction in the US primary care sector

(see, e.g., AMA Center for Transforming Medical Education, n.d.; The Physician Reentry into the Workforce Project, n.d.). A 2011 study from the American Medical Association (Jewett, Brotherton, Ruch-Ross, 2011) found that about 37% of physicians reportedly inactive in the 2008 AMAPM did not actually retire or had reentered medical practice on a full-time basis by 2011. This suggests that one may retire from medical practice well before age 65 and reenter practice on a full or part-time basis after age 65. Together, there is evidence to support the selection of age 70 as the limit of professional practice of immigrant physicians.

Proxies for Year of Immigration and New Migration Cohort

I used available data on residency completion date to estimate a proxy for year of immigration to the United States. I subtracted five years from SSA-IMGs' year of residency completion. Boulet, Norcini, Whelan, Hallock, and Seeling (2006) analyzed trends in certification and residency training among IMGs and found that between 1995 and 2003, internal medicine, family practice, and pediatrics accounted for about 70% of IMGs specializations. Since residency training in the above primary care specializations is on average three years, I used three years as the minimum time spent in residency. I added two more years to the three-year residency length in order to account for time elapsed in the United States before the beginning of residency. The two-year pre-residency length of stay in the United States was estimated from primary data I collected for a qualitative study of a small sample of SSA-IMGs residing in the United States (n = 24 IMGs; Mpre-residency time = 1.9 years; SD = 1.8 years; range: 0 – 8 years). Although the physicians who participated in the qualitative study were not all randomly sampled and are too few for any generalization, there is no indication that their admission to US graduate medical education differs significantly from that of the larger medical diaspora of which they are a part.

As detailed earlier, a comprehensive analysis of all SSA-IMGs appearing in the 2002 AMAPM was conducted nearly a decade ago (Hagopian et al., 2004). I used the 2002 figures of SSA-IMGs reported by Hagopian et al. (2004) (see Table 2) as baseline data for my analysis. I subtracted the 2002 figures reported in Table 2 from the 2011 AMAPM data in order to estimate the size of recent migration cohorts and the overall percentage increase of SSA-IMGs in the United States during the last decade.

Table 2
North America-based SSA-IMGs Identified by Hagopian et. al (2004)

Country of training	Number of African-trained IMGs in the USA [in 2002]	Number of African-trained IMGs in Canada [in 2003]	Number of physicians remaining in home country	% of total African-trained now in USA or Canada
Nigeria	2158	123	22 894	9
South Africa	1943	1845	23844	14
Ghana	478	37	1210	30
Ethiopia	257	9	1564	15
Uganda	133	42	722	20
Kenya	93	19	4001	3
Zimbabwe	75	26	1694	6
Zambia	67	7	676	10
Liberia	47	8	72	43
Other 12 countries*	83	35	12912	1
Total/Average	5334	2151	69589	10

Note. Reproduced from "The migration of physicians from sub-Saharan Africa to the United States of America: measures of the African brain drain" by A. Hagopian, M. J. Thompson, M. Fordyce, K. E. Johnson, and L. G. Hart, 2004, *Human Resources for Health,* 2:17, p. 5. doi:10.1186/1478-4491-2-17. Copyright 2004 by BioMed Central Ltd.

* Other 12 countries with at least one graduate in the United States.

Given that Hagopian et al. (2004) did not include US-based immigrant physicians born in SSA but trained outside SSA, I used year of graduation as the chronological marker for the migration of the latter group. I operationalized recent immigrants as any physician who graduated

after 2000. SSA-IMGs from Cameroon, Tanzania, and Sudan were all absent from Hagopian et al.'s (2004) piece, but appear in relatively significant number in the 2011 AMAPM. I used pre-and-post 2002 residency completion dates to estimate the emigration rate of these three groups of migrant physicians.

Results

As recently as August 2012, the AMAPM contained nearly one million individual records (*N*=971,803). This number reportedly excludes all retired and inactive physicians. Residents (*N*=104,183) and medical students (*N*=61,894) represent respectively 10.7% and 6.3% of the entire AMAPM records. Doctors of osteopathic medicine (DO) comprise 6.4% (*N*=62,169) of the entries, while women represent 34.3% (*N*=333,350) of the total entries. Excluding Canadian medical graduates (*N*=8,307), about 25.8% of physicians in the 2012 AMAPM (*N*=234,737) are IMGs, and 80,417 (34.3%) of them are women. The remainder of this Results section presents data on Sub-Saharan African (SSA) physicians appearing in the 2011 AMAPM. Given that many more physicians have been added to the AMA database since 2011, some of the figures reported in this paper should be considered conservative.

African Presence in the US Physician Workforce

At the end of 2011, the number of IMGs in the US physician workforce included about 5.6% medical graduates from schools located in Africa (*N*=12,914). As Table 3 below shows, there are over 17,000 physicians in the 2011 AMAPM who were born or completed their medical school in Africa. IMGs educated in medical schools located in SSA (*N*=7,370) and medical graduates born in SSA but trained outside SSA (*N*= 3,449) are the target of the present analysis.

Table 3

Regions of Training of African Physicians Identified in the 2011 AMA Physician Masterfile

Main regions of training	N	%
IMGs trained in Sub-Saharan Africa (*n* =**7,370**)		
West Africa	4,082	37.7%
Southern Africa	1,989	18.4%
East Africa	1,216	11.2%
Central Africa	83	0.8%
Born in SSA & traind in North America (*n* =**2,191**)		
USA	2,126	19.7%
Other North America	65	0.6%
Born in SSA & trained in Europe (*n* =**449**)		
Western Europe	275	2.5%
Eastern & Central Europe	94	0.9%
Other European region	80	0.7%
Born in SSA & trained in Asia/Pacific (*n* =**443**)		
South Asia	420	3.9%
Other Asian region	23	0.2%
Born in SSA & trained in the Caribbean (*n* =**254**)		
Dominica	67	0.6%
Grenada	60	0.6%
Other Caribbean countries	127	1.2%
Born in SSA & trained in MENA* (*n* =**107**)		
Middle East	79	0.7%
North Africa	28	0.3%
Central/South America (*n* =**5**)	5	0.05%
Subtotal	**10,819**	100.0%
North African Émigrés		
IMGs trained in North Africa (NA)	5,544	84.6%
Born in NA & trained outside Africa	1,011	15.4%
Other (unidentified)	2	0.03%
Subtotal	**6,557**	100.0%
Total	**17,376**	

*MENA: Middle East and North Africa

Throughout this analysis, IMGs educated in SSA-based medical schools are referred to as SSA-IMGs (*N*=7,370), whereas SSA-born physicians graduated specifically from US medical schools are referred to as SSA-USMGs (*N*=2,126). The combined population of SSA-IMGs, SSA-

USMGs, and SSA-born physicians trained outside SSA and outside the United States (*N*=1,323) totaled 10,819 physicians in 2011 and represent a sizable increase from the 2002 figures reported in Table 2.

New Immigration Trends

Table 4

Top 12 Countries of Emigration of SSA Physicians Appearing in the 2011 AMA Physician Masterfile (Sorted by Emigration rate)

Countries with ≥20 SSA-IMGs in the 2011 AMAPM	SSA-trained (SSA-IMGs)	SSA-IMGs increase since 2002 (%)	SSA-born US-trained (SSA-USMGs)	SSA-born trained outside SSA & USA	Total SSA-born trained abroad	Aggregate total of émigrés in USA	Physicians reported in emigration country**	Migration rate to USA*^	Total of potentially active émigrés (aged ≤70)	Potential addition to domestic workforce in case of return
Liberia	56	19.1%	96	23	119	175	51	77.4%	170	333.3%
Tanzania	24	60.0%	35	95	130	154	300	33.9%	141	47.0%
Ghana	721	50.8%	404	118	522	1,243	2,033	37.9%	1,226	60.3%
Ethiopia	531	106.6%	240	91	331	862	1,806	32.3%	830	46.0%
Zambia	81	20.9%	82	59	141	222	649	25.5%	221	34.1%
Kenya	173	86.0%	296	394	690	863	4,506	16.1%	844	18.7%
Uganda	145	9.0%	70	126	196	341	3,361	9.2%	321	9.6%
Zimbabwe	112	49.3%	43	9	52	164	2,086	7.3%	155	7.4%
Nigeria	3,271	51.6%	407	139	546	3,817	55,376	6.4%	3,763	6.8%
Cameroon	63	350.0%	66	70	136	199	3,124	6.0%	199	6.4%
South Africa	1,787	-8.0%	178	43	221	2,008	34,829	5.5%	1,789	5.1%
Sudan	329	282.6%	31	43	74	403	11,083	3.5%	390	3.5%
Other*	77	n/a	178	113	291	368	21,666	1.7%	328	1.5%
Total	7,370	38.2%	2,126	1,323	3,449	10,819	142,165	7.1%	10,377	7.3%

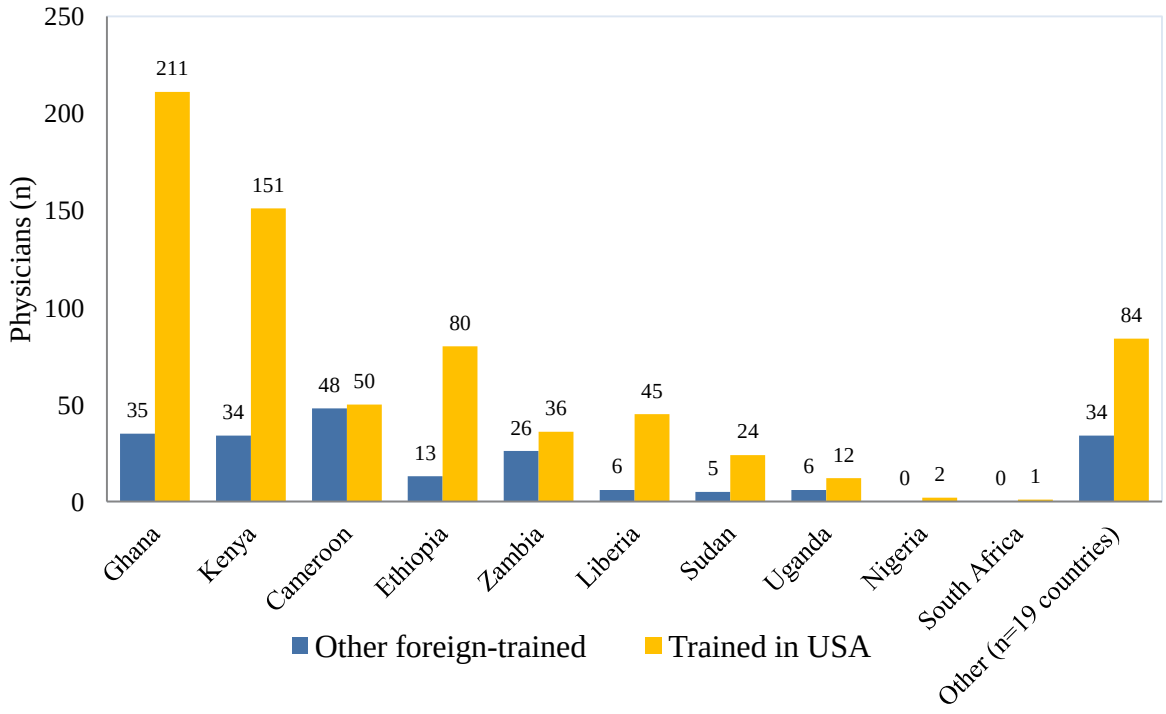
*Other: SSA countries with less than 15 SSA-IMGs in the 2011 AMAPM. **Latest domestic stocks reported in the *Global Health Observatory Data Repository* . *^Physician emigration rate = Aggregate total of SSA physicians in USA/(Physician stock in country of emigration + aggregate total of SSA physicians in USA)*100.

The 7,370 SSA-IMGs identified in the 2011 AMAPM were trained in 66 medical schools (five of which were unidentified) located in 28 SSA countries. Overall, 12 SSA countries, reported in Table 4, trained nearly 99% of all SSA-IMGs practicing in the United States. The 2011 AMAPM

data suggest an overall increase of 38.2% (*N*=2,036) in SSA-IMGs in the US physician workforce since 2002. While over two-thirds of all SSA-IMGs graduated from schools located in Nigeria and South Africa, Liberia had the highest emigration rate due to the very low numbers of physicians available domestically. The loss of physicians from "traditional" source countries such as Ethiopia, Ghana, Kenya, or Nigeria has continued to increase steadily while new countries of medical migration, namely Cameroon and Sudan, have emerged.

Figure 1

SSA-born Physician Immigrants to the United States who Graduated Between 2001 and 2010 from Medical Schools Located Outside SSA



Nigeria has lost the largest number of new immigrant physicians to the United States. Indeed, the number of Nigerian IMGs who were officially admitted into the US graduate medical education (GME) or who obtained a license to practice medicine in the United States after 2002 (*N*=1,113) exceeded the aggregate total of new IMGs from the 27 other SSA countries represented

in the 2011 AMAPM during the same time period (*N*=891). Meanwhile, the number of South African IMGs in the United States has decreased during the last decade (-8%, *N*=1,943 in 2002 to *N*=1,787 in 2011). When counting only *potentially active physicians* (i.e., aged 70 or younger), the decrease of South African IMGs becomes even more significant (-19%, *N*=1,943 in 2002 to *N*=1,577 in 2011).

Migration trends for US-based immigrant physicians born in SSA but trained internationally differ from patterns observed among SSA-IMGs. As Figure 1 shows, Nigeria, historically the largest supplier of SSA-IMGs, does not appear to be a significant source country among the Western-educated SSA physicians. Likewise, the absence of South African-born physicians among émigré physicians trained outside SSA is noteworthy. However, this is more consistent with the overall decreasing trend of South African IMGs in the United States. New immigrants from countries with historically lower rates of medical migration to the United States such as Cameroon are increasingly represented among IMGs. In fact, Cameroon has the largest SSA contingent (23.2%, *N*=48) of foreign trained physicians educated outside SSA and the United States between 2001 and 2010. About 60% of these Cameroonian immigrant physicians attended medical school in the Caribbean before relocating to the United States. Overall, over one-fourth (27.2%, *N*=246) of all SSA-born migrant physicians who graduated from medical schools located outside Africa during the 2001-2011 decade were Ghanaian natives, and the overwhelming majority of them (86%, *N*=211) graduated from US-MD granting institutions.

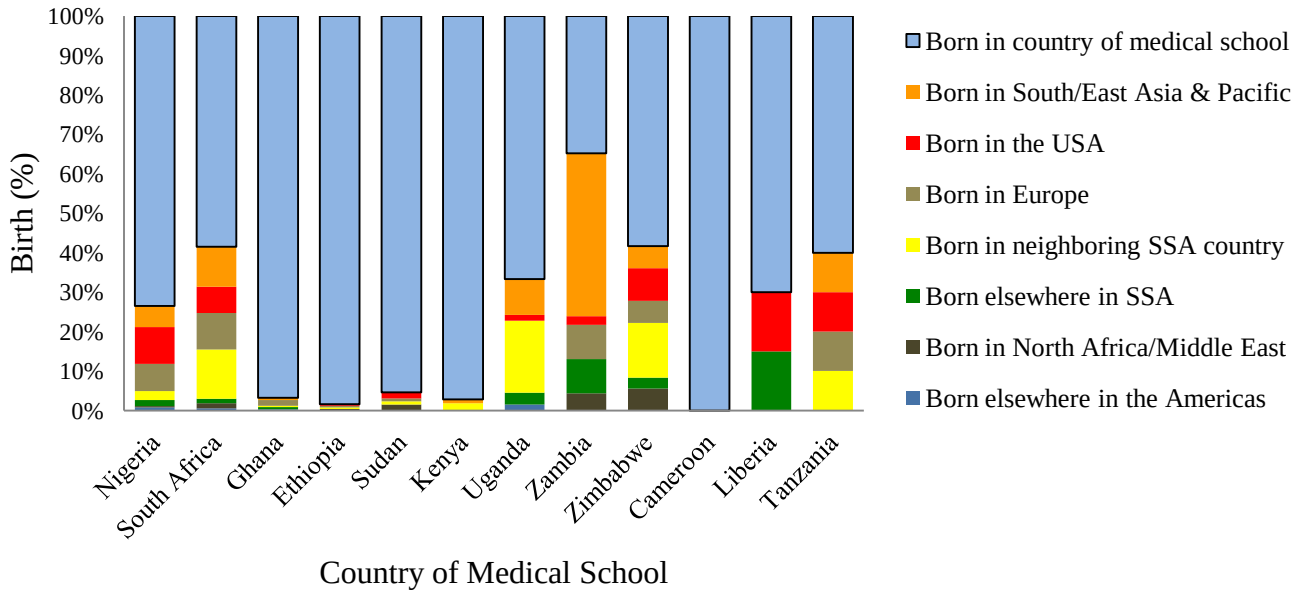
Diverse Mix of Origins of SSA-IMGs

As suggested earlier in this analysis, there is a very high rate of missing data on birth country (70.2%, *N*=5,171) among SSA-IMGs appearing in the 2011 AMAPM. In total, 467 physicians (21%) of the cross-section of SSA-IMGs who reported their birth countries (*N*=2,199)

completed medical school outside their birth countries. This total includes 342 foreign-born from 34 non-African countries (led by the United States, the UK, India, and South Korea). To ascertain whether or not birth country data were missing completely at random (MCAR), I conducted, by way of a t-test, a cross-sectional comparison of physicians with missing and complete birth country data. The t–test compared mean graduation year and mean ages at graduation and immigration for both groups. Mean differences from the t-tests were all significant, suggesting that the MCAR assumption was not tenable (see Appendix A). Nonetheless, except for South African IMGs, most SSA-IMGs with missing birth country had African-sounding names. So did the lion's share of foreign-born physicians trained in SSA-based medical schools.

Figure 2

Proportion of Native and Foreign born among SSA-IMGs Appearing in the 2011 AMA Physician Masterfile



As suggested by Figure 2 above, the number of foreign-born medical graduates from schools located in Nigeria and South Africa is substantial. Out of 752 Nigerian IMGs, 26.5% (*N*=199) reported a birth country other than Nigeria, and 156 out 376 South African IMGs (41.5%) were born outside South Africa. These two countries appear as training hubs not only for natives, but also

for medical graduates with diverse origin within and outside SSA. The fraction of foreign-born Zambian physicians is the highest (65.2%, *N*=30), with the majority of Zambian IMGs practicing in the United States born in India. Meanwhile, the vast majority of SSA-IMGs from Cameroon, Ethiopia, Ghana, Kenya, and Sudan graduated from medical schools in their respective countries of birth.

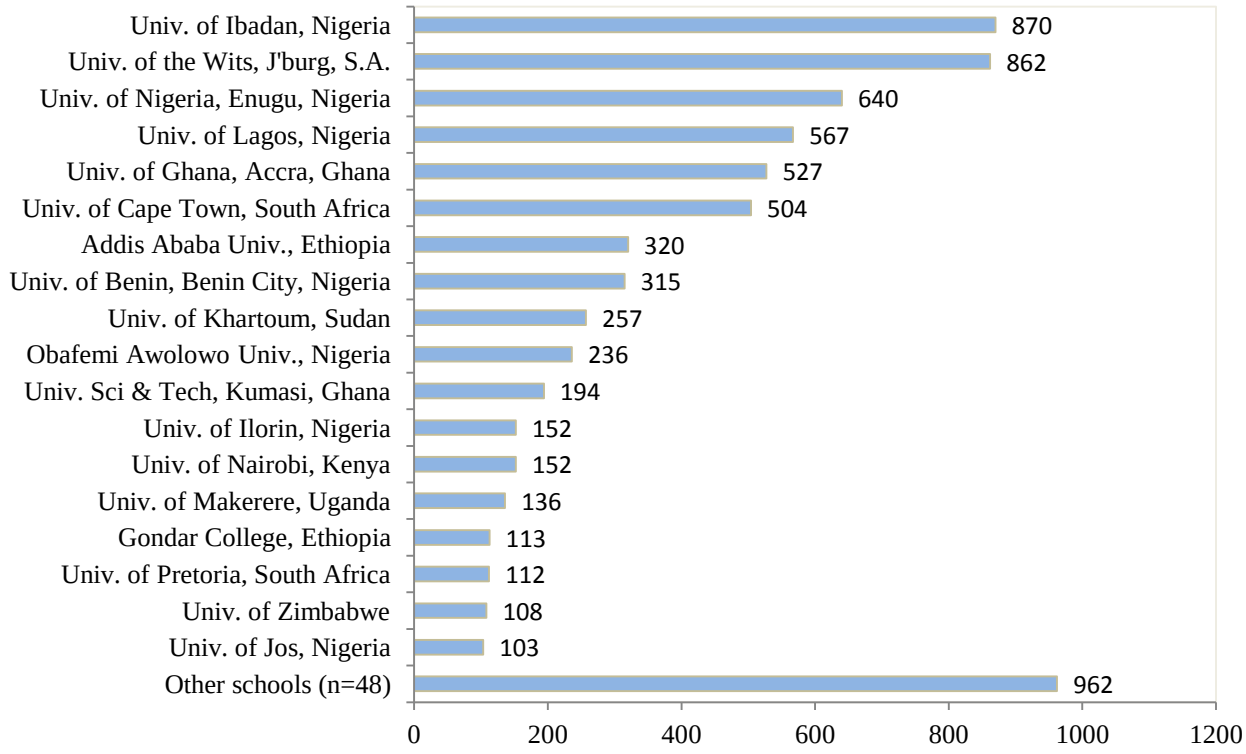
Medical Schools of SSA Physicians Appearing in the 2011 AMAPM

An analysis of emigration trends by medical schools suggests yet another layer of nuance. While the population of SSA-IMGs appearing in the 2011 AMAPM graduated from 66 SSA-based medical schools, over 70% came from only 10 medical schools, five of which are located in Nigeria alone. In total, SSA-IMGs from18 Nigerian medical schools are present in the 2011 AMAPM, however only six schools (see Figure 3) have 100 or more medical graduates in the 2011 AMAPM. These six medical schools account for nearly 38% of all SSA-IMGs and nearly 90% of all Nigerian IMGs practicing in the United States. Five of these schools are located in Southern Nigeria (Igboland and Yorubaland). Émigré physicians from medical schools located in Northern Nigeria (Hausaland), the largest geographic region of Nigeria, appear to be underrepresented within the US-based Nigerian physician workforce. This may be due in part to Northern Nigeria having fewer medical schools (*N*=6), and thus training fewer physicians than Southern Nigeria (*N*=19 medical schools).[10]

[10] See, "The Sub-Saharan African Medical School Study: Data, Observation, and Opportunity" (Mullan, et al., n.d.).

Figure 3

SSA-based Institutions with ≥100 Medical Graduates Aged ≤70 Appearing in the 2011 AMA Physicians Masterfile

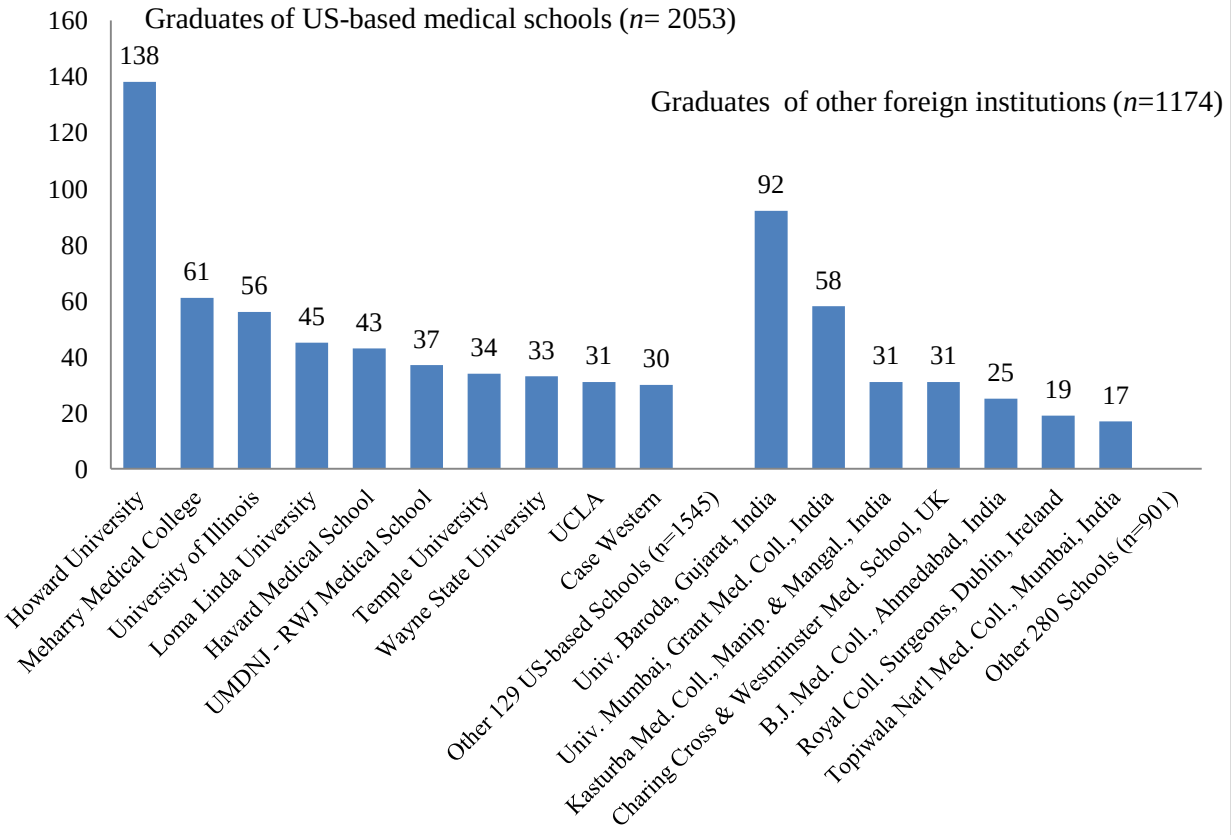


IMGs from the University of Witwatersrand and the University of Cape Town (*N*=1,558) represent over 87% of all South African émigré physicians practicing in the United States, but this number drops by 12.3% (*N*=193) when counting only potentially active physicians (i.e., 70 years old or younger). With 28 medical schools, Sudan has the largest number of medical schools on the African continent.[11] However, over 90% of Sudanese IMGs appearing in the 2011 AMAPM graduated from two institutions, the University of Khartoum (*N*=258) and the University of Gezira (*N*=40), and nearly 75% of these Sudanese immigrant physicians integrated into the US physician workforce after 2002.

[11] "The Sub-Saharan African Medical School Study: Data, Observation, and Opportunity" (Mullan, et al., n.d.).

Figure 4

US-based and non US-based Medical Schools with high Graduation Rates for Foreign-trained Physicians born in SSA and Practicing in the United States(aged ≤70, N=3227)



Among the population of SSA physicians present in the 2011 AMAPM, the ratio of foreign-trained to SSA-trained is 1:2 while the ratio of foreign-based medical schools to SSA-based medical schools is 7:1. The large numbers of US medical schools (*N*=139)[12] and non-US foreign medical schools (*N*=287)[13] that trained SSA migrant physicians reflects the globalization of the medical training of SSA physicians practicing in the United States. The majority of SSA migrant physicians trained outside SSA and practicing in the United States graduated from US medical schools (60%), and most attended US-MD granting institutions with historically high graduation rates for Black

[12] This number increases to 144 US medical schools when including medical schools of physicians older than 70 years.
[13] This number increases to 300 non-US foreign medical schools when including physicians older than 70 years.

medical students.[14] As suggested by Figure 4 above, only Howard University, a historically Black university, graduated at least 100 SSA-born physicians currently practicing in the United States.

Mean Age of Graduation and Estimated Average Length of Time in the United States

Table 5

Estimated Mean Age at Immigration and Mean Length of Time in the USA

Top 12 SSA countries of medical education	N	Mean age in 2011	Mean age at graduation	Mean age at residency completion	Mean age at immigration*	Average time in the USA**
South Africa	1,567	55.1 (9.3)	24.1 (1.6)	34.1 (4.7)	29.1 (4.7)	24.2 (10.2)
Uganda	138	54.1 (12.4)	25.3 (1.5)	34.8 (4.2)	29.8 (4.2)	23.5 (13.5)
Zambia	81	50.4 (8.0)	25.8 (2.2)	35.2 (4.4)	30.2 (4.4)	20.4 (9.4)
Tanzania	23	51.4 (9.4)	25.6 (1.3)	38.0 (6.0)	33.0 (6.0)	18.4 (10.6)
Liberia	56	54.0 (4.6)	27.7 (2.6)	41.4 (6.7)	36.4 (6.7)	17.5 (6.8)
Kenya	168	46.4 (10.0)	25.5 (1.2)	36.1 (5.1)	31.1 (5.1)	15.6 (10.8)
Ghana	700	47.4 (9.0)	27.1 (1.5)	36.8 (3.8)	31.8 (3.8)	15.5 (8.8)
Zimbabwe	117	45.9 (10.2)	25.0 (3.1)	35.0 (4.8)	30.0 (4.8)	15.0 (9.4)
Nigeria	3,242	45.7 (7.6)	24.8 (2.3)	36.9 (4.9)	31.9 (4.9)	13.7 (7.3)
Ethiopia	522	45.2 (8.0)	25.1 (1.9)	38.1 (4.7)	33.1 (4.7)	12.0 (7.4)
Cameroon	62	43.8 (8.6)	26.0 (1.4)	37.8 (4.6)	32.8 (4.6)	10.8 (6.5)
Sudan	319	43.2 (7.9)	25.0 (1.8)	37.7 (5.2)	32.7 (5.2)	10.7 (6.2)
Other	70	48.8 (7.5)	28.2 (4.3)	42.2 (6.0)	37.2 (6.0)	11.8 (6.4)
Total	7,065	48.1 (9.4)	25.0 (2.2)	36.5 (5.0)	31.5 (5.0)	15.9 (9.4)

**M* age at immigration to the United States=*M* age at residency completion - 5 years (based on available residency completion data among SSA-IMGs aged≤70 , *N* =6,421)

***M* time spent in the USA=*M* age in 2011 - *M* age at immigration to the United States.

Table 5 shows that, on average, SSA-IMGs in the 2011 AMAPM immigrated to the United States in their early 30's, about six and half years after graduation from medical school. Further, these SSA-IMGs have been living in the United States for approximately 16 years. However, there are large variations in the length of time spent in the United States by émigré physicians from

[14] Institutions that graduated 499 or more Black/African American physicians between 1978 and 2008 (AAMC, 2010).

various SSA nationalities. South African and Ugandan IMGs are the earliest and oldest IMGs while Sudanese and Cameroonian IMGs are the most recent and youngest.

Migration Cohorts

The time-series graphs in Figures 5 and 6 periodize the SSA physician emigration into four main migration cohorts spanning nearly six decades. Available residency records indicate that the earliest cohort of SSA-IMGs who settled in the United States included primarily South African medical graduates and a handful of SSA physicians trained mainly at Makerere College in Uganda and the University of Ibadan in Nigeria. These first settlers emigrated prior to the 1970's, that is, around the decade when most SSA countries were just transitioning from colonial rule and gaining independence. During that time, the SSA region had very few medical schools and most SSA countries were still heavily reliant on the foreign expertise of Western expatriates, namely, former colonial powers.[15]

The second cohort captures SSA-IMGs who emigrated throughout the 1970's and early 1980's, a time when most SSA countries opened at least one medical school and graduated the first domestic batch of MBChBs/MBBS (i.e., Bachelor of Medicine, Bachelor of Surgery).[16] Generally, opportunities for medical specialization were still unavailable to SSA-IMGs graduating in this time-period. The first two cohorts are smaller than subsequent cohorts and represent 13% of the total population of SSA-IMGs found in the 2011 AMAPM.

The third migration cohort is of particular interest, representing 46% of SSA-IMGs. The "Sapers" include all SSA-IMGs who moved to the United States between the mid-1980s and late 1990's. The surge in medical migration unfolding in the mid-1980 and sharply increasing

[15] See, e.g., O Briend (1958) The dawn of medical education in tropical Africa in *Journal of Medical Education.*
[16] Insight for the above statement came from the records of the International Medical Education Database (IMED).

throughout the following decade (1990 – 2000) coincided with the implementation of austere economic measures known all over the developing world as the structural adjustment programs (SAPs). Thus, it is reasonable to associate the sharp increase in physician migration observed between 1985 and 1995 to the implementation of the SAPs.

Likewise, the time-series graph in Figure 6 shows that except in late 1990's and early 2000's, the graduation trend among SSA émigré physicians educated outside SSA and practicing in the United States mimicked the migration pattern observed among SSA-IMGs. However, unlike SSA-IMGs whose emigration pattern has, by and large, increased consistently since the mid 1980's, a steep increase in the size of SSA medical graduates from the US and other foreign schools occurred between 1995 and 2000, about five years after the steep increase observed among SSA-IMGs.

Figure 6 further indicates that during the first half of the 2000 – 2010 decade, the number of SSA-born immigrants to the United States who graduated from foreign medical schools sharply decreased. This steep decrease is due to the notable drop of SSA-USMGs (from *N*=552 graduations during the 1995-1999 period to *N*=275 during the 2000-2004 period). Thus, the AMA data provide some evidence of the potential impact US immigration policies had on foreign medical students in the aftermath of 9/11.

Figure 5

Time-Series Graph of SSA-IMGs Migrating to the United States

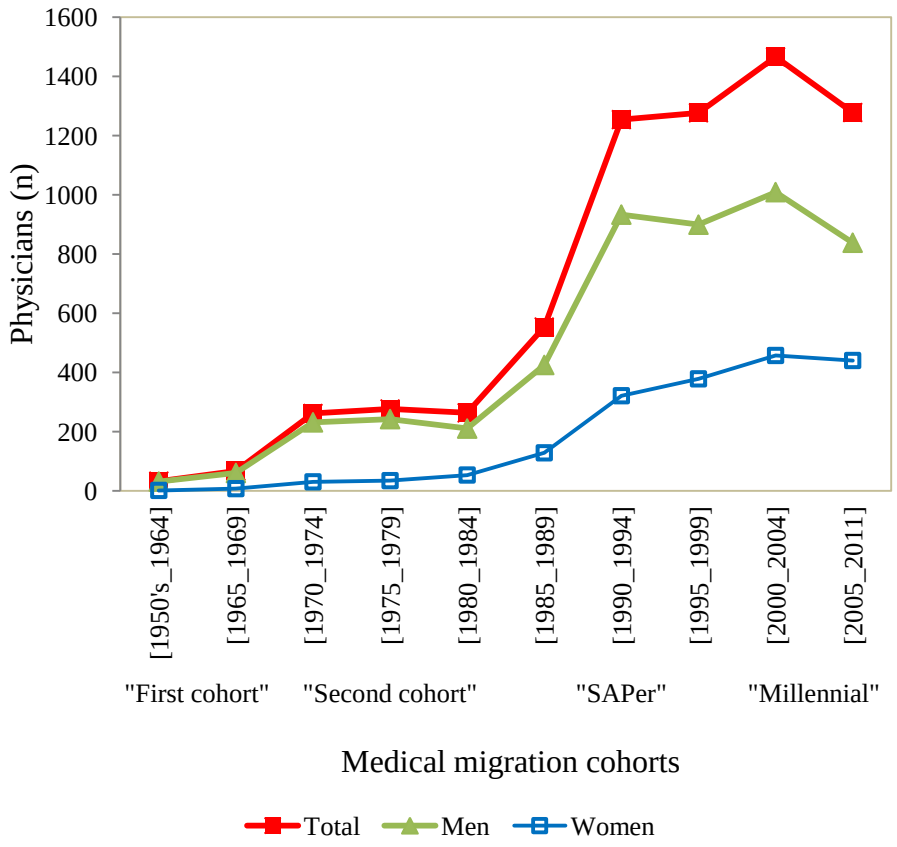


Figure 6

Time-Series Graph of SSA Physicians Trained Outside SSA and Migrating to the United States

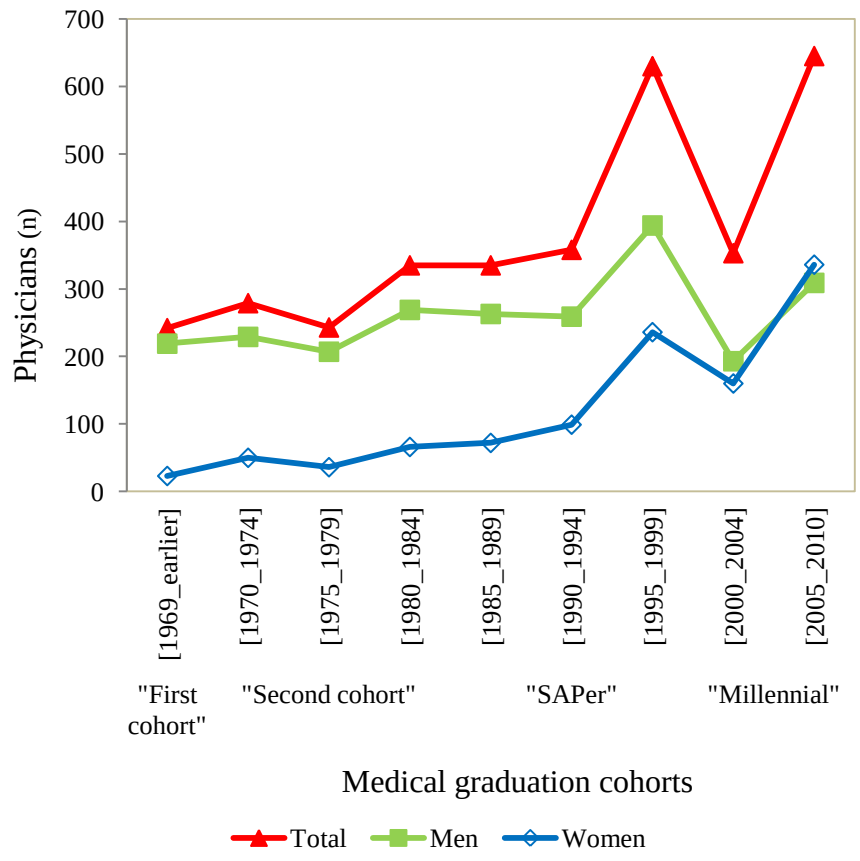
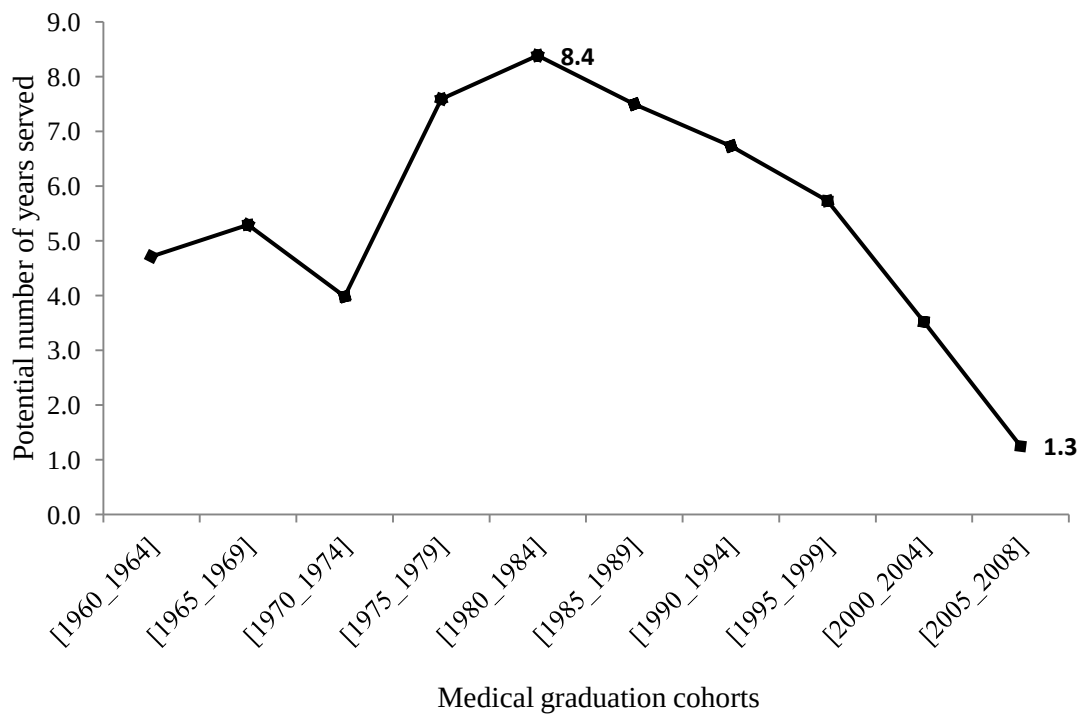


Figure 7

*Estimated Years of Service Provided by each Graduation Cohort Before Emigration**



*Based on *N* = 6,421 graduation and residency records; Estimated mean time between graduation and entry in the United States = 6.4 years (*SD*=4.6).

However, since 2005, there has been a continuing increase in US immigration among SSA physicians trained outside SSA, with the sharpest increase occurring among women. Finally, the last migration cohort is of SSA-IMGs who came to the United States during the new millennium. At this time, they represent 41% of the SSA-IMGs population, and many (≈28%) are still in residency.[17] As will be suggested by the next graph (Figure 7), their speedy emigration is a cause for concern.

Proxy for Years of Service Provided Prior to Emigration

The graph in Figure 7 plots the differences between the average year of entry in the United States and the average year of graduation in SSA for each semi-decennial graduation cohort of SSA-IMGs. The plotted differences are proxies for the respective number of years of service provided to the home countries by each cohort prior to emigration (assuming the émigrés did not spend time in another country prior to coming to the United States). The steady decline observed among graduating cohorts beginning in the mid 1980's suggests that since the onset of the SAPs, SSA-IMGs provide fewer and fewer years of services to their native countries before emigrating. SSA-IMGs who graduated between 2000 and 2008 (the last year for which graduation records for SSA-trained were available) may have practiced on average for 2.4 years before leaving. This suggests that many among them may have stayed in their native countries just long enough to complete their compulsory one-year housemanship and additional one-year national youth service (in the case of Nigeria).

[17] Of note, the downward slope observed in the last period in Figure 5 is not necessarily indicative of a recent decrease in medical migration among SSA-IMGs. It could be that the latest residency data were not available when I purchased the dataset in October 2011. Indeed, during the data collection for the qualitative portion of the broader project of which this study is a part (Article 2), I personally interviewed two SSA-IMGs in their first year of residency at Howard University Hospital whose records were not yet available in the 2011 AMAPM almost one year after their entry in residency.

Gendered Emigration Trends

A total of 2,928 (28.2%) women were identified among all SSA migrant physicians 70 year-old or younger. This figure includes 1,065 foreign-trained, with 70% (*N*=755) graduating from US medical schools. The 2011 AMAPM data reveal a sizable growth (60.5%, *N*=700) in medical migration among SSA-trained women physicians appearing in the AMAPM after 2002. The growth is even more significant among women émigrés who graduated after 2002 from medical schools located outside Africa (67.7%, *N*=430). This brings the total number of SSA women migrant physicians found in the AMAPM after 2002 to 1,130, representing an increase of 62.8%.

By and large, medical migration trends between men and women appear similar, although male migrant physicians outnumber females by a ratio of 2.5:1. There appears to be a steady decrease in the gender gap in recent years. As indicated by the latest graduation cohort in Figure 6, the decrease in the gender gap among the migrating physicians is more obvious among SSA migrant physicians trained outside SSA. Indeed, among SSA-born physicians trained outside SSA who graduated between 2005 and 2010, female physicians (52%) slightly outnumber their male counterparts (48%).

Medical Specialties

Irrespective of whether SSA émigré physicians are African-trained (SSA-IMGs), US medical graduates (SSA-USMGs), women or men, well over 90% are specialized in non-surgical medical specialties. The 10,377 physicians that constitute the possible universe of active SSA émigré physicians are unevenly distributed within 149 specialties and subspecialties. Out of 72 specialties and subspecialties with 10 or more SSA physicians, the field of pediatrics is the only specialty where women (54%) outnumber men. The primary care specialties of general internal

medicine, family medicine, and general pediatrics are the most popular and account for roughly 47% of specialty choices among the SSA-IMGs.

Discussion

The overarching goal of this study was to systematically identify the current population of the US physician workforce that were born or trained in Sub-Saharan African (SSA) countries. I identified three distinct groups of SSA migrant physicians totaling nearly 11,000 medical graduates in the 2011 AMAPM, namely physicians who graduated from medical schools located in SSA (68%), physicians who were born in SSA but went to medical school in the United States (20%), and physicians who were born in SSA but graduated from foreign medical schools outside the United States and the SSA region (12%). In the present section, I discuss some of the main findings and their potential implications for research and policy.

The Scale of the SSA Physician Brain Drain is yet to be Known

The total number of SSA-trained and SSA-born physicians practicing in the United States represents only 1.2% of the current US physician workforce, and accounts for barely 5% of the foreign physician workforce employed in the United States. However, 10,377 SSA migrant physicians in the US physician workforce exceed the combined total number of physicians (*N*=10,286) practicing in Ethiopia, Ghana, Liberia, Tanzania, Uganda, Zambia, and Zimbabwe (WHO, 2011), countries with significant fractions of their physicians in the United States and a combined population exceeding 210 million people (i.e., ≈ 0.5 physician for 10,000 people). Likewise, 10,377 SSA migrant physicians in the United States exceed the total number of

physicians reported in 32 African countries with fewer than 775 physicians each (WHO, 2011) (see Appendix C).

If only one half of the population of Liberian physicians identified in the 2011 AMAPM were to return to Liberia to practice, their presence would double the Liberian physician workforce, and the quality of health service delivery in Liberia would likely improve while the pool of potential medical professors at the University of Liberia would also expand. Likewise, if only half of Ghanaian-trained physicians identified in the 2011 AMA database and Ghanaian-born émigrés who graduated from some of the most competitive US medical schools were to return to Ghana to practice, their presence would increase Ghana's physician workforce by over 30%, and it is most likely that the quality of health service, medical education and research in Ghana would also improve as a result of the returnees' expertise. Of course, as suggested in the next article (Article 2 in this report), the above assumptions become problematic and highly romantic when the returning doctors are not provided with the necessary tools of the trade (i.e., adequate facilities, modern medical technology, drugs, and medical supplies).

A change from 5,336 SSA migrant physicians in 2002 (Hagopian et al., 2004) to 10,819 SSA migrant physicians in 2011 in the same AMA data source highlights the unsustainable depletion of scarce human resources from a region that has only 2% of the global physician workforce (Scheffler, Liu, Kinfu, & Dal-Poz, 2008), bears 24% of the global burden of diseases including 68% of the world's HIV/AIDS infections, and reportedly needs 420,000 additional physicians by 2015 in order to meet health-related targets for the millennium development goals (Scheffler et al., 2008). Alternatively, it must be observed that the over 10,000 SSA physicians who practice in the United States represent a very significant portion of the Black/African American physician workforce when considering the fact that the total number of Black/African American

physicians produced by US MD-granting institutions from 1978 to 2008 is N=29,775 (Association of American Medical Colleges, 2010).

Further, certification data reported by the Educational Commission of Foreign Medical Graduates (ECFMG) on IMGs seeking residency in the United States suggest that only 57% of applicants succeeded to obtain ECFMG certification between 1986 and 2005 (ECFMG, n.d.). Thus, there is an unknown number of SSA physicians who are missing from these data due to not passing ECFMG certification. A rough estimate would suggest over 6500 physicians[18]. Some portion of those may have attempted the ECFMG certification outside the United States. Other may have come to the United States and then returned to their country of origin or a third country to practice medicine. But many may have stayed in the United States and are simply lost to the practice of medicine.

Moreover, the noticeable presence of doctors with foreign births mainly among Nigerian and Southern African IMGs, and the high rate (70%) of missing data on SSA-IMGs' birth country, further compound difficulties in estimating the exact number of native SSA physicians practicing in the United States. In sum, the precise number of immigrant physicians from SSA living in the United States is yet to be determined, but, the estimates reported in this study take us one step closer to that goal.

Structural Adjustments and the Onset of the SSA Physician Brain Drain

To the extent that "brain drain" entails the migration of large numbers of highly skilled professionals, findings from this study suggest that the physician brain drain from SSA to the United States effectively started in the mid-1980's and accelerated in the 1990's during the

[18] (43/57)*(7,370 SSA-IMGs + 1,323 SSA-born MDs trained outside SSA and outside the U.S.) = 6,575.88 SSA physicians.

implementation years of the structural adjustment programs (SAPs) (see, e.g., MacLean, Quadir, & Shaw, 1997; Moghadam, 1999; Moyo, 2009). The SAPs were a set of conditionalities for loan disbursement and debt repayment imposed by international financial institutions, led by the International Monetary Fund (IMF) and the World Bank, on debt-stricken developing countries at the outset of the Third World debt crisis in the early 1980's. In exchange for the new loans needed to service the old debts, the IMF required debt-burdened countries to overhaul their stressed economies through a set of austere economic measures including currency devaluation, privatization, deregulation, desubsidization, and application of "user fees" or cost-sharing schemes in the delivery of social services namely public education and health services.

The social cost and human consequences of the SAPs have been widely reported and decried (see, e.g., Adepoju, 1993; Cheru, 1989; Cornia, Jolly, & Stewart, 1987; Lewis, 2005; The Structural Adjustment Participatory Review International Network [SAPRIN], 2004). In Zimbabwe, the reductions in public spending on healthcare in the 1990's triggered high health worker attrition and expatriation, resulting in a 30% drop in the quality of healthcare provision when compared to the achievements from the post-independence period (SAPRIN, 2004). In the classic publication, *Adjustment with a Human Face,* the UNICEF office in Ghana reported that Ghana "lost more than 50 per cent of its physicians between 1981 and April 1984, and about 8.5 per cent of nurses in 1982 alone" (Cornia, Jolly, & Stewart, 1987, p. 101).

Recent Graduates Spend Fewer Years of Service Before Emigrating

While migrant physicians who graduated in the 1980's and the 1990's left their native SSA countries mainly in response to the SAPs, emigration trends observed among SSA migrant physicians who graduated in the new millennium reflect different dynamics. As this study revealed,

the former immigrated to the United States on average of eight years after graduation, compared to 2.4 years for the latter. Assuming that migrating physicians did not study or work in a third country before relocating to the United States, the number of years between graduation and migration represents a good proxy for years of medical service provided to their native countries. Using 1985 – 1994 graduation records from the University of Ghana, Dovlo and Nyonator (2001) estimated that on average 50% of the medical graduates from the University of Ghana emigrate within 4.5 years and 75% within 9.5 years. In a recent study of the financial consequences of African medical migration, Clemens (2011) surveyed a sample of 1,159 migrant physicians from Africa located in Canada and the United States, and estimated that, on average, African-trained physicians immigrated to North America 7.2 years after receiving their medical degrees. However, the author conflated arrival data of North African IMGs with those of SSA-IMGs, thus making it difficult to determine SSA-IMGs' mean year of service prior to emigration. Nevertheless, Clemens' study further established the need to carefully estimate the amount of time served by migrant physicians in their home countries before emigration.

My estimations reveal that the average SSA-IMG graduated from medical school at age 25 and immigrated to the United States at age 31.5, suggesting a potential length of service of 6.5 years. However, if the current emigration trends from West Africa and East Africa are sustained, it is expected that migrant physicians' mean year of graduation and mean year of emigration will soon coincide, portending an even grimmer health worker crisis in SSA in the near future.

September 11 2001 had Limited Effect on the US immigration of SSA-IMGs

Findings from this study provide some evidence of the resiliency of medical migration against restrictive US immigration policies in the aftermath of September 2011. Among SSA

countries with large stocks of migrant physicians in the United States, only the number of South African physician has decreased in the last decade, and there is no evidence that this decrease is associated with post-9/11/01 immigration restrictions. For several African countries such as Ghana, Ethiopia, Nigeria, and Sudan, physician emigration rate and migrant physician stocks in the United States have increased significantly in the last decade. Indeed, the steep drop of medical graduation observed among SSA natives attending medical schools in the United States during the first half of the 2000 – 2010 decade is offset by a swift increase in medical graduations during the second half of the decade, and both trends appear consistent with post 9/11 enrollment decreases and increases reported among foreign students attending US universities (see, e.g., Goodall, 2008; Jacobson, 2003; McCormack, 2005; McMurtrie, 2008).

Strengths, Limitations, and Implications for Policy and Future Research

Beyond the systematic count and comprehensive analysis of US-based émigré physicians formally incorporated in the US physician workforce, this study is as an improvement on previous studies (e.g., Clemens & Pettersson, 2008; Docquier & Bhargava, 2007; Hagopian et al., 2004). These previous studies reported the counts of SSA physicians practicing in the United States but did not filter possible "outliers," that is, potential retirees or inactive physicians. Another main contribution of this study is the identification of a critical time-period when migration is most likely among SSA-trained physicians. If the number of SSA-trained physicians migrating to the United States peaks between ages 28 – 31, that is, three to six years after medical graduation from SSA, and wanes at age 38, at which time over 90% have settled in the United States, then policies aimed at curbing the unremitting emigration of physicians from SSA should put a particular focus on physicians within the 24 – 38 age group. An action plan advocated in the health policy paper

informed by findings from this study (Article 3 in this report) is to set the minimum admission age to US residency programs at 35 years for SSA-trained physicians applying for residency in the United States.

While this study certainly expands the knowledge base of the migration and global health literature, it has some limitations. The over 10,000 SSA physicians identified in the 2011 AMAPM do not represent the entire universe of SSA physicians who migrated to the United States. It is reasonable to believe that a significant number of SSA physicians are present in the United States but are employed in other occupations aside from medicine because of not qualifying for US residency admission. Thus, to determine the true magnitude of the physician brain drain from SSA to the United States, future research must include those "wasted" brains (Mattoo et al., 2007) in the calculus of the physician brain drain.

Further, it is quite difficult to accurately estimate the *mean length of stay* in the United States of SSA physicians without having access to *exit data* on SSA physicians who return home. While the records from the AMAPM are extensive enough to capture nearly all African physicians who formally practice medicine in the United States, they do not inform us on the cross-section of foreign-born or foreign-trained doctors who permanently leave the United States after their residency training or some years of practice in the United States. Thus, further questions worthy of investigation are: Will the population or a cross-section of the nearly 11,000 SSA physicians appearing in the AMAPM ever return home permanently? If so, when will they return? In the possible case that the AMA does not delete records of inactive, retired, or deceased physicians appearing in the AMAPM data, how can we identify returning émigré physicians from the AMAPM data? Finally, how can we estimate SSA physician return migration rate based on exit data?

Some of the above question can be answered, at least partially, via triangulation of physician data from diverse sources. I attempted to do so by contacting the ECFMG and requesting the demographic information of all USMLE registrants or test takers who were either born or educated in a country located in SSA. The ECFMG database contains demographic data on all foreign medical graduates who have attempted to establish their readiness for US graduate medical education through completion of the required ECFMG certification (Norcini, Boulet, Dauphinee, Opalek, & Krantz, 2010). Accessing the ECFMG database and comparing data on SSA physicians with those from the 2011 AMA Physician Masterfile had the potential to yield a more comprehensive, yet more discriminate and more accurate analysis and estimation of the physician brain drain from SSA to the United States. However, my multiple requests to receive access to the ECFMG database were denied and ignored. Future investigations may need to triangulate among the AMA data, the ECFMG data, and the US Census data in order to yield the most possibly accurate figures on SSA physicians actually living and working in the United States.

Last, inasmuch as this study has carefully documented the latest migration trends to the United States of SSA-born and SSA-trained physicians, analysis of macro-data alone cannot sufficiently shed light on the dynamics of medical migration. For instance, this study does not tease out how migrant physicians entered in the United States, who assisted them in their ecological transition, and why they chose to come to the United States in the first place. Answering such questions adequately requires the support of a solid theoretical framework and in-depth analysis of micro-data collected on individual migrant physicians. I will explore the above questions in a forthcoming study (Article 2 in this report).

Conclusion

Hardly any persuasive argument against the unremitting and unsustainable transfer of physicians from resource-constrained African countries to the United States can be articulated without any detailed analysis of the magnitude of the problem. Likewise, any policy proposal to curb the pervasive trends in medical migration from SSA to the United States, however well-intended, may hardly mobilize sympathy from policymakers unless it is informed by credible data. This study has attempted to present the most updated trends and the most comprehensive counts of SSA migrant physicians currently appearing in the US physician workforce. Its findings highlight the insidious global inequity in healthcare providers in its magnitude and complexity. It is hoped that the study's findings will also spur an agenda for action among policymakers in the United States and the various West and East African countries disproportionally affected by the immigration of their physicians to the United States.

CHAPTER III

PAPER TWO

MEDICAL MIGRATION DYNAMICS FROM SUB-SAHARAN AFRICA TO THE UNITED STATES: ECOLOGICAL AND PSYCHOPOLITICAL VALIDITY

Abstract

The growing presence of Sub-Saharan African (SSA) medical doctors in the United States has been documented in many quantitative reports. Yet these figures provide little to aid in understanding the rationales and motives of migrating physicians and the contexts that enable or constrain their migratory behaviors. This paper draws on the eco-psychopolitical validity framework (EPVF) to explore the dynamics of medical migration from SSA to the United States. It postulates that three interrelated dynamics namely, oppression, empowerment, and wellness, structure most migratory behaviors. Physicians born and educated in West and East African countries and currently living and working in the United States were interviewed in depth. Their personal stories of migration and medical practice were conflated with accounts provided by a cross-section of non-migrant SSA native physicians practicing in the countries of origin. This qualitative analysis yielded a complex and nuanced tapestry of personal, relational, organizational, and structural factors associated with migration. It further underscores the urgency to address in the short term the dire conditions of service in government-run health facilities and to increase opportunities for medical specializations within the SSA region. From the standpoint of theory, the eco-psychopolitical validity paradigm is a highly valuable framework that holds promise for a potential grand theory of migration.

Medical Migration Dynamics from Sub-Saharan Africa to the United States: Ecological and Psychopolitical Validity

Introduction

Consider the Yao[19] twin brothers. They were fed at the same breast. They most likely dressed identically each morning on their way to school. They attended the same elementary and high schools and graduated together. They were among a select few from a highly competitive pool of 180 Ghanaian high school graduates to pursue an engineering education in the United Kingdom. In unison, they both turned down a very tempting offer and chose to attend medical school in Kumasi, Ghana. Today, the Yao brothers are twin physicians. Both are married, and both are the fathers of three children. What sets these brothers apart today is the geographic expanse between them. Fifteen years ago, Dr. Etse Yao decided to leave Ghana and reunite with his wife in Canada before moving to the United States to complete his medical residency and fellowship. He currently holds a faculty position at a major medical school and teaching hospital in the greater Washington, DC metropolitan area. In spite of encouragements from his twin brother to join him in America, Dr. Achu Yao decided to stay and practice medicine in his native Ghana. He cited his unwillingness to go through the hassles of residency preparedness and his uneasiness at the prospect of being a second-class citizen in a foreign country as the main reasons for his non-migration. Having spent two years in the UK shortly after his graduation from medical school in the early 1990's, Dr. Achu Yao seemed keenly aware of the potential for alienation when living far away from one's native country. "There is no place like home," he repeatedly said.

Separation in place ultimately entails a separation in time. The two brothers have not seen each other since Etse's emigration in 1997. The geographic distance between them reflects, more so

[19] The names of participants appearing in this report are all pseudonyms.

than any significant difference in opportunities to emigrate, a substantive difference in the personal motives for emigration. While Etse's separation from his identical brother arguably entails a unique form of disruption, his immigration to the United States is ununique and is increasingly in vogue among medical graduates from Ghana and other developing nations. Presently, there are over 10,000 SSA-born or trained physicians incorporated in the US physician workforce (Tankwanchi, 2012a). What motivated or compelled these physicians to move over 5,000 miles from where most were trained and were expected to provide healthcare? A short answer may be: wellbeing. A more nuanced and more accurate answer is: it depends.

To explore the above question more thoroughly, I conducted a series of in-depth interviews with a diverse mix of West African and East African physicians practicing in the United States and in a handful of African countries (Ethiopia, Ghana, and Nigeria). This paper begins with an overview of current research themes and main approaches to migration research. The overview is deliberately brief and serves mainly as an introduction to the theoretical framework which structures the present study: the eco-psychopolitical validity paradigm. After presenting the framework and describing the data collection method, I present my research findings in two separate sections followed by a discussion of the findings and their implications for policy, research, and theory.

Current Themes and Approaches to International Migration Research

Since the pioneering work of Ravenstein (1885) who described the first "laws of migration," more contemporary research has focused on the emergence of transnational migrant networks (see, e.g., Schiller, Basch, & Blanc-Szanton, 1992), the formation of new communities under conditions of globalization (see, e.g., Castles, 2002; Hollifield, 2004; Massey, 2004; Portes & De Wind, 2004), and the social meaning of multilocality (see, e.g., Agnew, 2005; Vertovec, 2004; Vertovec &

Cohen, 1999). In the economics literature, there is an extensive body of research on the relationship between rate of return to education and the brain drain (e.g., Borjas, 2000), the measurement of international skilled migration (e.g., Beine, Docquier, & Marfouk, 2007), remittances (see, e.g., Adams, 2003; Ozden & Schiff, 2006), and the contested paradigm shifts from brain drain to brain circulation and brain gain (e.g., Beine, Docquier, Rapoport, 2008; Kangasniemi, Winters, & Commanders, 2007; Rapoport, 2002; Saxenian, 2005; Schiff, 2006). A brain waste predicated on the low transferability of skills by highly educated migrants with limited English proficiency has also been suggested (e.g., Mattoo, Neagu, & Ozden, 2008).

Existing psychological studies of international migration focus primarily on immigrants' adaptation, resilience, and acculturation (e.g., Berry, Phinney, Sam, & Vedder, 2006). More idiographic analyses including a psychodynamic perspective on the impact of place dislocation on migrants' identity have been conducted (e.g., Akhtar, 1995; Akhtar, 2007; Seiden, 2011). The ubiquity of migration has also triggered research interests among religious scholars, with conceptual efforts to theorize migration from a theological standpoint well underway (e.g., Groody, 2009). Amidst the constellation of theories that have sought to explain the determinants of international migration of skilled migrants, three perspectives with divergent loci/levels are worth highlighting for the purpose of this study.

Micro/behavioral approach: The neoclassical economics model of migration. This model suggests that migration of skilled professionals results from wage differentials between equally qualified laborers in emigration and destination countries. It posits that brain drain is high in countries where rate of return to education is low compared to skills (see, e.g., Borjas, 2000). In other words, physicians emigrate from their native countries to maximize their earnings in a measure sufficient to offset the tangible costs and emotional toll associated with their migration.

This behavioral microeconomic model was first theorized by Todaro (1969) in his analysis of rural labor migration and urban unemployment in Kenya and other developing countries. The decision to migrate may emanate from individual migrants or may represent a family decision. Either way, migration is purely a rational, calculated, and strategic economic investment.

Macro/structural approach: The world systems theory. The atomistic focus of the neoclassical economic model is countered at the other extreme by world systems theory (e.g., Wallerstein, 1974; Portes & Walton, 1981; Sassen, 1988). This theory explains international migration in terms of disruptions and dislocations arising from the historical exploitation of poor peripheral economies by wealthier Western nation-states at the core. The Western-dominated world system took shape starting in the 16th century and has sustained itself by penetrating peripheral economies through the slave trade, colonialism, and currently through neo-colonial regimes and multinational corporations. World systems theorists read the worldwide adoption of English as the standard medical language and the standardization of medical curricula and medical practice requirements across countries as a reflection of international arrangements favoring the exploitation of foreign medical skills by the United States and the UK (Cheng & Yang, 1999).

Meso-relational approach: Migrant networks. Migrant networks represent a meso-level analysis between the two reductionist interpretations highlighted above. Tilly (1990) best summarizes the theory: "Individuals do not migrate, networks do" (p. 84). Migrant networks are sets of interpersonal relations that link émigrés with relatives, friends, fellow colleagues, and compatriots at home and in the host country (Arongo, 2004). Networks function as a form of social capital and a circular and cumulative causation of migration (Massey, 1993). Many people move because other people with whom they are connected emigrated before them and assisted them in the

process. The behavior is reciprocated from one cohort/wave to another. Once begun, these dynamics become self-sustaining (Boyd, 1989).

The aforementioned theories are helpful in providing conceptual maps that direct migration scholars towards important modes of inquiry and specific levels of analyses. However, they all have their limitations. The neoclassical economic model fails to account for the broader ecological context within which migration occurs (see, e.g., Arango, 2004; Kearney, 1995; Massey, 1990; Portes & Wanton, 1981). As Massey (1990) observed, structural changes within societies can mobilize labor beyond individual utility maximization rationales. The major demerit of the world systems framework is its inattention to the agency of migrants, who are viewed as mere passive pawns in the chess gambits of powerful capitalist actors/institutions (Arango, 2004). Migrant networks is an unsatisfactory analytical model because it conflates social networks with migrant networks (Goss & Lindquist, 1995) and fails to account for distant actors in the migration channel (Krissman, 2005). Goss and Lindquist (1995) have suggested that migrant institutions may be a more suitable mid-level concept for the analysis of international labor migration. In short, any valid theory of international migration needs to transcend the phony war between micro and macro, agency versus structure (Giddens, 1984), and treat them not in isolation or serially, but as part of an integrative framework. Toward this goal, I apply the eco-psychopolitical validity model to analyze the medical brain drain from Sub-Saharan Africa to the United States.

The Eco-Psychopolitical Validity Framework (EPVF)

The eco-psychopolitical validity framework (EPVF) is conceptualized as an integrative model involving three interrelated but distinctive processes: wellness, oppression, and liberation/empowerment (Christens & Perkins, 2008; Prilleltensky, 2008). At the core of the

concept of psychopolitical validity lies the critical issue of power. Whether conceived as embodied capability, a dynamic of social systems (Smail, 2002; Fryer, 2008), or the subjective expression of the societal distribution of the latter (Fryer, 2008), social power acts to realize or hinder personal, relational, or collective needs (Prilleltensky, 2008). Whereas power requires elements of agency/volition (ability, capability, skills, or talents) and structure/external factors (opportunity) to meet or thwart migrants' needs, wellness refers to a state where personal, relational, and collective needs of migrants are collectively met. As such, the state of wellness stands in opposition to the state of oppression.

Oppression is a state or social situation essentially characterized by asymmetric power relations. Accordingly, it may be defined by any relationship of control, deprivation, or discrimination between the oppressed and the oppressor. As a process, oppression entails ongoing attempts by one group or individual to dominate and control another group/individual with the purpose of securing political, economic, and/or social-psychological advantage (Mar'i, 1988). Broader considerations of ecological validity could expand the above definition of oppression to include nature and the physical environment, which can also be highly oppressive. For example, the drought-induced famine in the Horn of Africa and the relatively recent tsunamis in Japan are relevant examples of environmental oppression. In medical migration research, sources of oppression may involve all factors or processes that conspire against the wellbeing of health systems and migrating physicians.

Prilleltensky (2008) builds on Eric Fromm's dual conception of *freedom from* and *freedom to* in defining liberation. "Liberation is the process of overcoming internal and external sources of oppression (freedom from), [in the] pursuit of wellness (freedom to)" (p. 128). Examples of external sources of oppression from which migrants aspire to be free may include arbitrary regulation,

employment discrimination, underemployment, precarity, patronage, and corruption. External sources of oppression are closely linked to Amartya Sen's (1999) "unfreedoms." According to Sen, human development necessitates the removal of major sources of unfreedoms, namely, poverty, tyranny, poor economic opportunity, systematic social deprivation, neglect of public facilities, intolerance, and hyperactivity of repressive states. Further, freedom from internal sources of oppression requires acknowledging and overpowering various psychological conditions that hinder one's ambitions and subjective experience of wellbeing: anxiety, fear, self-distrust, internalized intimation of inferiority, or low personal expectation (Bartky, 1990; Fanon, 1963; Prilleltensky, 2008).

Moreover, liberation to pursue wellness (freedom to) involves meeting personal, relational, and collective needs. It entails securing instrumental freedoms namely political freedoms, social and economic opportunities, and guarantees for protection and transparency (Sen, 1999). In medical migration research, processes of liberation include enabling factors and resources that émigré physicians mobilize or exploit for the realization of life and career goals and for their wellbeing. In sum, the concept of psychopolitically validity suggests that migrants are essentially in pursuit of liberation and wellness.

Ecological validity stresses the broader context in which a psychopolitical act is performed. The ecological approach transcends the evaluative space of individual agency and invites a critical examination of all significant environmental influences (e.g., physical, economic, political, institutional, and sociocultural). In practice, this requires closely examining the gamut of interconnections and transactions between close and distant actors and environments. The roots of the ecological approach can be traced to the early works of Kurt Lewin (1935), Henry Murray and colleagues (1938), and Baker and Wright (1955) on person-environment interactions. However, it is

Uri Bronfenbrenner (1979) who popularized the ecological framework through his transactional description of the person and his/her environments. Contemporary representations of the framework are more or less adaptations of the Bronfenbrenner's model. The three-dimensional structure of the EPVF is adapted in Figure 1 and suggests three levels of analysis (micro/individual, meso/organizational, and macro/structural) within any one of the four ecological domains identified in the depth dimension of the figure (political, economic, social, and physical capitals).

Variables that operate primarily at the individual or personal level are explored at the micro level of the EPVF. Micro-level factors associated with medical migration from SSA may include educational aspirations, professional satisfaction, personal ambitions, and financial self-interest or economic motivation, which is the basic building block of the neoclassical economics model of migration. Meanwhile, the meso level of the EPVF explores both informal relational processes (e.g., family support and friendship) and formal organizations (e.g., medical school, residency program, and institutional affiliation/employer) that influence emigration decision and immigration outcomes. Migrant networks theory is integral to the meso level of the EPVF and emphasizes the role of social networks in the onset and perpetuation of migration. Last, the macro level of the EPVF incorporates broader structural factors identified in part by world systems theory and ranging from historical determinants of medical migration (e.g., colonial ties) to current national regulations and transnational dynamics (e.g., US immigration policy, and globalization).

Unlike some of the previous ecological models, the proposed framework contains a temporal dimension, which incorporates processes of empowerment, namely; oppression, liberation, and wellness. The order of these three stages is somewhat arbitrary given that the person or the community may need a modicum of wellness to undertake the challenging task of liberation, which over time, should lead to an increased amount of wellness (Christens & Perkins, 2008). Hence, the

temporal dimension supporting the stages of empowerment captures the idea of change over time (transformation), and does not suggest a linear reading of the process. Alternatively, the compartmentalization of domains within the three-dimensional framework is merely for analytical purpose. Realistically, it is difficult to isolate or dissociate the political from the economic, or from the social environments. Also, although the various domains appear independent from each other, they should be viewed as interconnected through transactional ties. The location of the political domain in the front view of the three-dimensional model, while reflecting a focus on the political context and political dynamics at play in the process of migration, does not diminish the importance of socioeconomic factors in the onset of migration.

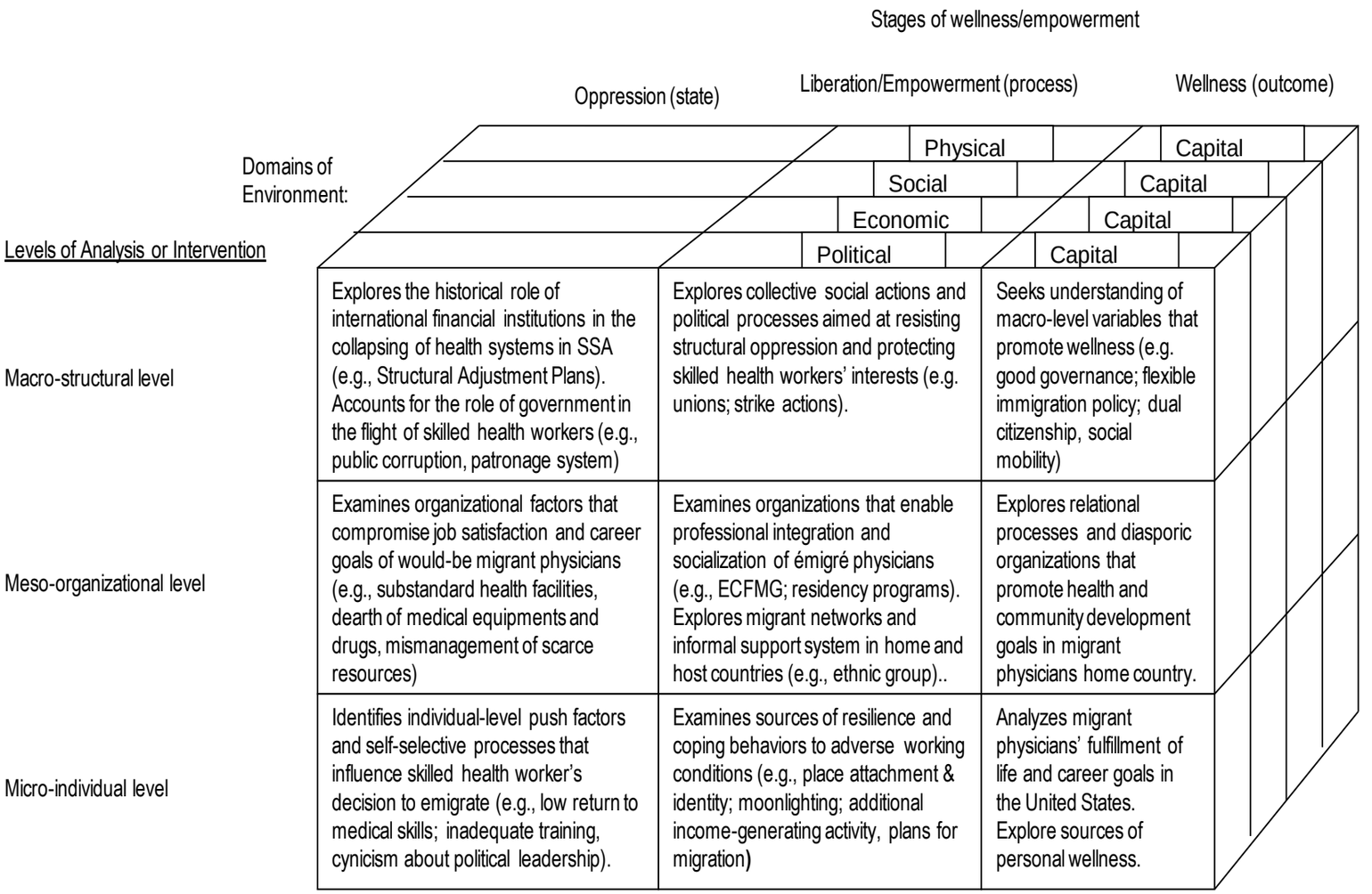
Statement of Purpose

The purpose of this study is twofold: 1) To adapt the EPVF to the study of migration; and 2) to offer a deeper understanding of the dynamics of the physician brain drain from SSA to the United States. The present research is organized around three main questions/themes:

1. What needs/experiences do SSA migrant physicians report as critical in their decision to migrate? And, what factors influence these decisionmaking processes at the meso and macro levels?
2. What processes and resources do SSA migrant physicians use in implementing the decision to emigrate? And, once they have settled in the United States, what are their long-term plans vis-à-vis supporting, returning to, or ignoring their native countries? How successful are they in carrying out these plans?
3. How satisfied are SSA migrant physicians with their life and career goals in America; and what factors influence these levels of satisfaction?

Figure 1

Three-Dimensional Representation of the Eco-Psychopolitical Validity Framework (EPVF)



Adapted from Christen and Perkins (2008)

Methods

This section provides an overview of methodological procedures of the study. It contains four subsections which describe respectively recruitment procedures, data gathering and analysis, reflexivity, and the limitations of the study.

Recruitment

The Washington, DC area served as the primary sample frame because the region has a significant concentration of African immigrants, and is the site of Howard University Hospital, a major training hub for African medical graduates seeking residency training in the United States (see, e.g., Article 1 in this report). After securing approval of the study protocol from the Vanderbilt University Institutional Review Board in late October 2010, an initial but largely unsuccessful round of recruitment was attempted via phone calls targeting a purposive sample of 45 early-career physicians and residents identified through the 2011 American Medical Association (AMA) Physician Masterfile who recently graduated (2002 or after) from medical schools located in West Africa and East Africa. In late November 2010, I attempted a second round of random recruitment via email communication to two U.S. based medical associations: the Association of Nigerian Physicians in the Americas (ANPA, www.anpa.org) and the Ghana Physicians and Surgeons Foundation (GPSF, www.ghanaphysicians.org). I was able to recruit only one physician participant directly through the above organizations. However, his participation and recommendation of potential volunteers snowballed into several of the target participants that I was initially unable to recruit by phone.

I interviewed a total of 30 US-based migrant physicians, including 19 men and 11 women. All but three graduated from medical schools located in SSA countries. Twenty-three respondents were recruited in the Greater Washington, DC and Baltimore metropolitan areas and seven more were interviewed in Middle Tennessee and Ingham County, Michigan. The national origins represented in the sample included Cameroon (*n*=7 participants), Eritrea (*n*=1), Ethiopia (*n*=5),

Ghana (*n*=7), Liberia (*n*=1), Nigeria (*n*=8), and Sudan (*n*=1). With respectively the first, third, and fourth largest emigration stocks of African-trained physicians in the United States, Nigeria, Ghana, and Ethiopia can be considered "traditional" countries of medical migration. Meanwhile, Cameroon and Sudan can be labeled "emerging" countries of medical migration as physicians from both countries are among the fastest growing groups of new immigrant physicians entering to the United States in the last decade. With a physician emigration rate exceeding 70%, Liberia has the highest proportion of African migrant physicians in the United States (see, e.g., Article 1 in this series).

The sample was further expanded to include a small sample of 10 non-migrant physicians from Ethiopia (*n*=2), Ghana (*n*=3), and Nigeria (*n*=5). The non-migrant group contained eight male and two female physicians. All were recruited with the assistance of US-based participants, and all were former classmates or research partners of their US-based migrant counterparts. Non-migrants were included in order to provide some balance and nuance to the accounts of migrant physicians. Ultimately, the final sample was a composite of snowball and purposive sampling procedures.

Data Collection and Analysis

Data were collected via a demographic data sheet and a semi-structure interview guide (see Appendix B2 – B4). A qualitative interview method was used because of its potential to generate thick description of events about which physician respondents have "substantial experience and considerable insight" (Charmaz, 2006, p. 29), and because of its capacity to uncover potentially important topics not anticipated by the researcher (Fontana & Frey, 2005). Following informed consent, all interviews were digitally recorded and transcribed. Interviews with US-based respondents were conducted face-to-face and averaged 76 minutes per session (range: 36 – 152 min). While interview sessions with SSA-based participants were fewer and were completed over the phone (*n*=6) and via Skype (*n*=1), the average length of the sessions (75.6 minutes, range: 40–116 min) was close to the face-to-face interviews. Three SSA-based participants were unable to participate over the phone and provided their comments via email communication.

I started the data analysis using some procedures of grounded theory practice—namely simultaneous data collection and analysis, coding, memo writing—to identify emergent themes and contend with their meaning, and then I applied the eco-psychopolitical validity structure to organize identified themes and develop conceptual categories. Applying the eco-psychopolitical validity framework meant that the main organizing codes for this study—oppression, liberation, and wellness—were created a priori. However, their loaded and broad content necessitated the creation of more discreet and detailed subcode themes. Subcode themes were generated through initial line-by-line coding followed by more focused coding (Charmaz, 2006; Glazer, 1978). Given the large volume of interview transcripts, I used a qualitative analysis software program, ATLAS.ti 6.2, to complete the coding and memo-writing processes.

To establish reliability, a sample of interview transcripts was coded individually by me and by a fellow colleague in the Sociology Department who is familiar with the subject matter, trained in qualitative methods, and has volunteered as a copy-editor for earlier versions of this paper. Some minor discrepancies in coding categories were identified, discussed, and a consensus was reached as to the most appropriate way to handle them. After coding all data, emergent categories were all integrated in the structure of the eco-psychopolitical validity framework, and the comprehensive table was sent to a handful of participants for feedback prior to finalizing the data analysis. No significant changes occur as the result of these reviews.

Reflexivity

I was drawn to this particular research by a genuine and personal interest in issues related to global health equity and by the fact that I am also a skilled migrant from Sub-Saharan Africa. While I am not a physician, I could qualify as a "health worker" based on the broad definition of WHO (2006), which defines health workers as "all people engaged in actions whose primary intent is to enhance health [and wellness]" (p. 1). Hence, to some extent, part of my own story is told through the voices of émigré physicians.

Strengths and Limitations

Some of the main strengths of this study are the application of the eco-psychopolitical validity framework to the field of migration, the multinational origin of participants, and the inclusion of non-migrant physicians' perspectives on medical migration. With two-thirds of my informants recruited in the United States and only one-third in Africa, the two groups were unbalanced in terms of number, national origin, and to a lesser extent, gender representation of participants. However, this was due primarily to the time constraints placed on physicians, with many of those approached declining to participate mainly because they were unable to avail themselves for an hour-long face-to-face interview. Also, as indicated earlier, the snowball, purposive (in the U.S.), and opportunity sampling (in SSA) recruitment techniques may have produced some bias, especially in the case of non-migrant Nigerian participants where four of five participants were full-time and part-time medical faculty and were located in Northern Nigeria, a region with a limited culture of medical migration relative to Southern Nigeria (see, e.g., Hagopian et al., 2005). Aside from the three of 10 non-migrant respondents who submitted their comments by email in lieu of live in-depth interviews, the subsamples of Ethiopian local doctors (n=2) and Ghanaian (n=3) were very small. Last, data are limited to the accounts of physicians. I did not include the views of other stakeholders involved in the medical migration process such as health policymakers.

Results

Sample Descriptives

Demographic data reported by migrant physicians indicates that the average migrant participant was 26 year-old at the time of graduation from medical school in SSA (SD=2.1, range: 22 – 31), just over 30 years at the time of immigration to the United States (SD=4.1, range: 23 – 37), and a little over 42.5 years at the time of this study (SD= 9.6, range: 29 – 66). Before migrating,

they practiced for three and a half years in their home countries and spent on average two years in the United States before starting residency. Émigrés can be divided into three main cohorts based on the period of their emigration.

The first cohort of migrant physicians comprises four early migrants and the most senior physicians. They graduated medical school in the 1970's and early 1980's and moved to the United States by the mid-1980's. The second cohort of migrant physicians includes 14 medical graduates from the late 1980's to late 1990's. They moved to the United States between 1990 and 2000. The last migrant cohort includes 12 physicians who completed medical school during the new millennium with most moving to the United States after September 2011. The most junior physician and most recent immigrant, a 29 year-old Sudanese male, had been in the United States for less than a year at the time of the interview. The most senior participant, a 66 year-old Liberian native was in the first year of her retirement from medical practice when she was interviewed.

With respect to the non-migrant physicians, the youngest and most junior non-migrant physician was a 30 year-old Ethiopian female and the oldest and most senior a 45 year-old Nigerian male. Detailed information on both groups is found in Table 1, Table 2, and Table 3, while Figure 2 presents the data collection sites and the primary sample frame of US-based participants. Of note, the stars in Figure 2 do not necessarily represent individual participants, but rather the specific site where participants were interviewed. For example, resident physicians recruited at Howard University Hospital are represented by a single star just as the lone physician interviewed in a different site.

Figure 2

Primary Sample Frame for US-based Physician Participants (Yellow Stars are Recruitment Sites)

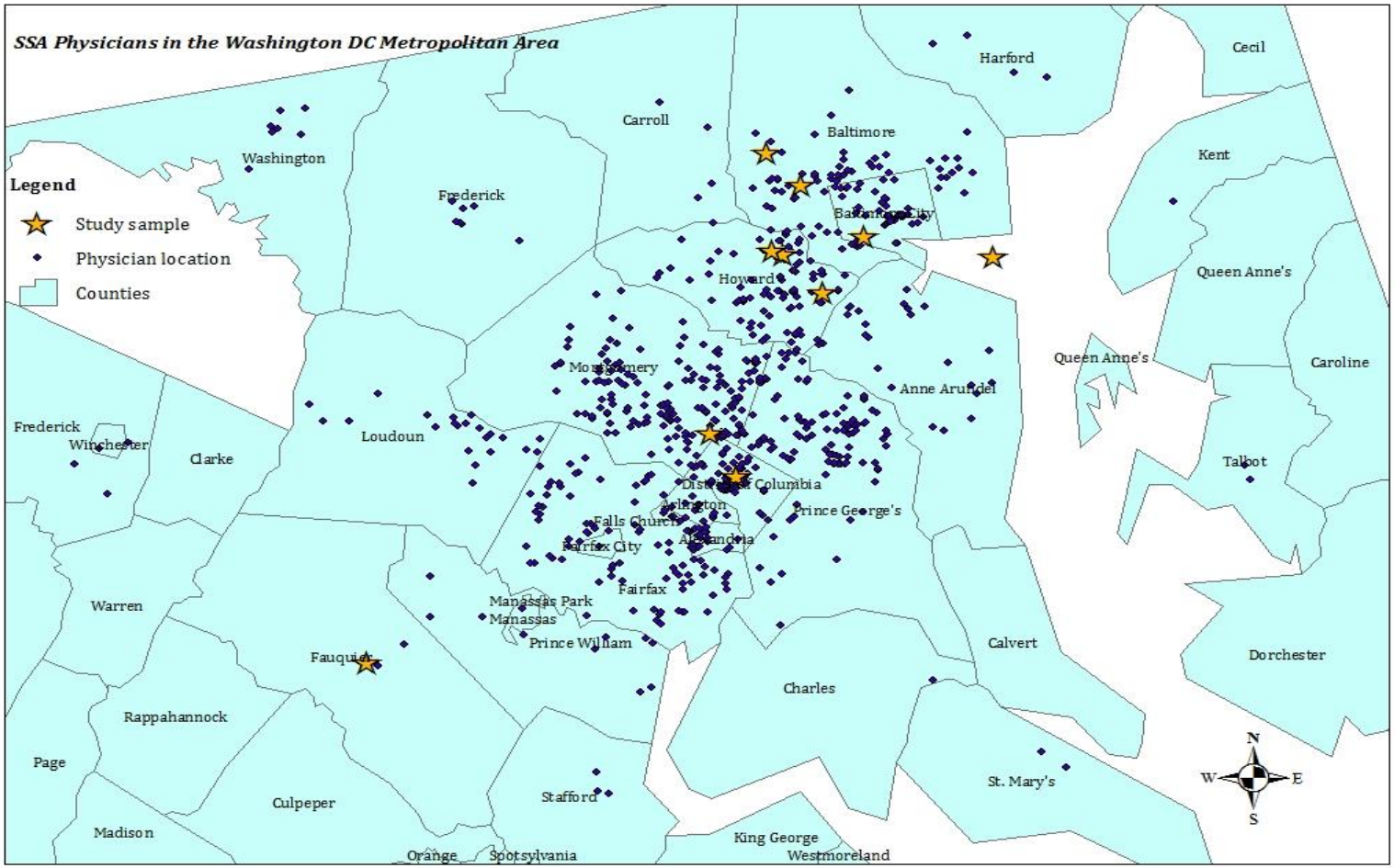


Table 1

Demographic Characteristics of Émigré Physicians

Mean age	
Women (*n* = 11)	42.4 (10)
Men (*n* = 19)	42.7 (9.7)
Total (*N* = 30)	42.6 (9.6)
Country of origin (% trained in-country)	
Nigeria	8 (112.5%)
Ghana	7 (100%)
Ethiopia	5 (80%)
Cameroon	7 (57%)
Sudan	1 (100%)
Liberia	1 (0%)
Eritrea	1 (0%)
Current marital status	
Married	26 (87%)
Single	2 (6.5%)
Widowed	2 (6.5%)
Marital status at emigration	
Married	12 (40%)
Fiancé(e)	3 (10%)
Single	15 (50%)
National origin of émigrés' spouses	
Same African nation	21 (80.7%)
US-born	2 (7.6%)
Other foreign-born	2 (7.6%)
Not reported	1 (3.8%)
Children	
Mean number	2.1 (0 - 4)
Mean age (in years)	9.1 (0 - 42)
Graduation	
Graduation year	1994.3 (1974 - 2008)
Graduation age	26.1 (22 - 31)
Years of practice in home country before emigration	
Men	3.3 (2.4)
Women	3.6 (3.2)
Sample	3.4 (2.6)
Range	0 - 10
Mean age at emigration	
Men	30.3 (4.2)
Women	31.5 (3.6)
Total émigré	30.5 (4.1)
Mean year of entry in the U.S.	
Male	1998 (11.1)
Female	1999.4 (8.3)
Sample	1998.5 (10.1)
Years spent in the U.S. before residency	1.9 (0-8)
Visa at entry in the U.S.	
Immigrant visa	5 (17.2%)
Non immigrant visa	16 (55.2%)
Dual intent	5 (17.2%)
Not reported	3 (10.3%)
Current immigration status	
Naturalized US citizen	12 (41.4%)
Permanent resident	10 (34.4%)
Other	7 (24.1%)

Table 2

Selected Professional Information of Émigré Physicians

Medical license status	
Resident	8 (27.5%)
Licensed or board certified	17 (58.6%)
Other (not yet in residency)	4 (13.8%)
Specialty (residents/fellows & licensed physicians)	
Internal medicine	14 (48.3%)
Other primary care specialty	4 (13.8%)
Non primary care specialty	7 (24.1%)
Occupation (resident & licensed émigrés)	
Academic	5
Self-employed/owner	5
Attending in non-teaching setting	5
Fellow	2
Resident physician	8
Other occupation (not yet in residency)	
Public health analyst	1
Telemetry technician	1
Nurse assistant	1
Residential staff	1
Annual Income ($)	
≥200,000	6
150,000-199,000	3
120,000-149,000	4
75,000-100,000	2
40,000-50,000	11
≤30,000	1
≤15,000	1
Not disclosed	2

Table 3

Demographic Characteristics of SSA-Based Physicians

Mean age	
Women (*n* = 2)	32 (30 - 34)
Men (*n* = 8)	42.6 (35 - 48)
Total (*N* = 10)	40.5 (5.9)
Country of origin (% trained locally)	
Nigeria	5 (100%)
Ghana	3 (100%)
Ethiopia	2 (100%)
Current marital status	
Married	9
Single	1
Children	
Mean number	2.5 (0 - 4)
Mean age (in years)	5.9 (0 - 15)
Graduation	
Mean graduation year	1996.2 (1989 - 2004)
Mean graduation age	25.6 (22 - 30)
Mean annual income ($)	
Nigeria	55,191 (25,200 - 75,000)
Ghana	16,937 (11,209 - 20,922)
Ethiopia	11,400 (4,800 - 18,000)
Primary occupation	
Faculty & consultant at teaching hospital	3
Public health consultant	2
Attending physician	3
General practitioner	1
Chief of party (Administrator)	1
Length of current employment	
Mean number of years	11 (1992 - 2011)
Average number of hours/week	44.4 (35 - 68)
Primary specialty	
Internal/Family medicine	3
Public/community health	3
Internal/Cardiology	1
OBGYN	1
No residency	2
Public sector employee	
Nigeria	4 (80%)
Ghana	3 (100%)
Ethiopia	0
Visited or studied in potential immigration country	
UK	4
United States	7
Never travelled abroad	1

The Big Picture

Consistent with the ecological model, the findings presented in Table 4 are organized by level of analysis and domain of capital. Consistent with the psychopolitical validity paradigm, the metaphors of oppression, liberation, and wellness serve as the main organizing code themes. The subcode themes emerging from the analysis of interview transcripts represent variations of the three organizing metaphors. The content, frequency, and distribution of subcode themes across and within the various cells of Table 4 provide a gestalt of the main dynamics at play in the migration of SSA medical graduates to the United States. Close examination of Table 4 shows that processes associated with migration and long-term stay of African migrant physicians in the United States stem largely from macro-structural and meso-organizational dynamics. Determinants of non-migrant physicians' decisions to stay in their native countries appear to be mainly socio-cultural and idiosyncratic/personal.

The main sources of oppression at the onset of medical migration are primarily macro-political (e.g., public mismanagement) and macro-economic (e.g., resource-constraint) factors whose effects spill over to the physical and social domains and trickle down to lower levels of intervention. While macro-political factors such as globalization and US immigration policies act as liberatory processes for migrating doctors (and their support networks), they also act as powerful sources of structural oppression due to their detrimental effects on the physician workforce in the countries of emigration. Wellness outcomes are prevalent mainly at the micro/personal level and are determined primarily by economic and social "capitals." Last, while medical migration is influenced by cultural, economic, physical, and political contexts, attending to meso-organizational factors like medical facilities, diagnostic and therapeutic equipments, and residency programs in-country, may help mitigate the need for emigration.

Table 4
Code Themes Emerging from Analysis of Interview Transcripts

Variations or subcode themes (sorted by level of analysis, domain of capital, and frequency of themes): / Main code themes or stages of liberation/empowerment:	Sources of oppression	Processes of liberation	Wellnes outcomes
Macrolevel/Community/National/International/Global			
Economic domain			
National debt burden and constraint of financial resources ("heavily indebted poor countries") {18 comments}	X		
Stunted and unequal economic opportunity structure {14}	X		
Economic crisis, structural adjustment programs, international financial institutions, and the "global market" {10}	X		
The "American mirage" (tax; mortgage; overall cost of living in the United States) {3}	X		
Political domain			
Mismanagement and misallocation of resources (bad government; corruption; rural-urban disparity; ineffective exploitation of diasporas) {75}	X		
Insecurity {21}	X		
Power structure, political repression, abuse of human rights, and civil war {15}	X		
US immigration system (Diversity Lottery program; J-1 visa waiver scheme; US naturalization) {33}	X	X	
Globalization ("global village"; freedom of movement) {6}	X	X	
Assets of health systems (growing number of medical schools; existing public health facilities; expanding private health sector; emerging national health insurance) {27}		X	
Public service requirement before and after graduation from medical school {9}		X	
Physician labor unions (strike; industrial action; collective bargaining efforts) {7}		X	
Physical environmental domain			
Penury of basic social infrastructures (running water; electric power supply; roads; transportation; good schools) {16}	X		
Geographic threat of HIV infection (travel to neighboring countries) {4}	X		
Drought-induced water and food scarcity {2}	X		
Environmental degradation (from petroleum waste dumping and deforestation) {2}	X		
Social & cultural domains			
Social role, social status, and oppressive social expectations for physicians' behaviors {19}	X		
Stunted educational opportunity structure {16}	X		
Disease burden {12}	X		
Cultural & behavioral threats to health (illiteracy; HIV stigma; religious influences & taboos; charlatanry; coming to hospital as a last resort; deficit of prenatal care & family planning; unsafe sexual practices; limited public health education; population explosion) {11}	X		
Westernization (Western lifestyle and emerging chronic diseases; elite travel to the West to seek treatment) {5}	X		
Medical migration culture {7}	X	X	
Social mobility in the United States ("the sky is the limit") {7}		X	X
Mesolevel/Organizational/Relational			
Economic domain (conflated with physical capital)			
Conditions of service in public medical settings (penury of medical equipments; lab tests, drugs, technology; substandard and unsanitary facilities; indequate emergency medical services) {80}	X		
Political domain			
Extortion, abuse of power, and other ethical malpractices in medical settings {3}	X		
Mismanagement of public health facilities (maintenance issues, underutilization, and waste of existing resources) {7}	X		
Organizational and leadership challenges within diasporic, professional, and ethnic associations in U.S. {3}	X		
Politics of medical specialization (arbitrary and protracted delay of specialization program completion) {8}	X		
Physical environmental domain (conflated with economic capital)			
Conditions of service in public medical settings (penury of medical equipments, lab tests, drugs, technology; substandard and unsanitary facilities; indequate emergency medical services) {80}	X		
Social & cultural domains			
Low number and high emigration rate of physicians; inadequate qualification of nurses and auxillary health workers {10}	X		
Dearth of evidence-based intervention and best practice; informal culture of improvization in the medical setting {4}	X		
Hazards of private clinics (questionable credentials of physicians; unregulated; excessive charges) {4}	X		
Migration networks, pathways, and patterns {14}		X	
Howard University Hospital as IMG-friendly program {14}		X	X
Microlevel/Individual/Personal/Psychological			
Economic domain			
Income deprivation as prime motive/reason for actual emigration or unsuccessful attempt to emigrate {14}	X		
Competitive salary, additional income-generating activity, job security, freedom from student loans, and material comfort {43}		X	X
Remittances and instrumental support to family {25}		X	X
Political domain			
Cynicism about political leadership {11}	X		
Medical malpractice and fear of litigation in the U.S. {6}	X		
Sense of powerlessness (inability to meaningfully assist patients; unremitting exposures to "totally preventable" deaths) {3}	X		
Personal frustrations from struggles with medical insurance companies and medicaid bureaucracy {1}	X		
Identity and assimilation conflicts in the U.S. {30}		X	
Physical environmental domain			
Housing, land, and personal transportation needs in SSA {5}	X		
Attachment to home, place identity, as non-economic factors for non-migration {19}		X	X
Material assets (owns properties in country of origin) {7}			X
Social & cultural domains			
Social stress and feeling of loneliness in the U.S. {43}	X		
Experiences of prejudice and discrimination in the U.S. {16}	X		
Lack of appreciation from American patients {7}	X		
Fear of aging and retirement in the U.S. ("your children will drop you in a nursing home") {4}	X		
Separation anxiety, disruption of place attachment/identity, the longing for home, and return migration plans {79}	X	X	
Professional and personal development (achievement needs: advanced training; medical specialization; international exposure) {60}		X	
Motivation and inspiration for medical career {38}		X	
Sense of community, social obligation, and personal involvement in health and community development projects in home countries {59}		X	X
Education, health, and welfare of own children as reasons for stay in the U.S. {9}		X	X
Family reunion and love/belonginess needs as non-economic factors for moving to the U.S. {6}		X	X
Professional fullfilment and overall satisfaction with life {30}			X

Detailed Accounts

In the following section, data analyses from interviews with US-based migrant physicians and SSA-based non-migrant physicians are presented separately. A selected number of factors that cut across various domains of capital and multiple levels of analysis are examined. The selected items represent, by and large, the main emergent themes of the interviews.

US-Based Migrant Physicians

Sources of oppression. Analysis of oppression addresses the following research question: What needs/experiences do SSA migrant physicians report as critical in their decision to migrate? And, what factors influence these decisionmaking processes at the meso and macro levels?

Among the constellation of factors associated with the migration of physicians, five sources of structural oppression stood out: Conditions of service (meso-physical); mismanagement and misallocation of scarce resources (macro-political); basic social infrastructures (macro-physical); income deprivation (micro-economic); and oppressive social expectations (macro-sociocultural).

Conditions of service. Conditions of service emerged as a transcending theme from the data. Conditions of service refer to meso/organizational level factors, mainly in the work setting, which impact the performance, quality and intensity of care provided by physicians. Specifically, they include overall working conditions and the tools available to health practitioners in medical settings. In total, 80 comments were coded under this category. Although I categorized conditions of service under the physical environment, constraint of finances within any health system is an important determinant of physical resources. Irrespective of country of origin, participants described working conditions in government-run health facilities as particularly taxing. The adverse working conditions are due to lack of material resources, including equipment, lab tests, drugs, and medical

supplies, and on-site specialists. Moreover, the skills of nurses and other paramedical staff or auxiliary health workers were deemed very inadequate.

The lack of essential resources in healthcare settings is compounded by the constraint of financial resources of many patients. Irrespective of their ability to pay, patients are expected to defray the cost of services they receive. "The system, supposedly, is a free system, but it doesn't provide anything for you. I have seen our patients buying gloves for surgeries," recounted a 5th year neurology fellow from Ethiopia (35 years; class 2002; immigrated 2006). "I can't be in a country where I know that there is a problem with your brain, and I prescribe a CT scan, and it's not possible how that can be done," noted a 33 year-old recent Nigerian migrant not yet admitted to residency. A similar frustration was conveyed by Ghanaian native Dr. Akua[20] (35; 2003; 2004; critical care), the most outspoken female participant of the sample. She pointed out:

> The biggest facility where I trained, Korle-Bu Teaching Hospital, which is like the national hospital in Ghana; it is a dirty hospital. So many of its facilities are broken down; nothing is being done to fix it. The system is such that physicians are handicapped in carrying out their duties; it is like working in a jungle. You may have all the knowledge but you don't have the facilities to treat patients. And even when you do have the facilities, patients can't afford it. So you make a fanciful diagnosis and sit on it. The patient dies. What's the benefit of it? Nothing! What's the satisfaction? Nothing!

However, Dr. Akwesi (52; 1988; 1993), a more senior Ghanaian internist who has been residing in the United States for almost two decades expressed some skepticism about poor conditions of service in emigration countries being the main drivers of physician migration:

[20] Pseudonyms of migrant physicians are followed respectively by their ages and years of graduation and immigration. Pseudonyms of non-migrant physicians are followed by their ages and graduation years.

> When people talk about frustration over lack of resources to work within the hospital, the question is: What kind of resources are you looking for when working in that environment? You do the best with what you have. Except that, your colleague who you know, was not smart enough to be a doctor, but went to wherever, and became a secretary to a bank or whatever; that colleague earns more than five times what you earn!

If the poor conditions of service in the countries of origin are not the most important drivers of medical migration, they at the very least represent a major variable that needs to be incorporated in any credible intervention designed to address the healthcare crisis in Africa. Further, the grim conditions of service reported by participants were exacerbated by managerial challenges prevailing in the work setting. As suggested by the sobering comment of Ghanaian-born Dr. Akrofi (41; 1997; 1999), lack of resources in medical settings is compounded by the underutilization, poor maintenance, and waste of existing resources: "Donations are given for equipments and they just sit around for years, not being used, because of politics."

Mismanagement of resources. A total of 75 comments were reported under this category, making it the second most recurrent theme under the rubric of oppression. The subcode theme, mismanagement, captures negative outcomes attributed to bad government, political leadership, and bureaucracy. Mismanagement entails public corruption, misallocations of scarce resources, misidentification of development priorities, and underutilization and waste of existing resources. While mismanagement is coded under the political domain, accountable and efficient management of public resources is also informed and enhanced by mastery of the economy. The imperative to manage scarce public resources more efficiently, accountably, and ethically was a universal theme emerging from the interviews. In a context of scarcity and crisis, the mismanagement of public resources seriously affects the identification of development priorities. Cameroonian native and

pediatrician, Dr. Nana (43; 1994; 1994), observed: “Thirty years ago, we had the means, but there was mismanagement and mispriority. Today, there is mismanagement, mispriority, and we don’t have the means.” Beyond the mismanagement of development priorities, the unaccountable management of scarce public resources fosters a generalized climate of public corruption. Commenting on the pervasiveness of corruption in the Nigerian health system, Nigerian native Dr. Sannu (41; 1993; 2001) observed:

> It is such an intricate web. If a contract is being given, the person in the ministry gets a cut, the auditor gets a cut. The contractor inflates the rates. The person who is in-charge of accounts at the ministry and the hospital itself gets a cut. The storekeeper gets a cut.

Moreover, mismanagement fosters the misallocation of scarce resources between sectors in the economy and geographic localities. A case in point is the disparity in resources and health infrastructure between rural and urban communities. Dr. Stevens (66; 1974; 1982), a retired pediatrician from Liberia commented on the difficulties of retaining doctors in rural Liberia: “If you are a young doctor with a family, there is not a good school to send your children there. There are no stores to buy the things that you need. Everything is concentrated in the capital.” As suggested by Dr. Stevens, the dearth of schools, stores, and social amenities in rural Liberia is partly explained by the violent and prolonged civil war that occurred in the 1980’s. She pointed out that, “right now, most of those hospitals are destroyed because of the war. Few are being built back up.”

Despite its specific historical circumstances, the Liberian case is not unique. Ethiopian native and first-year internal medicine (IM) resident, Dr. Tesfaye (35; 2000; 2009), recounted the ordeal of a pregnant woman who was brought to the health clinic after a two-day walk from an Ethiopian village with no health clinic:

> I was serving in the obstetrics ward, and a pregnant lady came from the countryside. She had a ruptured uterus. …It took them two days to get to the hospital … because there is no public transportation, there is no road. They had to carry her on a locally made stretcher.

Unfortunately, the above patient did not survive. Dr. Tesfaye (35) explained that they could not operate on her because there was a weeklong power outage in the hospital. A Cameroonian-born female physician who completed her medical school in neighboring Nigeria wondered: "Why are all our dignitaries in government going abroad to get their care done as opposed to beefing up the health system?" Such behavior by government officials can be construed as an implicit endorsement of medical migration and an acknowledgement of the substandard healthcare provided to their own citizens.

Another feature of mismanagement involves the inability of the political leadership to positively leverage resources embodied in the diaspora. Dr. Akrofi (41) pointed out that the Ghanaian government does not do enough to encourage Ghanaian migrant physicians like him to contribute meaningfully to the enhancement of Ghana's health system:

> Inasmuch as a lot of physicians, including myself would like to give back to the country in one way or another, there is no … cooperation from the government. …For instance, there is a lot of medical information that I would like to stock in the medical library. I think the Ghana government should be able to organize a container so that we just pile it and then send it. What happens is that when people send it, they actually have to pay duties, which is ridiculous.

With regard to constraint of resources, it is noteworthy that nearly all Nigerian migrants refuted the thesis that Nigeria has a scarcity of resources. They insisted that Nigeria is beleaguered

by an endemic problem of bad government. A profound cynicism about the political leadership is apparent in the statement of Dr. Oweri (44; 1990; 1991).

> My idea about Africa is that misgovernance is the biggest problem. Like, in the case of Nigeria, I know people who are in positions of responsibility. … I know how they misuse resources. So, you have one person and he will take a billion dollars, 500 million dollars. This happens in Nigeria. Okay? And there are many of them! You can go and find out how much a Nigerian congressman makes. It is much more than what a US congressman makes in a year. You can't justify it! So for me, even though I am a physician, the way I look at it is that the biggest impact is going to come if you can reduce corruption in Nigeria by 50%.

Basic social infrastructures. Deficit of infrastructures was repeatedly mentioned by migrant physicians as a major challenge to health systems and public health. The most recurrent problems include "pipe-born water," "power supply," "dilapidated roads," "no public transportation," and "schools with crumbling walls." Cameroonian native, Dr. Nana (43), explained that he goes on medical mission to his native Cameroon at least twice a year and has firsthand experience of the frequency of power outages and water shortages:

> If you go to Yaoundé [Cameroon's capital], half of the time there is no light; half of the time there is no water. It doesn't matter if you are a private or a general of the army when there is no light in the hospital; your probability of dying is very high.

Income deprivation. At the individual level, the most important economic factor identified by the migrant physicians was income. Thirteen physicians cited income and material deprivation as their paramount motive for migrating. "When I started having a family, it was difficult to pay for their school fees. … That is when I decided to move outside" (Dr. Kwadjo, 49; 1989; 1997). The

above informant suggested that, in order to make ends meet, he was confronted with two unpleasant choices: to exact money from his patients or to seek greener pastures outside his native Ghana. Several migrant physicians confided that their frustrations with regard to personal finances were exacerbated by two factors. Not only were they not paid adequately, they were not paid on time. Dr. Ngozi (41; 1995; 2006) observed: "Before I came out here, I wasn't paid for almost six months. So, right now as I'm talking to you, medical doctors in Nigeria are on strike because they haven't been paid." Moreover, many physicians echoed the sentiment conveyed earlier by Dr. Akwesi (52) that doctors are woefully underpaid when compared to fellow compatriots deemed "not smart enough" or less educated, but working in other sectors of the economy (e.g., banking, law, and management).

Experiences of income deprivation appeared to vary substantially by graduation and migration cohorts. "When I left medical school, my salary was about 40 dollars. This is 1988. I couldn't even afford a car if somebody gave it to me for free, because I wouldn't have the money to buy fuel" (Dr. Akwesi, 52). The financial ordeal reported by the above informant is typical of physicians who graduated and practiced in Africa in the mid-1980's and throughout the 1990's and experienced firsthand the effects of the structural adjustment programs (SAPs). Overall, this cohort of physicians had terrible memories of material deprivation. They lived through currency devaluation, inflation, spike in commodity prices, and widespread poverty resulting from the implementation of the SAPs. Nigerian native Dr. Sannu (41; 1993; 2001) recalled his hardship during his internship in 1994: "We had the structural adjustment programs that had substantial impact on inflation. … Exchange rates went up and people couldn't afford the basics. I was earning about 40 dollars a month. That was my entire monthly salary!" If the average doctor was earning $40/month at the height of the SAPs, one can easily imagine that the economic predicament of the average patient was even more dismal. Dr. Sannu continued:

> It got so bad in the operating theater that the patients had to provide their own halothane anesthetic gas before surgery. So, if they cannot afford those 20 dollars, the woman who was in labor will die. …. If you are practicing in an environment like that, you have to run away if you get an opportunity, because the fact is that every single day you lose a patient. And the reason why you went into this profession in the first place was to save lives. So yeah, in the late 80's to the mid 90's the system was totally broken.

Social expectations. Concerns about oppressive social expectations arose when I probed migrant physicians about their perceived obligations toward their native countries. Many respondents felt that as physicians, they were unfairly targeted as the cause of a problem that has deep roots in development, failed political leadership, and global economic dynamics. Cameroonian native, Dr. Nana (43), observed: "This is a development problem, and you cannot fix one area and leave the others. Let's ask all the soccer players to come back. Let's ask all the other professionals to come back home." Like-minded respondents strongly resisted the idea that society should hold physicians to a higher moral standard than other professionals or should expect greater sacrifices from them. Dr. Akwesi (52) remarked: "The doctor is not any more moral than the carpenter. No! We are all helping humans!" Ethiopian native, Dr. Tesfaye (35) added: "I don't see myself as a charity worker or a freedom fighter." The overall sentiment of oppression echoed in the above statements is summarized in the reflection of Dr. Akua (35):

> A lot of people who are not physicians migrate to this country. They do that to better themselves. Nobody is chasing them. Did they go to the universities? Yes they did. Did they get free training? Yes they did. Do they not have to give back too? Yes they have to. But nobody is chasing them. Why are we chasing physicians? Because everybody feels that physicians have to do charity. No, they don't!

Alternatively, social expectations for physicians' altruistic/sacrificial behaviors are conflicted by social expectations for financial comfort. As reasoned by Ghanaian native and twin physician, Dr. Etse (48; 1990; 2000), in a westernizing world defined by consummate materialism, the social images projected by physicians are as important for the patients as the medical services provided. Thus, he noted, people expect doctors to "have a level of living standard that goes [hand in hand] with their admiration" for doctors.

Processes of liberation. Migrating to the United States is not merely a matter of take-off and land fall. To make it in the United States, personal, relational, and collective resources are often utilized. This segment explores the ways and means and the support systems that migrants used to complete their ecological transition from their respective homelands to the United States. Examination of liberation processes addresses the following questions: What processes and resources are utilized by migrating doctors in implementing the decision to emigrate; and, once they have settled in the United States, what are their long-term plans vis-à-vis supporting, returning to, or ignoring their native countries? How successful are they in carrying out these plans? The following processes of liberation have been discriminately identified among the main emergent themes and will be briefly surveyed: professional and personal development (micro-social); US immigration policy (macro-political) and migrant networks/pathways (meso-social); identity (micro-social); the longing for home and return migration plans (micro-social).

Professional and personal development. Professional and personal development refers to academic achievements and specialized training pursued by migrant physicians. If education is the tool par excellence of liberation, a medical degree is the asset par excellence possessed by migrants to reach their career goals and ultimately meet their life goals in the United States. Migrants' foreign medical credentials eased their professional integration/socialization and enabled their

ecological transition from the domestic work environment characterized by "very rustic" medical facilities to US residency programs endowed with "state-of-the-art technology, investigations, and lab tests."

While a substantial majority of respondents reported that their interest in medicine was motivated by a genuine desire for "curing people and helping people," they also bemoaned the limited choices available to them at the time of entry in medical school. Nigerian native and third year internal medicine resident, Dr. Obi (33; 2004; 2006), pointed out: "So, students who are doing very well [in high school] end up doing medicine and law and engineering. So, it was like a status symbol at that time." The limitation of career options and the symbolic capital conferred by medicine add additional weight to the very competitive medical school admission process. Thus, obtaining admission to medical school in the home country and gaining entrée in residency in the United States are two distinctly daunting tasks that migrant physicians have to overcome.

Further, prior to gaining admission to a US residency program, some migrants completed graduate degree programs in public health or medical research. In addition to their medical degrees ("MB BS," "MB ChB," and "M.D."), six respondents had master's degrees, while others had doctorate degrees in public health (Dr.PH) and pathology (PhD). In addition to intellectual merits, significant economic resources are also expended by migrants to meet their career goals in the United States. First year internal medicine resident and Sudanese native, Dr Salim (29; 2006; 2010), the most junior physician and most recent migrant of the sample, reported that he applied to "more than one hundred" residency programs: "The whole process, I think the cost is about maybe 15 to 20 thousand [dollars], including the travels and the exams fees."

US immigration policy and migration pathways. As suggested earlier, US immigration policy is a powerful vector of structural oppression because it helps exacerbate the depletion of

scarce health human resources in migrants' countries of origin. However, from the standpoint of individual migrants, US immigration policy is considered a factor of liberation in that it enables them to realize opportunities in the United States that they could not in their respective homelands. From the information provided by 25 respondents who reported their visa status at the time of entry in the United States, four patterns of immigration emerged.

Family reunion. Five respondents came to the United States as K-1/K-3 (fiancé/spouse) visa holders. Their partners had already established domicile in the United States, were US citizens by birth or naturalization, and served as visa petitioners for the migrants. One of the respondents who immigrated through the above channel explained: "My wife was born here [in the U.S.]. She relocated [from Nigeria] to the U.S. in 2007. So, she was the one that actually influenced my coming here to this country."

Diversity Visa winners. Two doctors reported winning the US State Department-sponsored Diversity Visa program (formerly Green Card Lottery program) within a year of graduating from medical school. They subsequently immigrated to the United States as US permanent residents. One of the winners recalled: "It was my penultimate year. I was one of the recipients of the Green Card Lottery. So, I think that played a huge role in the certainty for me to immigrate to the United States."

Visitors. Seven respondents confided that they came to the United States as "visitors" or "tourists" with a "B1/B2" visa. As intimated below in the confession of one physician, "visitors" eventually adjusted their immigration status while preparing for their admission to medical residency:

> I came to the U.S. in 1994...as a visitor. … I had no real idea about the medical system or the exams I had to take to validate my medical degree. But, once I got here, I collected

> information, bought books and started reading. … I passed my first step in 1995, the 2nd step in 1996, [and] then, I went into residency in 1997. In between, the first job I got was as a doorman at a hotel in DC, and I held that job for about 2 years until I passed step 1. By the time I passed step 2, I worked as a clinical research tech at Georgetown University Hospital before I went into residency.

Scholars and students. Unlike the above informant, most respondents (11 of 25) reported entering the United States as exchange scholars (J-1 visa), international students (F-1 visa), or foreign professionals with special skills (H-1 visa). Thus, most were admitted to US residency or graduate degree programs prior to immigration. As such, the gap between their time of entry in the United States and the time when they started residency was minimal. Most of these migrants were to leave the United States after completion of their residency and graduate degree programs. However, US immigration policy provided several avenues to change their immigration status and stay in the United States permanently. A participant holding an H-1B visa at the time of immigration explained: "I became a permanent resident almost immediately after I completed the doctorate program; the University of Alabama sponsored it." The case of J-1 visa holders is noteworthy. A respondent who was on J-1 visa until 2009 explained:

> When on a J-1 visa, there is this clause that you have to go back to your home country for two years or serve in an underserved area. ... And that is what drives us to the rural areas and to underserved areas. There may be some under-served areas in big cities where Americans don't want to work. So, there is a need for doctors there, and because of necessity, foreigners gravitate to those areas to avoid going home. That's where they get their job security.

Identity, the longing for home, and return migration plans. While emigration entails disruptions of place attachment and place identity, immigration provides opportunities to expand one's identity. The professional identity of migrant doctors is ultimately expanded as a result of immigration and residency completion and licensing in the United States. Their nationalities are also expanded or renegotiated as a result of US naturalization. I probed respondents on issues of identity in order to explore their experiences with integration or assimilation in the United States, their degree of attachment to home and host countries, and their ultimate plans for return to their native lands. Judging by some statements, a cross-section of respondents feverishly resisted the possibility of compromising their national identities. "I am Ghanaian to the core." "I am a proud Nigerian." "That one is non-negotiable." The authors of the above statements are US citizens, but recognized that, "the passport you hold doesn't say where you come from." As such, they defined themselves almost exclusively in terms of the cultural referents of their native countries.

However, other respondents conveyed an attachment to both their native and host countries and could not wholly embrace or reject either. An enduring feeling of belonging to "this country, and that country" appears to be the transcendental feature of their hyphenated social identities. As suggested by the reflection of Nigerian pathologist, Dr. Oweri (44), this sense of "double consciousness," to use Dubois' vocabulary, is sustained by a pervasive feeling of otherness:

> When I meet colleagues, friends, or just strangers on the plane, and we talk; they ask me: Where are you from? ... What they mean is, you have an accent; or, I could detect, I could feel out that you weren't born and raised in the U.S. You are from somewhere else. So as long as people here are asking me where I am from … [and are] expecting that I answer, "I am from this country, or that country," then, I will never be able to claim complete identity here.

Dr. Oweri (44) has been living in the United States for over 20 years, becoming a US citizen in 2005. However, as intimated in his reflection, fully embracing an American identity may be beyond the possibility of immigrants. The sense of double consciousness reflected in the accounts of respondents is paralleled by an enduring longing for home. Many participants reported missing their native "food" and "culture." Despite the relative ease of "picking up the phone and calling," they miss being around family and friends. For many migrant physicians, moving to the United States has inflicted a heavy toll on their sense of community. They miss sitting down at sunset and chatting with family and friends after the "Maghrib prayer." One of my informants observed: "Here is very lonely. You don't have people to talk to; that's my biggest problem. I miss that social aspect a whole lot. I need to go back home and reignite that because here it's almost gone."

Indeed, the loss of "community life" and social "support system" appears to be the most difficult trade-off or compromise negotiated by the physician migrants in this study. This generalized feeling of loneliness and loss of sense of community is captured in the comment of third year internal medicine resident Dr. Obi (33): "coming here you realize that money cannot give you happiness. … Social support is a big issue in America. But, back home there is this support system that I think has a positive impact on people."

To allay their longing for home and the lingering anxiety of separation associated with migration, several respondents explained that they "would like to go home more often," but are currently constrained by time and the multiple challenges of life in America. Other participants explained that they visit home alone or with their entire family "every year" or at least every "two years depending on finances." Three respondents stated that they went home at least two times in the previous year. Plans for permanent return were closely explored with respondents who were within five to ten years of their anticipated retirement from practice in the United States. Dr.

Stevens (66), a retired Liberian pediatrician that I introduced earlier in this report was preparing her return when she granted me an interview in June 2011. Given that she is a widow, and that her mother, children, and grandchildren all live in the United States, I wondered why she desired to return home permanently:

Investigator: I gather that you are not homesick, are you?

Dr. Stevens: Not really. But, I also know that I don't want to stay here. I want to go home.

Investigator: So what do you miss so much about home?

Dr. Stevens: I just miss having people around, having helpers. I miss going to the bank, going to the supermarket, people know you. It is a feeling of being somebody.

Investigator: A sense of community?

Dr. Stevens: Yeah, you are somebody within your community.

The respondent explained that she will use her retirement time productively in Liberia. Among her multiple projects, she plans on providing part-time consultancy at the university teaching hospital in Monrovia, Liberia's capital. As our conversation proceeded, I inquired about her thoughts on aging in America with limited social support. She explained: "I definitively want to go [back]. … You know, I much rather be sick there where you have somebody to give you a cup of water, a cup of tea, than here where you are the only one."

The concerns of the above respondent are shared among several respondents. Many stated their intentions to return home permanently after retiring from US practice. Several have already built retirement homes in their native countries and others reported that they were saving some money to do the same. There are a few exceptions, however. A 55 year-old Cameroonian-trained physician who has been living in the United States for over 25 years confided that he has never returned to Cameroon since his emigration. His parents were able to visit him frequently in the

United States. Thus, the need to travel home was not so salient. Over the years, the gradual detachment from his home country was complete, aided by the enculturation challenges experienced by his US-born children:

> I have no plans of returning. I have not made any preparations for it. The reason being that when we started having our children we wanted to have them know where they came from and we sent them home religiously every year, every other year for a period of time. I finally came to the conclusion that, that was a futile exercise. … I do not believe that they have any intentions whatsoever of going to Cameroon in their professional lives. So, I see it then that I had to choose. For example, if I were to exit the planet or die, as people say, and I was buried in Cameroon, I doubt that, based on the lifestyle that I see of Americans here, that my kids would come to my grave. It would be impossible for them to do that. So I am better off just if I am buried here, they might pass by and throw a flower or two. And that's the way I see it.

Incidentally, exploration of identity intersects with issues of discrimination. Overall, participants viewed incidents of prejudice and discrimination minor and manageable when compared to the prevailing challenges that compelled them to emigrate. One respondent observed: "Of course, if you couldn't stay in your own country, then you don't expect people to be nice to you when you go to their country."

Outcomes of wellness. Exploration of wellness outcomes is intended to answer the third research question of the study: How satisfied are migrant doctors with their life and career goals in the United States; and, what factors influence these levels of satisfaction? A selected number of factors influencing outcomes of wellness will be highlighted: Howard University Hospital and IMG-friendly residency programs (meso-social/meso-physical); social mobility (macro-social);

professional fulfillment (micro-social); competitive income and job security (micro-economic); children's education and welfare (micro-social); remittances and instrumental support to family and home-based community (micro-economic).

Howard University Hospital (HUH) as a friendly program. Of the 25 migrant physicians who have already completed their residency or were in the process of completing it, 13 (52%) were trained at HUH. This high percentage may reflect, to some extent, a sample bias in that HUH was the most accessible recruitment site.[21] Nonetheless, HUH appears to play a singular positive role in the professional integration and socialization of respondents from the Washington, DC metropolitan area. It would seem that, by training specifically at HUH, they are provided not only with the excellent conditions of service that are so often wanting in their native countries, but also with a friendly social environment that is reminiscent of the home country and shields them from experiences of prejudice and racial discrimination. Reflecting on her experience at HUH, Dr. Akua (35) observed with a smile on her face: "I like everything about it; the job satisfaction; the fact that you see results. I haven't had any experience with racism because of course I am at Howard. ... It is an extension of Ghana to me."

Job security, professional fulfillment, and social mobility. The belief that the "sky is the limit" in America was a recurrent theme in the narratives of migrant participants. Irrespective of whether such a belief holds true in the daily realities of immigrants, respondents were aware of the significant career opportunities for physicians in the United States. Except for a handful of migrants who had yet to meet the requirements for residency, participants felt very secure in their job and employment prospects in the United States. As intimated in the previous comment from Dr. Akua, "seeing results" and having the appropriate conditions of service boost job satisfaction among

[21] The population of SSA-IMGs 70 years old and younger identified in the 2011 AMA Physician Masterfile in District of Columbia, Maryland, and Virginia (primary sample frame of the study) was *N*=758 physicians. Of those, 28% (199 of 722 physicians with complete residency information) completed their residency training programs at HUH.

physician migrants. Further, the ability of doctors to apply what they learn appears to be a source of intrinsic reward: “Professionally it's fulfilling. I mean, what you know is what you do, there is no theorizing; it's practical. You deal with it” (Dr. Akrofi, 41). Evidently, migrant physicians are able to apply their trade mainly because of the abounding physical capital available in the work setting, namely the “state-of-the-art technology, investigations, and lab tests.” For many migrants, professional satisfaction reaches the climax because they are “paid well for doing something that they like,” and “in such a way that they can afford to help other people around” them.

Children’s education and welfare. Despite some cultural conflicts experienced in the upbringing of their children in the United States, most respondents reported that the educational opportunities available to their children in the United States were unrivaled. A participant who described life in the United States as a “mirage” and a “treadmill you can’t get off” commented positively on the benefits of having his children in the United States: “Having a family here is great, because you can provide for them; there are a lot of resources to help them as they grow up.” A compatriot of his who came to the United States purely out of financial frustration, and was not otherwise enthused about living in America observed about his children’s education: “You're kind of more assured they're having the right education. They have access to advanced technology.” Indeed, it appears from respondents’ concerns that the welfare and education of children are paramount and weigh heavily in the émigrés’ deliberations to return home in the middle of their most productive years or to stay in the United States until their retirement or near-retirement years. One Nigerian female respondent confided that she moved to the United States in 2006 exclusively to seek medical treatment for her 9 year-old son. She seemed well pleased with the progress accomplished by her child since her immigration.

Remittances and material support to home community. The most prominent externality to

native countries by medical migration is the financial and material support sent home by émigrés. While many respondents reported sending monies home to significant others "now and then" and declined to provide any specifics on amount, the role of remittances on the wellbeing of both recipients and the remitters cannot be overlooked. Upon probing him on the amount of money sent home to significant others, a third-year resident from Nigeria observed with a mixture of humility and pride: "That one is personal, but just know that there's nobody I know now in Naija that can die because of $1,000." Respondents who disclosed specific figures on remittances reported varying amounts ranging from "about $100 a month" to "maybe $5000" a year. The monies are sent home for various reasons including school fees for children and support of émigrés' aging parents. As represented in the comments of the Ethiopian and Cameroonian doctors cited below, émigrés derive a profound sense of gratitude, purpose, and accomplishment from the financial assistance provided to family members:

> Regarding your financial life and as to helping your family, which was really a problem, when I was in Ethiopia, I don't remember giving any helpful amount of money to my family, even occasionally. But, since I came to the United States, I have sent, I think a good amount of money to my family; at least to make them have no problem with their day-to-day basic lives (Dr. Abeles, 36; 2001; 2006).
>
> All my brothers and sisters who are younger than me have been able to leave Cameroon because I have been practicing medicine in the U.S. We have engineers after me, we have lawyers in the U.S., pharmacists, nurses, all of whom have come because we have had more resources with my being able to work in the U.S. So, through one person, the whole family has been blessed. (Dr. Nana, 43)

Besides the financial and material assistance provided to family members, some respondents

conveyed that they were involved in broader community development efforts in their native countries through various projects implemented at the local and national levels. Some of the salient activities undertaken individually or collectively by émigrés include: the purchase of a generator for a community clinic, and the shipment of medications to clinics and hospitals in Ghana; the donation of medical equipments such as "EKG" and "diabetic monitor machines," and the refurbishment of hospitals/clinics in Cameroon.

African-based Non-Migrant Physicians

The exploration of non-migrants' perspectives on migration, medical practice, and life in their native countries arose from the need to "validate" or "crosscheck" the stories reported by US-based migrant participants. Thus, no formal research question was formulated a priori for this group. However, the main goal of the data collection was to explore personal reasons and factors associated with non-migration among local physicians practicing in Sub-Saharan Africa.

Sources of oppression. Main sources of oppression identified by non-migrants can be summarized in the following statement by one respondent:

> Hospitals are ill-equipped. There is no power to run most of the public hospitals in Nigeria. The health infrastructure had broken down for more than two decades now, and conditions of service are among the worse globally. It is really frustrating to be a doctor in Nigeria. (Dr. Oku, 45; 1996; Abuja, Nigeria)

Conditions of service. Although their accounts were somewhat less dramatic than the stories of their US-based counterparts, all African-based respondents confirmed the overall lack of equipment, facilities, and the poor maintenance of existing resources. Reflecting on factors associated with the emigration of his colleagues, Dr. Buba (45; 1989; Abuja, Nigeria), the most

senior medical graduate of the group observed: "After all, medicine is a science, and you cannot just operate with the spirit." Taken metaphorically or literarily, his statement alludes to the dearth of material/physical resources available to doctors. The first African-based physician to grant me an interview was Ghanaian native Dr. Achu (48; 1990; Accra, Ghana), the identical twin brother of US-based participant, Dr. Etse. Reflecting on the structural problems that undermine the Ghanaian health system, Dr. Achu observed:

> We seem to have lost our priorities. The health system has a lot of challenges which, by this time, we should have sorted out. It begins with infrastructures; it is the same old structures that you will find. We have a huge challenge with facilities for all the departments. You go to the hospital, you can't find basic equipments and materials you need. You enter a doctor's office; there is nothing to write home about. You go to the wards, the maintenances are falling. … And, there is a lot of frustration when you know what to do, but you can't have what you need to do your job.

The lack of adequate facilities, equipments, and medical supplies is further compounded by the poor maintenance of existing resources. In addition to the above, Dr. Efua (33; 2003; Accra, Ghana), a female physician specializing in public health, identified a culture of "improvising" as a core factor that compounds the deleterious conditions of service in Ghanaian health settings:

> People have learned to improvise for the sake of the patient. I think, in fact, people have gotten complications with that. So, the administration knows that even if there is no equipment, the doctors or the nurses would manage with something.

A few years earlier, Dr. Efua had visited the United States where she took some health-related courses at George Washington University (GWU). She contrasts her experiences below:

> When I went to George Washington University Hospital while I was there in the US, the

> place was clean and sweet. I mean, it was nice to work in there, you see? But then back home, the environment is not checked well, the place is not maintained.

Similar frustrations over "broken down health infrastructures" and doctors' inability to perform time-sensitive lab tests emerged from Nigerian interviewees. Abuja-based Dr. Oku shared his experiences via email communication. Commenting on the lack of time-sensitive diagnostic procedures in his work setting, Dr. Oku explained: "Today, in my clinic I saw a case of milliary pulmonary TB in a young girl but she had to wait for at least 12 days before sputum sample could be collected for an AFB test." As hinted in the comment below, the bleak and substandard conditions of service described by respondents may be inherent to government-run health facilities:

> The diagnostic profiles and things that would allow you to do your job properly within the university system still do not exist. … When you come within government, no matter how much best practice you know, it's like there is very little you can do when the laboratories are not functional. (Dr. Buba, 45)

If government-run facilities are ill-equipped and dysfunctional, are private hospitals better equipped and well maintained? My data collection with US-based migrant participants indicated that there is a growing private health sector in Ethiopia, Ghana, and Nigeria. I invited Dr. Efua to share her thoughts on conditions of service in private medical settings in Ghana. She observed:

> I think in the private health sector, things are better because they are there purely to make profit, so they take better care of their equipment. They are charging patients, so they are able to maintain things. And also, people's expectations of the private hospitals are higher, so they need to live up to expectations. Because if you own a private hospital and people are not satisfied with your service, then they can go to another hospital. So I think competition and all that has helped make them better. … But, I always say that private

> hospitals are usually run by the same doctors who work in the public hospitals. They're the same people, but in a different setting. And their performance varies. Because, when they need stuff at the private hospital, they get it. They need it in a public hospital, it will take, what, two, three, four months?

Whereas Dr. Efua suggested that the competition in the healthcare market has a positive influence on the conditions of service in private health settings, Dr. Buba had an overall negative appraisal of the proliferation and impact of private health clinics on public health facilities. In his own words, "it is like robbing Peter to pay Paul." He insinuated that, too often, the owners of private health facilities in Nigeria are government administrators and bureaucrats who take advantage of their positions in the government to garner ill-gotten resources needed to build their private clinics: "The beneficiaries of public [institutions] and government policy seem to have deliberately killed public institutions to allow private institutions [to flourish]."

Mismanagement. As was the case with US-based participants, mismanagement was a recurrent theme in the narratives of non-migrant doctors. As suggested by several of the previous comments reported in this analysis, conditions of service in government-run health facilities hinge on the quality of public administration, a duty and responsibility of the government. Public health facilities are government properties created and managed by the Ministry of Health. Hospital managers are government appointees and are answerable to the Minister of Health. In the words of Dr. Oku, "politicians decide the staff to be employed, equipment to be purchased."

Reflecting on mismanagement and the crisis of health human resources in Ghana, Dr. Achu wondered: "If you are prepared to spend tax money to train them, why are you not prepared to spend tax money to keep them?" His question was not only an implicit indictment of the government's failure to adequately incentivize physicians, it also reflected a broad perception

among Ghanaian and Nigerian respondents that their countries have more or less adequate resources, but their governments lack the political will to address the concerns of physicians. Dr Achu's cynicism about the political leadership crescendoed as he decried the spoils system of Ghanaian politics: "They can't find money to provide decent accommodation or to maybe push up salaries or make loans available for doctors. And then, you find the same politicians being given huge loans to buy cars and to build houses." A similar sentiment was gathered from Dr. Buba's. While the figures provided in his account may be inflated, the main point he is making is apparent: "There is a big uproar about how much politicians are earning. One of my youngest brothers is a parliamentarian in Nigeria. A typical parliamentarian makes almost close to a million US dollars every month in Nigeria."

While the responsibility of the government in the misallocations of resources cannot be overstated, Dr. Tsikata (38; 2003, Accra, Ghana), the third Ghanaian non-migrant physician, ventured to look beyond the national level and to highlight the influence of international financial institutions in the depletion of health human resources in Ghana:

> Talk to some of my friends who are in politics, and they will tell you that if you are in government and you want to increase the salaries of doctors, you have to discuss this with the World Bank and the IMF who are sponsoring you, and some of those that are from the West, telling you not to increase salaries, because they think that you should use the money in other areas than using it to improve the conditions of service of these people. At the same time, these same countries are the ones who open their doors for your professionals. Hello!

In Ethiopia, mismanagement is reflected mainly in the low utilization rate of public health facilities. Dr. Mengistu (35; 2002, Addis Ababa, Ethiopia) works as a public health consultant with

the World Health Organization (WHO) in Addis Ababa. He provided his comments via email exchanges. He noted that, despite the immense need for "hospital-based quality care, the utilization rate is 30%." He attributed this under-utilization or waste of scarce resources to several factors namely financial constraints, "geographic inaccessibility," and "poor quality of care." Poor quality of care is the inevitable by-product of practicing in health settings with "inadequacy of drugs, equipments, and very low number of health professionals." Alternatively, geographic inaccessibility speaks to the larger issue of basic social infrastructures, and all the above factors are connected with mismanagement.

Dr. Mengistu also underscored the fact that the Ethiopian leadership places an "excessively high priority to community based health services," putting a heavy emphasis on prevention at the expenses of the "curative." As a follow-up question to my initial email exchange, I asked: "Have you heard about the Ethiopia Health Extension Program (HEP)? Can you please comment on its successes (or limitations)?" He replied:

> I am well aware of the program. … Basically HEP is focusing on having two female health workers for a village of 5,000 inhabitants. Their training is 1 year after high school and they basically provide preventive services rather that curative (with exception of malaria, attending deliveries, and in the near future ARI). It does not and cannot replace the hospital level curative service.

Dr. Mengistu listed the potential successes of the HEP in addressing "hygiene and sanitation" and preventing "communicable diseases [such as] malaria, and HIV [through] VCT [voluntary counseling testing], immunization, and distribution of family planning" kits. However, he insisted that there was no credible evaluation of HEP's outcomes thus far. Meanwhile, there are reportedly several limitations including: the "weak link [of the HEP] with the curative service at the

health centers, and the insufficient skills" of HEP's staff.

Conversely, Abuja-based physician, Dr. Oku conveyed an opposing view of the public health situation in Nigeria: "Public health policy implementation is inconsistent and out of tune with health needs of the public. Public health practice is deficient and not emphasized. As such, the entire care system focuses mainly on the curative while neglecting the preventive." He further observed that public health threats in Nigeria are compounded by the proliferation of dubious traditional healers: "Many families are impoverished and cannot afford appropriate health care. Many [of them] patronize quacks, and the so-called traditional healers who deceive the unsuspecting general public."

Basic social infrastructures. The exploration of basic social infrastructures pertains to the impact of the physical environmental domain on health systems. The need for basic social infrastructures in the form of roads, electricity, water, and "good schools" was underscored by participants. Reportedly, the dearth of electricity is so widespread and so persistent in Nigeria that it has become almost a non-issue, mitigated in part by the proliferation of electric power generators across Nigeria. By one respondent's account, Nigeria may have the highest number of generators per capita in the world:

> Hardly can you have electricity supply running for six out of twenty-four hours a day in most places. In fact, in some places they could go for a whole month without having electricity for three hours. So, that is a really big challenge, and in fact, you see that sometimes when we are asked to generally comment on our problems, we even hardly remember the problem of electricity because we've come to live with it. It has become part of us…. and it impacts [by] several magnitudes on our health system. (Dr. Hakim, 45; 1991; Kano, Nigeria)

The above account is consistent with several testimonies provided by US-based Nigerian participants regarding the lack of electricity and the use of candlelight in health facilities. Kano-based public health physician, Dr. Hakim, stated that running water was less problematic or "easier to handle." Yet, he acknowledged that health facility personnel have to "get water from wells, rivers, and sometimes it's not an easy thing, especially during the dry seasons...."

The limited availability and affordability of "good schools" also appeared to be a major concern for all respondents. Concerns for their children's education partly explain why it is difficult for physicians to relocate to rural areas. Their children "wouldn't get ahead well," Accra-based Dr. Efua noted. Her Ghanaian compatriot, Dr. Achu, added: "Once you are a doctor, you know the importance of education, so you're forced to find money and send your children to the so-called good schools." The same concern emerged among Nigeria-based participants: "The situation of the country does not allow one to just send one's children to public school. One has to really be open. You pay, sometimes, through your nose, but then it's the only alternative you have" (Dr. Bello, 45; 1991, Kano, Nigeria).

Social threats to health systems. The main factor examined under social threats to health systems was the issue of insecurity. The level of insecurity in Nigeria in particular appeared to be of serious concern to Nigerian participants. Dr. Buba used the phrase "multifaceted levels of insecurity" to describe the prevailing security threats across Nigeria. In the southern region of Nigeria, the main driver of insecurity is "environmental degradation" from petroleum waste dumping in the Niger Delta, and the resulting "rampant kidnapping." In the northeastern region of Nigeria, insecurity is compounded by religious extremism. Dr. Buba pondered the possibility of leaving Nigeria for security reasons:

> If you're, kind of, keeping track with what's happening in Nigeria, it's like, despite the

> democracy and the elections and so on, there is too much insecurity for yourself and your family to, kind of, take that chance no matter how much they may be willing to pay you. So now, the push factor [of emigration] now may not be money, it will be more of security and technology.

His US-based compatriot, Dr. Hakim, identified the serious personal safety threats in Nigeria as a potent deterrent for return migration:

> Somebody who has stayed and worked at home, he has just less security risks and attention compared to somebody, who everyone knows that for the past ten, fifteen, twenty years, he has been in the U.S. or UK or Asia, gathering some money and he is now coming back. You can be kidnapped straight from the airport.

In addition to the high level of insecurity, the "heavy burden of communicable diseases" including "HIV, enteric fever, malaria, and tuberculosis" greatly stresses the health system. Furthermore, "emerging non-communicable" or "chronic diseases" were reported as looming public health threats in Ethiopia, Ghana, and Nigeria. The steady stream of chronic diseases such as "diabetes and hypertension" is explained in part by a growing "western lifestyle" in vogue in the African countries surveyed.

Processes of liberation. Liberation refers to the resources (personal, organizational, collective) mobilized or exploited by respondents to meet their career and life goals. Under this rubric, multilevel processes of adaptation/coping, empowerment, and resistance are explored.

Personal and professional development. Demographic information obtained from the participants indicated that all the Nigeria-based (n=5) and Ghana-based participants (n=3) were fellows of the West African College of Physicians (WACP). This means that they successfully completed their medical specialization/residency programs domestically in Ghana and Nigeria

under the administration of the West African College of Physicians, the largest post-graduate medical program in West Africa. Many migrant physicians reported limited access to "post-graduate" medical training in-country as a prime motive to emigrate. The accounts provided by non-migrant physicians suggest that it is increasingly possible to specialize without emigrating. After graduating from the University of Ghana Medical School in 2003, Dr. Tsikata, was admitted to the Fellowship of the West African College of Physicians in 2006 and successfully completed all program requirements in obstetrics and gynecology (OBGYN) in 2011. He explained that initially, he was eager to leave Ghana for the United States and had started taking the United States Medical Licensing Examination (USMLE). However, "after due considerations and [after] talking with some senior colleagues," he "decided to stop." Among the various reasons cited for his change of mind, the opportunity to successfully complete his residency in Ghana became increasingly appealing: "Apart from the West African College of Surgeons, there was a new Ghana College of Physicians and Surgeons that started training surgeons in the country at that time. So, I decided to join."

The above informant visited the United States prior to his graduation from medical school, spending some time at Tulane University in New Orleans, where he completed an elective in radiology. Traveling and international exposure was a distinctive addition to the curriculum vitae of all the respondents. All but one had visited the United States or Europe where they obtained a master of public health degree, completed some certification programs, and/or attended seminars or conferences. Commenting on his international experience in the United States, Kano-based Dr. Adamu stated:

> I was in the U.S. for three months as a clinical observer. … I stayed in Baltimore, in St. Agnes Hospital. And, I remember the program director of the residency training at that time asked me if I was interested to come back to the U.S. He asked me to go and do the

> USMLE exams and he offered, if he is still the director, to give me a place. But, I actually was not interested. I really wanted to go to the U.S. to get exposed to training, and not because of lack of opportunity.

Additional income generating activities. Another means of empowerment reported by Nigerian respondents in particular was their involvement in additional income-generating activities. Among the five Nigeria-based respondents, four reported supplementing their basic income with "occasional consultancy" and "some stock investment." Ghana-based respondents equally reported that they practiced as "locum tenens" periodically.

Labor union mobilization. Physicians' ability to generate additional income is in part the result of collective bargaining agreements negotiated over the years by physician labor unions. One Nigerian participant served as the national secretary of the National Association of Resident Doctors (NARD) of Nigeria in the mid-1990s. He recounted how Nigerian physicians went on strike under the motto "your take-home pay cannot take you home." They successfully compelled their military government to increase physicians' salaries and to allow them to work in private practice after finishing their daily duties in government-run facilities.

> Prior to our action, what the doctors were receiving in terms of total emolument was really, really, miserable; especially those doctors who were working exclusively in the academic setting as lecturers. … One of the good things that we succeeded in achieving from the strike was to make locum tenens legal, once the doctors finish their regular clinical work. Prior to that, locum tenens was illegal.

Likewise, Ghanaian respondents intimated that their overall circumstances have substantially improved because of "medical doctors' discord" and "industrial action" conducted over the years by the Ghana Medical Association.

Outcomes of wellness. Wellness outcomes were examined via respondents' subjective accounts of professional fulfillment and overall satisfaction with life.

Living wage. Among the 10 participants, only Dr. Oku reported that he was "totally dissatisfied with the quality of life and professional fulfillment." The main source of his frustration surrounded his economic circumstances. Dr. Oku, reported that he worked 40 hours a week, earned 350,000 naira monthly (i.e., ≈ $2300/month), and was married with two children aged eight and four years. He explained that life in Nigeria's capital, Abuja, was very expensive and that he attempted several times to immigrate to the United States and Canada, but was unable to afford the cost.

> I started the Canadian immigration application last year [2010] but stopped it because I need a minimum of 60,000.00 Canadian dollars in my account in addition to the cost of planning and funding of my travels and that of my family members before my application could be considered. I was admitted to the University of Boston in 2007 for the MPH but could not afford it. I was again admitted to University of Arizona in 2008 for the MPH but could not afford it. I wanted to use all these as spring boards for my emigration plans.

Dr. Oku wished to "be able to afford housing and education" for himself and his family. During my interview with another Nigerian participant, I inquired: "So, what kind of lifestyle can one afford with a monthly salary of 350,000 naira, living say in Abuja?" He explained:

> Yes, Abuja is a relatively expensive city, but still a doctor who earns that much amount of money should be able to pay his rent. He should be able to drive a car, a relatively comfortable one, and be able to take care of his children's school fees, as long as the children are not many.

The above respondent intimated that life was mainly a matter of contentment and that

physicians will do better if they recoil from often comparing their earnings to that of less educated professionals who earn more than they do. Ethiopian-based Dr. Gigi (31; 2004), the youngest and most junior medical graduate of the group, was also the physician with the lowest salary. She sent her comments via email. She wrote: "Though I work more and get paid even less and less than most professionals, I am happy to work as a doctor and live with my family and loved ones." She reported earning a monthly income of $400. I probed her about the cost of living in Addis Ababa, Ethiopia's capital where she was located. She observed: "My current salary in private practice is reasonable compared to my colleagues in similar practice. I can live average. I can't afford a car or a house, but live an average life compared to the general population."

Incidentally, Dr. Gigi has been in the United States two times already to prepare and take Step1 and Step 2 of the three-step USMLE. This indicates that, despite her relatively low income, she lives comfortably enough to afford several trips to the United States. Given her interest and effort to pursue residency in the United States, it is plausible that she has already moved to the United States by this time. In Ghana, Dr. Efua summarized the economic predicament of physicians as follows: "To tell you the truth, when we started working [in 2003], salary was thinner. But now, it has markedly improved; markedly!"

Attachment to home, place identity, social capital, and personal fulfillment. "There is no place like home," I was told by Dr. Achu Yao when I inquired why he did not follow his identical twin brother, Dr. Etse Yao, to America. He expressed no mixed feelings for staying in Ghana and suggested with some irony that by the time our conversation ended he might have received several voicemail messages from his émigré colleagues in the United States entreating him to go and assist their family members in need of medical attention in Ghana. The overall feeling of living in one's own homeland, the "sense of belonging" to one's own country, and the feeling of being a "first-

class citizen," was a universal theme that emerged from respondents' rationales for non-migration. The following perspective was articulated when I asked Dr. Efua why she did not leave Ghana:

> Well, I am staying in my country, because the truth is that I love Ghana, and I love being a first-class citizen in Ghana. And, I believe that no matter what you do, where you go, and who you become forever, you'll never be a first-class citizen in anybody else's country but your own. … In Ghana, when I open my mouth, wherever I work, wherever I go, this is my home.

I dug a little bit deeper to ascertain whether Dr. Efua did not regret her decision to practice in Ghana even while knowing that her former classmates currently practicing in the United States may be earning tenfold her salary. She stated with emphasis: "No, no, no, no, no! I am very happy to be here!" She stressed that it is not all about money: "Once I have enough; once I can survive, I am okay," she observed. She intimated that her wellbeing hinges on socio-cultural and psychological factors related to sense of community and social capital:

> For me, the more important thing is family, because I can't be in the U.S. and the only thing [I have] is my husband or my children. I mean, there's a bigger family. And, there's a bigger circle of friends. And, I mean, I have really good friends who think like I do. We believe that Ghana is our home, and we stay in Ghana, and we work in Ghana. And, then if you need to go for a holiday or travel, you save up some money and then you go. But, by all means you come back home, and we will be here.

Dr. Efua's position is not unique. In Nigeria, Dr. Hakim expressed his professional satisfaction even more emphatically: "I must tell you even if I am an outlier, get it on record, I am very happy, very fulfilled with my specialty and with what I am doing right now." While he may not earn as much money as his classmates who migrated to the United States, Dr. Bello expressed a

deep sense of gratitude for staying in Nigeria and tending to his late mother and for continuing to "take good care of [his] wheelchair stuck father," an obligation he would not be able to take on had he emigrated. The sources of his wellbeing are highlighted in the excerpt below:

> I think I'm quite happy. I am fulfilled. I have the opportunity to practice my occupation in a place where there are a lot of challenges. And I have never regretted practicing in Nigeria, and it has never crossed my mind to go and practice outside Nigeria. I enjoy what I am doing. I like teaching. I like conducting researches. And, then participating in the consultancies also gives me the opportunity to conduct a lot of field work. I consider myself among those that are a bit on the better side when it comes to standard of living. I earn quite a lot of money according to my standards, because it is enough to take care of a lot of my problems and that of my family. And, I cherish to see the future of my children. I would like my children to have a sense of belonging. Yes. I feel they have their pride when they grow up in their own country and believe that they're at home.

Overall, non-migrant physicians' narratives on migration, medical practice, and daily living in their native countries suggest that they are relatively happy to live and work in their home countries despite the professional challenges encountered daily in government-run health facilities. In the words of one Nigerian respondent, "it is not all rosy, but one cannot go on complaining that things are terrible."

Discussion

The goal of this study was to conduct an in-depth analysis of the dynamics of the physician brain drain from Sub-Saharan African countries to the United States. By using the eco-psychopolitical validity paradigm as the organizing framework for the research, I construed

migration as a liberatory venture articulated around the triadic processes of oppression, empowerment, and wellness. While it may be problematic to generalize based on the sample of this study alone, there is increased evidence in the literature to support many of the "facts" uncovered by this investigation (see, e.g., Awases, Gbary, Nyoni, & Chatora, 2004; Connell, Zurn, Stilwell, Awases, & Braichet; Hagopian et al., 2005; Luboga, Hagopian, Ndiku, Bancroft, & McQuide, 2010; McCoy et al., 2008; WHO, 2006). Whereas the list of themes reported in Table 4 may not capture the entire universe of factors and processes associated with medical migration, the list provides a detailed and accurate picture of the main dynamics at play in the migration of African medical graduates to the United States.

Further, the inclusion of non-migrant physicians' perspectives on medical migration and medical practice in emigration countries adds not only some breadth to this study, but also a layer of complexity helpful in understanding the nuances that are often missing in the literature of medical migration, most notably the reasons for non-migration among physicians with opportunities to emigrate. Indeed, a case in point is provided in the divergent migration decisions of the identical twin brothers and physicians highlighted in the introduction of this paper. Also, although the framework employed to organize the findings may not be novel in the field of psychology, seldom has it been applied in the field of migration (see, e.g., Perkins & Procentese), let alone in the empirical investigation of the medical brain drain from Africa. Therefore, it is necessary to discuss some of the nuances uncovered through this study and to reflect on policy, research, and theory implications.

The Building Blocks of Migration are Stable, but the Contexts are Changing

Irrespective of the time-period when SSA-trained physicians completed medical school and

immigrated to the United States, the building blocks of medical migration remain constant (oppression, liberation/empowerment, wellness), but the current global context greatly exacerbates the migration of recent medical graduates. While many recent medical graduates may have come to the United States to expand their opportunities, it is doubtful that their economic circumstances were as grim as that of their "structurally adjusted" senior colleagues who emigrated throughout the 1990's. An increased focus on the large income disparities between physicians in the global north and physicians in Sub-Saharan Africa (see, e.g., Vujicic, Zurn, Diallo, Adams, & Dal Poz, 2004) paints at best a static and distorted picture of the current dynamics of medical migration, and at worst creates a caricature of the lifeworlds of physicians prior to US immigration. By contrasting the perspectives of migrant and non-migrant physicians, this research has revealed that it is not every physician who stares longingly at the "American dream" from the distant corner of Africa, and that it is possible for physicians to live relatively happily and thrive in their native African countries. However, the significant and ever-growing number of African physicians in the US physician workforce (over 10,000 and counting, see Article One) strongly suggests that many of them will keep moving in, even if they may not all "make it" in America.

The new impetus for medical migration may be found within the current context of globalization. While the protagonists of my account may not have reflected critically on globalization, the various conduits and networks that they used to relocate to the United States speak to the increased facility of information, visa, interconnectivity, and movement brought about by contemporary globalization. By categorizing globalization as both a source of oppression and a process of liberation (see Table 4), I wanted to stress the fact that globalization has eased the mobility and expanded the opportunities of individuals doctors, but at the expense of the resource-constrained countries that equipped migrating doctors with their capitals/capabilities. Hashemian

and Yach (2007) observed that globalization may carry enormous opportunities. However, unless its benefits trickle down to the "distant needy" in Africa, globalization cannot truly serve humanity. Likewise, the metaphor of "global village" embodies the political project of globalization, and calls to mind the values of solidarity, affinity, and community in a world rife with inequalities. Whether this aspirational self-image of globalization will be realized in a distant future is debatable. However, it is all too apparent that, in its current state, globalization has betrayed its promise (Castles & Miller, 2009; Stieglitz, 2003), and has done more harm than good to the collapsing health systems in Sub-Saharan Africa. Owing to globalization, we currently live in a world "in which HIV and other pathogens spread readily across such boundaries while the fruits of science, including treatment, are blocked at customs" (Farmer, 2006, p. 530).

Medical Migration Pathways are Multifold and Increasingly Peripheral

The migration channels through which several informants obtained their visas for the United States reflects a complex network of social relations stretching beyond the boundaries of nation-states, a defining feature of globalization (see, e.g., Held, McGrew, Goldblatt, & Perraton, 1999), and characteristic of the current context of international migration. One of my informants planned her immigration to the United States from the time she was in high school. Over a time span of 10 years, she devotedly played the lottery-based Diversity Visa (DV) program, and eventually won it in 2003 after seven unsuccessful attempts. It is noteworthy that, to participate in the DV program, one merely needs to access the internet from anywhere in the world and complete the appropriate online registration from the site of the US Department of State.[22] Another informant obtained her visitor visa with the assistance of a stranger that she befriended online and who eventually sent her

[22] Application for the DV lottery is open every year for a one-month period (usually within the last trimester of the year). Applicants that are most likely to be granted a DV visa are those with a higher education and some special skills.

an invitation letter and an affidavit of support (both documents are required when applying for a visitor visa). Irrespective of whether there was a quid pro quo for the service rendered, the encounter, interaction, and interconnection between the two parties was greatly facilitated by the internet, an artifact of contemporary globalization.

Likewise, six of the 30 migrant physicians were involved in a long-distance relationship with their partners in North America before they migrated. In other words, they were already part of a *transnational social field* (Schiller, Basch, & Blanc-Szanton, 1992) which structured their mobility and facilitated their ecological transition from their home countries to the United States. Last, of the 15 physicians who moved to the United States during the new millennium all but three physicians entered the United States as visitors (B1/B2 visas), fiancés/spouses of US citizens (K1/K3 visas), spouse of a foreign student (F2 visa), and Green Card (Diversity Visa) holders. The remaining three entered the United States as professionals with special skills (H-1 B visa). I emphasize this point to underscore the diversity of visa opportunities and the increased facilities of migration available to recent medical graduates.

It is noteworthy that none of the physician participants who immigrated to the United States since 2000 came in with a J-1 visa. Yet, the Association of American Medical Colleges (AAMC, 2006) stressed that the J-1 visa program is the most suitable visa program for IMGs seeking residency in the United States. “The J-1 program's purpose is educational and its administration by the ECFMG assures that J-1 residents and fellows’… country of origin needs [and benefit from] the knowledge and skills that they will obtain through their education in the U.S.” (AAMC, 2006, p. 6). Yet, fewer and fewer SSA-IMGs appear to use the J-1 visa route as their pathway to migration. And, as evidenced in the stories of participants who came to the United States with a J-1 visa, all it took for them to adjust their immigration status and stay put in the United States was to work for

two to three years with a designated "medically underserved area/population" (MUA/P).

The U.S. Health Resources and Services Administration (HRSA, n.d.) assigns the designation "MUA/P" to communities that have a very small number of or no primary care providers, a high rate of infant mortality and poverty, and/or a significant proportion of elderly. In other words, MUA/Ps are essentially remote rural or inner city areas that rank lowest in the pecking order of US medical graduates preferred working locations (Martineau, Decker, & Bundred, 2004). In return for serving in a MUA/P, as many as 1,500 waivers are made available each year to foreign trained physicians with J-1 visas, which allows them to circumvent the requirement that they return to their country after completion of their residency training (AAMC, 2006). All in all, it is apparent that even if the original stipulation of the J-1 visa were to be strictly enforced today, the regulation of migrant physicians with J-1 visas alone may be highly ineffective as a way to curb the brain drain of physicians from SSA to the United States.

Implications for Policy: Improving Conditions of Service while Discouraging Migration

"Many professionals wouldn't leave if they had the [diagnostic and therapeutic] tools they needed to do their jobs" (Farmer, cited in Mullan, 2007, p. 1065). It is necessary to improve conditions of service in countries of emigration not because it may spur the return of physicians who have left, but because it will most likely improve the performance, morale, and professional satisfaction of those professionals who have remained home. Moreover, it will provide an incentive to stay for those considering leaving (see, e.g., Awases, Gbary, Nyoni, & Chatora, 2004). Providing adequate facilities, modern equipment, drugs, medical supplies, and ensuring proper management of supplies and maintenance capability in government-run health facilities may be costly, but it is necessary to addressing the critical shortage of physicians and improving health outcomes in

countries of emigration. Irrespective of financial constraints, the onus is primarily on the governments of those countries whose physicians are leaving.

By focusing primarily on conditions of service, I am by no means implying that addressing issues such as the lack of basic social infrastructures or the inadequate compensation of health workers is unimportant or secondary. I am intimating that there is a hierarchy involved, and that some priorities are more pressing than others. My interviews with local doctors in Ghana and Nigeria suggest that doctors' salaries have "markedly improved" in recent years, and that many doctors working in the public-health sector also supplement their earnings with occasional consultancy, private practice, locum tenens, and additional income-generating activities unrelated to medicine. Indeed, it would seem that consistent and timely payment of a moderate salary is more laudable than inconsistent and untimely payment of unrealistically high salaries. Alternatively, the popular view that the United States has a growing need for additional physicians is not without reservation (Goodman, 2004; Goodman & Grumbach, 2008). Even in the case where there is a genuine shortage of physicians in the United States, it is problematic and ethically questionable to rely heavily on international medical graduates without concurrently addressing the deleterious effects that such a heavy reliance has on the fragile health systems of resource-constrained countries from which these foreign physicians hail (Mills et al., 2008; Mullan, 2005; Physicians for Human Rights, 2004; WHO, 2006).

Preventing the large-scale migration of African medical graduates to the United States is only possible if the United States strongly commits to it. Physicians are constrained, enabled, and emboldened in their emigration decisions and actual migration behaviors by immigration policies of receiving countries (see, e.g., Arango, 2004; Castles & Miller, 2009). And, while the Universal Declaration of Human Rights asserts that freedom of movement is an unalienable right for all

human beings, freedom to leave one's country does not necessarily translate to the right to enter another country. The countries in which migrants wish to enter have the sole discretion to grant them permission; and, the burden of regulating international migration falls almost exclusively on the destination countries (Zolberg, 1999). The United States can effectively help reduce the African medical brain drain if there is a political will to do so. Additional development of this point is provided in the forthcoming article (Article 3 in this report).

Implications for Theory and Research: Toward a Unifying Theory of Migration

Irrespective of the structural factors that influence migratory behaviors, the voluntary migration of critical social agents such as physicians is essentially a political act in that it involves an intentional exercise of one's freedom, and the subversion, unintended or not, of the social contract that binds physicians with their communities (Pellegrino, 1999). It follows that, any adequate analysis of migration must necessarily accounts for psychological dynamics (e.g., agency, motivation, life goals of would-be migrants), legal and political dynamics of the nation-state (Hollifield, 2004), and the broader political economy that structure the global space of flows (Castells, 2001; Ley, 2003). Such a task can hardly be met by a lone scholar.

Mindful of the limitations of unidisciplinary approaches in explaining a complex social phenomenon such as international migration, social science scholars are attempting to consolidate the diverse theories of migration research into more integrative frameworks (see, e.g., Massey, 1990; 1999; Jennissen, 2007). There are also efforts among leading international migration scholars from various social science traditions to work more collaboratively (see, e.g., Hirschman, Kasinitz, & DeWind, 1999; Vertovec & Cohen, 1999). As informative and laudable as these integrative frameworks and collaborative efforts are, they equally reveal the disciplinary biases of their authors.

A case in point is the interdisciplinary volume on international migration sponsored by the Social Sciences Research Council (SSRC) entitled *The Handbook of International Migration: The American Experience* (Hirschman, Kasinitz, & DeWind, 1999). The three basic questions examined in the handbook are:

> a) What motivates people to migrate across international boundaries, often at great financial and psychological costs? b) How are immigrants changed after arrival? (Responses to this question address such issues as adaptation, assimilation, pluralism, and return migration). c) What impacts do immigrants have on American life and its economic, sociocultural, and political institutions? (Hirschman, Kasinitz, & DeWind, 1999, p. 6)

On account of the basic research questions that the volume intended to explore, it is unsettling to observe that the 500-page handbook contains no contributions from psychologists let alone geographers. Indeed, even the references and index pages contain no mention of a leading acculturation theorist like social and cross-cultural psychologist J. W. Berry (1997; 2005). Yet, psychology and particularly community and social psychology has much to contribute to research on processes such as motivation, adaptation, acculturation, social support, mental health, human striving, well-being, diversity, prejudice, and prosocial behaviors all of which are intimately associated with most migration experiences. Thus, the eco-psychopolitical validity paradigm (Christen & Perkins, 2008) is suggested as a "bridging" structure that will pool the cultural capitals of social scientists from various backgrounds and enable them to collaborate more creatively in the co-creation of knowledge.

Moreover, some migration scholars (see, e.g., Arango, 2004; Portes, 1999; Portes & DeWind, 2004) have contended that it would be misguided to posit a grand theory of migration because of the inherent challenges in synthesizing all the potential questions germane to migration

processes. More specifically, Portes (1999) noted: “There does not seem to be much danger that someone might be attempting a grand theory of immigration anytime soon, but just in case, I would like to argue that this kind of endeavor would be futile” (p. 27). “To encompass the very heterogeneous questions addressed in this field,” Portes and DeWind (2004) further explained, “a comprehensive theory would have to be pitched at such a high level of abstraction as to be useless for the explanation and prediction of concrete processes” (pp. 829 – 830).

This position has some merit in that it calls attention to the methodological difficulties intrinsic in theory unification in a highly dynamic and composite field. I would argue, however, that the application of the eco-psychopolitical validity paradigm to the study of migration provides a unifying framework of migration that is not far removed from empiricity. The perspectives of the three-dimensional model can be expanded to include other possible domains (e.g., historical, legal), or contracted to conflate highly interdependent domains (e.g., physical and economic capitals). Likewise, the levels of intervention or units of analysis could be further stratified such as to clearly distinguish the hierarchy within the macrosystem (e.g., national, transnational, international, global).

Irrespective of how the model is expanded or contracted, all the units of analysis and domains of capital are still linked together by transactional ties. Moreover, the temporal dimension (horizontal plane containing the processes of liberation) remains constant. This is to suggest that by and large, *individual* migrants (and their networks) migrate to promote their wellbeing. In the case of involuntary migration, it is reasonable to postulate that *individual* migrants leave their native countries to escape oppression. In both cases, a striving for liberation is implied and power dynamics are at play. A similar logic would hold true in cases where migrants are considered

passive actors in the chain of exploitation as suggested by the world-system approach (Wallerstein, 1974).

Conclusion

The purpose of this study was to conduct an in-depth exploration of the dynamics of the physician brain drain from Sub-Saharan Africa to the United States. Given the critical, salutary, and allocentric role of medicine in society, and given the multiplicity of factors associated with international migration, the task at hand was to use an approach that reflects the complexity of the studied phenomenon. By applying the eco-psychopolitical validity paradigm to the study of physician brain drain, this study has uncovered critical sources of oppression, processes of empowerment, and wellness outcomes associated with medical migration. While the findings reported in this study are based mainly on the experiences of a small number of migrant physicians from Cameroon, Ethiopia, Ghana, and Nigeria and non-migrant physicians from Ethiopia, Ghana and Nigeria, they have implications for policy and for the understanding of medical migration dynamics from other Sub-Saharan African countries threatened by the medical brain drain.

CHAPTER IV

PAPER THREE

POLICY DISCUSSION OF A MORATORIUM ON THE ADMISSION INTO THE US PHYSICIAN WORKFORCE OF EARLY-CAREER PHYSICIANS FROM SUB-SAHARAN AFRICA

Abstract

Despite the unanimous adoption by member-states of the World Health Organization (WHO) of a global regulatory framework for monitoring and mitigating the consequences of the international recruitment and migration of health workers from developing to developed countries, there is no indication that the physician brain drain from Sub-Saharan Africa (SSA) to the United States will abate in a foreseeable future. Currently, there are well over 10,000 physicians born or trained in the SSA region that are fully licensed or on the way to becoming fully licensed to practice medicine in the United States. This number exceeds the combined population of physicians reported by WHO in 32 SSA countries. This unsustainable emigration trend is likely to persist unless bolder and more targeted interventions are implemented. This article discusses one potential action likely to help in mitigating the large-scale migration of SSA-trained physicians to United States. Namely, it suggests setting 35 years as the minimum threshold age for admission into US graduate medical education of international medical graduates (IMGs) trained in medical schools located in SSA (SSA-IMGs). It is anticipated that the proposed strategy would have a threefold impact by (1) significantly lowering the current migration magnitude among SSA-IMGs, (2) compelling early-

career SSA-IMGs to practice in their native countries long enough to bolster domestic physician pipelines, and (3) helping to recoup public investments in educating SSA-IMGs and opportunity costs incurred as a result of their emigration. A 10-year moratorium on the admission into US residency programs of SSA-IMGs under 35 years old may reduce by about 80% the projected number of SSA-IMGs entering the US physician workforce in the next 10 years ($N \approx 3600$). Such a policy in the United States could also produce some ripple effects by inducing other major doctor-receiving countries such as Canada, Australia, or the UK to adopt a similar regulation. While the implementation of the proposed recommendation may require an act of the US Congress, the Educational Commission on Foreign Medical Graduates (ECFMG) is best suited to enforce such a policy as part of the ECFMG certification process.

Policy Discussion of a Moratorium on the Admission into the US Physician Workforce of Early-Career Physicians from Sub-Saharan Africa

In an effort to mitigate the unsustainable physician brain drain from Sub-Saharan Africa (SSA) to the United States, the present paper considers one potential policy option likely to curtail the large-scale immigration to the United States of international medical graduates (IMGs) trained in SSA countries (hereafter SSA-IMGs). The paper argues for a more "indicated" intervention targeting early-career SSA-IMGs aged < 35 (hereafter under-35 SSA-IMGs), seeking admission to US residency programs. After briefly reviewing the historic role and current engagement of the United States in the SSA healthcare crisis, I present data germane to my central argument, and I discuss its potential outcomes.

Background

Consistent with the health-related goals of *The Millennium Declaration* (United Nations General Assembly, 2000), private foundations such as *The Bill and Melinda Gates Foundation*, government-sponsored programs such as *The President's Emergency Plan For AIDS Relief* (PEPFAR), international financing institutions such as *The Global Fund to Fight AIDS, Tuberculosis, and Malaria,* and grassroots advocacy and campaigning organizations such as ONE, have all mobilized their resources in an unprecedented effort to promote global health equity. Academic programs have also witnessed a dramatic expansion in global health education and research training (Merson & Page, 2009). Further, twinning, whereby medical programs in the global North partner with medical programs in the global South to co-create medical knowledge and promote health, is becoming a preferred mode of engagement. In the United States, this effort is led

by the *Consortium of Universities for Global Health* (CUGH, n.d.) which currently includes over 60 US-based global health programs and 15 foreign partner institutions located primarily in developing countries. The numerous health challenges afflicting countries in the SSA region spur so much interest (and competition for funding) among global health academic programs that Crane (2011) has likened it to a new "scrambling for Africa" (p. 1388).

Arguably, a moral insurrection (Ziegler, 2005) stemming from the uncomfortable awareness of gaping inequalities between high-income countries and heavily indebted poor countries partly explain the increasing international mobilization of resources to promote health and wellness in some of the most afflicted communities around the world. As reflected in the *Oslo Ministerial Declaration* (Amorim et al., 2007) and encapsulated in the concept of *global health diplomacy*, there is recognition that promoting health abroad is a strategic decision for benefactor countries seeking high yields in foreign policy and national security (Frist, 2007; Institute of Medicine [IOM], 1997; 2008; Primarolo, Malloch-Brown, & Lewis, 2008).

Further, in a world of increased interconnectedness between communities near and far, any serious threat to health within a given country has potential adverse effects well beyond its borders. This sentiment is aptly reflected in a statement from the *UK Government's Interministerial Group for Global Health*: "Poor health is more than a threat to any one country's economic and political viability—it is a threat to the economic and political interest of all countries" (Primarolo et al., 2008, p. 443). Besides HIV, which purportedly originated in the central African forest via a zoonotic transmission from simians to humans (see, e.g., Moore, 2004) and spread swiftly worldwide, the most notable and relatively recent example of global health interconnectedness is the 2002 – 2003 outbreak of severe acute respiratory syndrome (SARS), which reportedly cost the global business community between 60 to 80 billion US dollars (Frist, 2007).

Beyond the fact that investment in peoples' health represents an investment in human capital, and thus is a factor in productivity and long-run economic growth (see, e.g., Schultz T. W., 1961, 1962; Schultz, T. P., 1994; Weil, 2009), the growing engagement in global health is indicative of sustained efforts by leading global health advocates to frame the issue of global health as one intimately tied to universal human rights, and the lack of basic health resources as a gross human right violation (see, e.g., Farmer, 2003; Kim, Millen, Irwin, & Gershman, 2000). The right to health is affirmed in Article 25 of the *Universal Declaration of Human Rights* (United Nations [UN], n.d.) and further enshrined in multiple international and regional treaties on human rights including: *Convention on the Elimination of all Forms of Discrimination Against Women, Convention on the Rights of the Child, European Social Charter, African Charter on Human and Peoples' Rights*, and *Protocol of San Salvador* (Office of the UN High Commissioner for Human Rights & World Health Organization, n.d.).

Prior to all the above iterations, the constitution of the World Health Organization (WHO, 1946) emphasized the attainment of the highest possible standard of health as a fundamental human right irrespective of socioeconomic class, race, creed, and political ideology. By defining health as "a state of complete physical, mental and social well-being and not merely the absence of disease or infirmity" (WHO, 1946, p.1), the WHO constitution implicitly proclaims the right to health as arguably the most important human right since its protection and promotion entail the guarantee of a number of basic rights (life, food, healthcare, education, etc.). For the purpose of this position paper, the former UN Special Rapporteur captures the essence of the right to health:

> It is time to grasp that an effective health system is a core social institution, no less than a court system or a political system. The right to a fair trial underpins a good court system.

> The right to vote underpins a democratic political system. And the right to health underpins the call for effective health systems accessible to all. (Hunt, 2005, p. 4)

However noble and well-meaning international treaties and position statements on the right to health sound, wide disparities in health outcomes between high-income countries and heavily indebted poor countries are the order of the day (see, e.g., Marmot, 2005; WHO, 2006). These inequalities will likely increase unless creative solutions are imagined and bolder steps taken to address their root causes and compounding factors. One such compounding factor is the unsustainable large-scale immigration to high-income countries of SSA physicians. As suggested by the most recent data on SSA physicians integrated into the US physician workforce (Tankwanchi, 2012a), the United States is becoming the international destination par excellence for SSA-trained physicians.

The Conflicting Roles of the United States in the Health Crisis in SSA

The United States as Abettor of Poverty-Generating Economic Policies in SSA

The national capital of the United States is the site of powerful international financial institutions (IFIs), namely the International Monetary Fund (IMF) and the World Bank, which, in tandem with the US Treasury Department, engineered the neoliberal economic policies that came to be known as the Washington Consensus (Williamson, 1993; 2004). Arguably, the most controversial and harmful outcome of the Washington Consensus was the structural adjustment programs (SAPs). The SAPs were a set of conditionalities for new loans imposed by IFIs to debt-burdened countries at the outset of the third world debt crisis in early 1980's. These conditionalities included inter alia currency devaluation, privatization, deregulation, and desubsidization of critical

goods and services (e.g., food, fuel, and public transportation) supported by country governments (see, e.g., Moyo, 2009; The Structural Adjustment Participatory Review International Network [SAPRIN], 2004).

The implementation of the SAPs in SSA was directly associated with a significant deterioration of social services including healthcare and public education, from which many countries have yet to recover. Most relevantly, the SAPs were a major factor in the large-scale emigration of health workers from SSA (see, e.g., Farmer cited in Mullan, 2007; the Structural Adjustment Participatory Review International Network [SAPRIN], 2004; Cornia, Jolly, & Stewart, 1987). Almost one-half of all SSA-trained physicians identified in the 2011 American Medical Association (AMA) Physician Masterfile immigrated to the United States during the implementation years of the SAPs (Tankwanchi, 2012a). Over the course of nearly two decades (early 1980's – late 1990's), the SAPs were the only economic strategy acceptable to the US Treasury Department, and they contributed significantly to the collapsing health systems of many SSA countries.

The United States is the Largest Recipient of Immigrant Physicians Trained in SSA

In absolute numbers, the United States is the prime beneficiary of SSA-IMGs immigrating to OECD countries (see, e.g., Hagopian et al., 2004; Mullan, 2005; Tankwanchi, 2012a). Figures reported in the *World Health Statistics 2011* (WHO, 2011) suggest that the current population of immigrant physicians from SSA practicing medicine in the United States exceeds the combined stocks of physicians available in 32 SSA countries with less than 775 physicians each (see Appendix C). The figures would be much higher if the number of SSA immigrant physicians present in the United States included SSA-IMGs who failed to obtain admission into US residency

programs and thus do not appear in the AMA Physician Masterfile, but are still living in the United States and are working in other occupations aside from medicine (see, e.g., Tankwanchi, 2012a).

The United States attracts physicians from low and middle-income countries through its immigration policy favoring selection of the best and brightest (Kapur & McHale, 2005) and its significant funding of graduate medical education (GME), the pathway through which all US and foreign-trained medical graduates must pass to become licensed medical practitioners in the United States. GME is funded through the federally-administered Medicare program. In 2010 alone, it contributed US$9.5 billion to US teaching hospitals for the training of about 100,000 residents (Iglehart, 2011). This means that the US Government invested about $94,000 for each US and foreign medical graduate admitted to a US residency program in 2010.

Between 1991 and 2004, the United States and the UK recruited 60% of the global stock of migrant physicians practicing medicine outside their countries of education (Docquier & Bhargava, 2007). However, through a policy document entitled *Code of Practice for the International Recruitment of Healthcare Professionals* (Department of Health, 2004), the UK Government has taken some incremental steps to limit the increased immigration of foreign physicians to the UK by precluding active recruitment of skilled health workers from SSA and other developing countries. Although the effectiveness of the above UK Code of Practice has not been fully evaluated and was reported to be marginal in early implementation years (see, e.g., Volqvarzt, 2005; Pond & McPake, 2006), it nonetheless suggests an awareness of the problem.

Conversely, there is no publicly announced commitment by the United States to limit the continuous immigration of skilled health professionals from developing countries (see, e.g., Garrett, 2007). In fact, *S. 1979 Conrad State 30 Improvement Act* (U.S. Congress, 2011), a recently introduced bill endorsed by the American Medical Association and the American College of

Surgeons (see, e.g., Hoyt, 2012; Klaric, 2009; Madara, 2012), is currently pending in the Senate Committee on the Judiciary. Enactment of the above bill would permanently reauthorize the J-1 visa waiver program. In other words, the United States is instead seeking to increase the immigration and the likelihood of international medical graduates (IMGs) on J-1 visa to stay permanently in the United States after their medical specialization. These IMGs would otherwise be required to return to their countries of origin upon completion of their US residency programs and practice for a minimum period of two years before reapplying for a professional visa to come to the United States.

The United States is a Major Sponsor of Current Global Health Initiatives in SSA

The U.S. Government-sponsored PEPFAR represents by far the largest commitment made by any nation for a global health initiative targeting a single disease (Committee on the U.S. Commitment to Global Health, 2009). The *Tom Lantos and Henry J. Hyde United States Global Leadership Against HIV/AIDS, Tuberculosis, and Malaria Act of 2008* which reauthorized funding PEPFAR for five additional years (2009 – 2013), put special emphasis on strengthening countries' health systems. Specifically, it called for the training of 140,000 new health professionals, including medical doctors and nurses in countries supported by PEPFAR grants (U.S. Congress, 2008). Towards this end, the Obama administration launched the *Medical Education Partnership Initiative* (MEPI) in October 2010. Budgeted at US$130 million over a five-year period (2010 – 2014) and funded mainly through PEPFAR in partnership with the National Institute of Health Fogarty International Center (Eichbaum et al., 2012), MEPI is a network comprising about 304 regional partners, country health and education ministries in 12 SSA countries working in collaboration with more than 20 US partners (U.S. Government, n.d.). Support of human resources for health is the

linchpin of MEPI, with retention of graduates a priority goal of the initiative (The Lancet Editorial, 2011).

However praiseworthy, the need for MEPI and NEPI would arguably be less pressing were it not for the implementation of the aforementioned SAPs, which were endorsed by the U.S. Treasury Department and sapped the foundational structures of health systems in SSA for over nearly two decades. Compounded with the onset and steady stream of the HIV/AIDS pandemic, the full implementation of SAPs effectively reversed public health gains achieved by many African countries after their independence (Lewis, 2006). Likewise, the long-term benefit of MEPI would be more promising were it not for the United States' primary care system's heavy reliance on physicians from the developing world. Promoting MEPI and NEPI programs in SSA while concurrently condoning the large-scale migration of health professionals from SSA to the United States is just as good as giving with one hand and taking with the other (Hunt, 2005). A comparable sentiment is reflected in Lewis' (2006) first-hand account of the collapse of health systems in SSA. In *Race Against Time,* the former UN Secretary General's special envoy for HIV/AIDS in Africa described in graphic detail the toll the HIV/AIDS pandemic and the staffing shortage took on the delivery of healthcare at the Lilongwe Central Hospital in Malawi.

> The wards rumbled with low, almost-inaudible moans, as though those who were ill could not summon the strength to give voice to the pain. The smell was awful: a room of rotting feces and stale urine. And the eyes, so sunken and glazed and pleading. I talked with the administrator. He told me that on the ten-hour night shift, to care for between sixty and seventy patients—each and every one of whom would have been in intensive care in a Canadian [or U.S.] hospital—there would be one nurse. The situation was impossible. … The pandemic has taken a decimating toll on nurses, doctors, and clinicians of every

> variety. … I can't remember a hospital or clinic that had a full-time pharmacist. … The problem is grievously compounded by the practice of "poaching" and the resulting brain drain from Africa to the outside world. Some of the drain goes to other countries in the region … but they, too, lose professionals in the predominant flow to the United Kingdom, the United States, Australia, and Canada. It is rancid behavior on the part of the West. … People have the human right to move to better jobs, with better pay, better benefits, [and] better working conditions. But given the situation in Africa, they shouldn't be induced to leave by countries perfectly capable of solving occupational deficits internally (Lewis, 2006, pp. 46-47).

While Lewis' visit took place in 2002, the staffing shortage at the Lilongwe Central Hospital is still quite daunting today as suggested by Farmer (2010): "In the largest public maternity ward in the country, in Lilongwe, two obstetricians and a handful of nurses were struggling mightily to deliver twelve thousand babies each year" (p. 549). With the 2010 designation of Malawi as a Global Health Initiative (GHI) Plus country (Fleischman, 2011; U.S. Global Health Initiative, n.d.), it is hoped that the dire predicament of Malawi's health system will improve substantially. GHI Plus designation refers to any of the eight countries selected by the Obama administration to pilot a far-reaching Global Health Initiative (GHI) which builds on the successes of PEPFAR but goes beyond a narrow focus on HIV/AIDS treatment and prevention to include other critical structural issues such as gender equality and health system strengthening (U.S. Global Health Initiative, n.d.). By identifying strengthening of health systems as a core priority of GHI, the U.S. Government acknowledges the necessity of an adequate number of qualified health workers in every African country. However, it is one thing to train local health workers and quite another to retain them in their native countries where their medical skills are sorely needed. The current large-scale migration

of SSA physicians to the United States does not bode well for expectations that new cohorts of medical doctors graduating from MEPI-sponsored programs will practice in Africa after graduating.

Alternatively, the selection criteria by which scientific reviewers of the U.S. National Institute of Health chose the African medical schools that received MEPI grants have perplexed some experts (Eichbaum et al., 2012). For instance, the University of Ibadan received an MEPI award totaling up to US$10 million over five years. A portion of the programmatic MEPI award received by the University of Ibadan will fund a collaborative effort with five additional Nigerian medical schools and two US partner institutions to revise, update, and restructure current education curricula in medicine, nursing, dentistry, and pharmacy in Nigeria (University of Ibadan, n.d.). However, it is worth pointing out that the University of Ibadan also has an entrenched culture of medical migration. Not only does this culture fail to discourage the emigration of recent medical graduates, it actively promotes medical migration through its medical school faculty serving as role models for the benefit of migration and subsequent return (Hagopian et al., 2005).

However, return migration is not merely a matter of landfall; it must often be negotiated with significant others within medical migrants' networks (Tankwanchi, 2012b). Timely permanent return becomes increasingly problematic once migrant physicians have immigrated to the United States and successfully integrated into the US physician workforce (Tankwanchi, 2012b). The University of Ibadan currently has the largest number (N=870) of SSA medical graduates practicing medicine in the United States (Tankwanchi, 2012a), and there is no reason to believe that the next batch of medical graduates benefiting from the improved medical curriculum developed at the University of Ibadan through the MEPI grant will not ultimately find their way to the US physician workforce. Thus, taking the necessary steps to abate the current scale of medical migration and

curtail the future countermovement of MEPI-sponsored physicians from the SSA workforce to the United States is a much-needed addendum to current efforts.

The WHO Global Code of Practice: A Tepid Effort to a Severe Crisis

It has been over two years since the memorable 63rd World Health Assembly (WHA) when 193 WHO member states, including the United States unanimously adopted the *WHO Global Code of Practice on the International Recruitment of Health Personnel* (WHO, 2010). The Code stresses that all countries should endeavor to address their health staffing needs with their own domestic human resources for health (HRH), and that the international migration of skilled health workers should result in a win-win situation for both emigration and immigration countries. In theory, the unanimous adoption of the Code marked a significant milestone on the global health equity agenda. It reaffirmed a universal awareness that fragile health systems in resource-constrained countries are systematically destabilized when their meager stocks of health workers are continuously depleted as a result of international recruitment and international migration. In practice, however, there is no indication that the medical brain drain from resource-constrained countries, such as those in Sub-Saharan Africa (SSA), to developed countries, such as the United States or Canada, will abate in the foreseeable future as the result of the adoption of the Code. In fact, the voluntary and non-binding nature of the Code makes it an all-too-political text, preserving as much the interests of doctor-receiving countries as it reflects a blunt regulatory framework for the international migration of health professionals.

In lieu of a global but non-enforceable code, there is justification and a pressing need for indicated and bolder interventions targeted specifically at countries that are most affected by the critical shortage of healthcare providers. The *World Health Report 2006* (WHO, 2006) identified 36

such resource-constrained countries in SSA. However, the WHO list should be expanded to include countries such as Djibouti, Somalia or South Sudan, which are all saddled with significant shortages in human resources and unmet health needs but are listed by WHO as Eastern Mediterranean countries. Even countries like South Africa or Botswana that are absent from the WHO list are the epicenter of the HIV/AIDS pandemic. In other words, migration regulation targeting physicians in all countries within the SSA region is more justifiable and more promising than the current global code for the international recruitment of migrant health workers.

Rationale for Radical Intervention

This position paper proposes setting a minimum age below which the admission of SSA-trained medical graduates (SSA-IMGs) into US graduate medical education would be restricted. On the basis of graduation data and immigration estimates reported in Tankwanchi (2012a), age 35 is suggested as the minimum threshold age for admission of SSA-IMGs into US graduate medical education. Enactment of such a policy by the US Congress and its enforcement by the Educational Commission on Foreign Medical Graduates (ECFMG) could have a threefold impact by (1) significantly reducing the current pace of medical migration from SSA, (2) compelling early-career migrant physicians to practice in their native SSA countries long enough to bolster domestic physician pipelines, and (3) helping to recoup public investments in educating migrant physicians and opportunity cost incurred as a result of their emigration. Moreover, enforcement of such a policy in the United States could produce a ripple effect by inducing other major doctor-importing countries such as Canada, Australia, or the UK to follow suit. The remainder of this paper discusses the evidence, assumptions, anticipated outcomes, and potential unintended consequences of the proposed policy.

Figure 1

Current Age, Graduation Age, and Estimated Age at Entry in the United States among SSA-IMGs

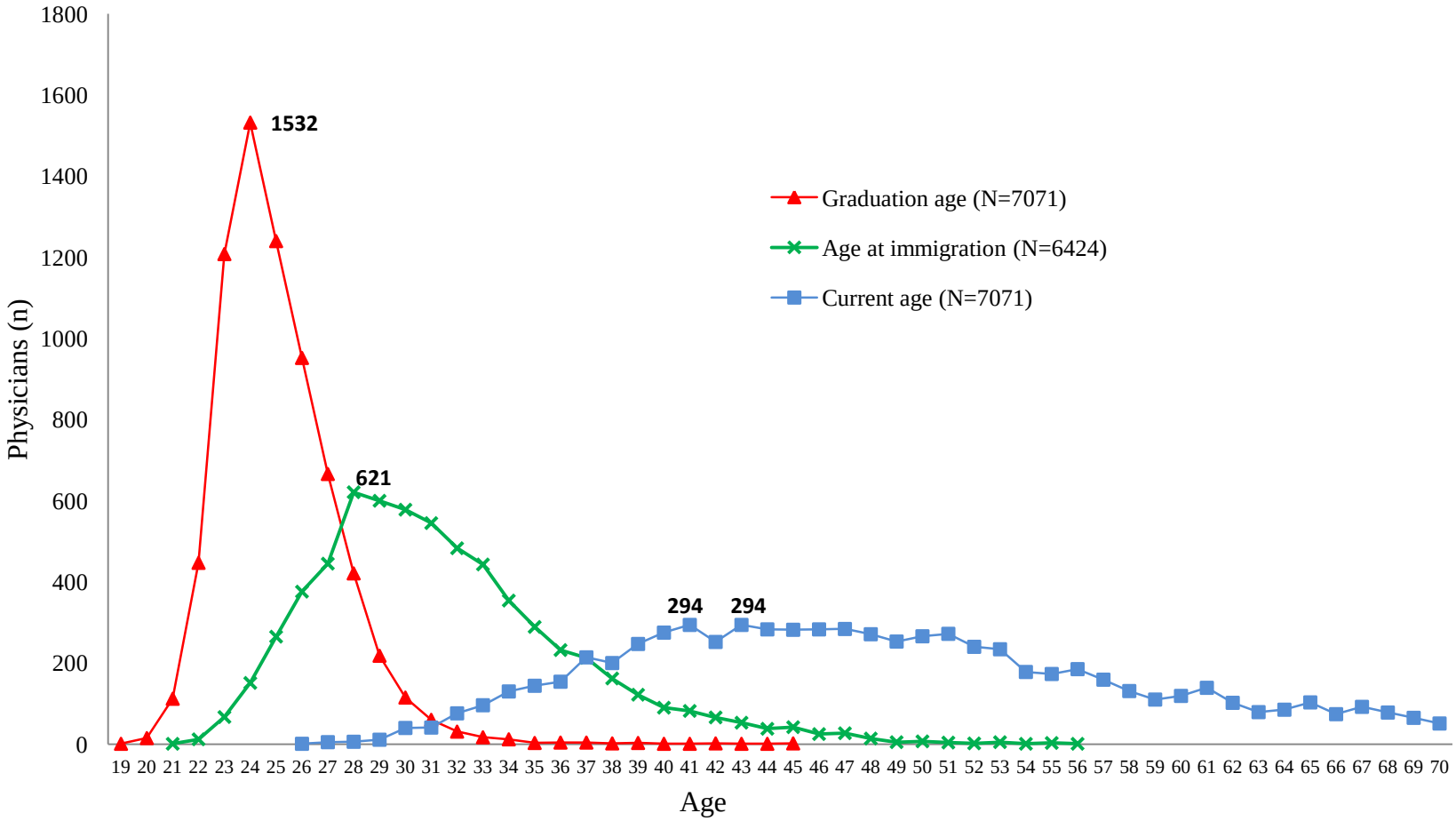


Figure 2

Cumulative Percentage of SSA-Trained Physicians Graduated and Immigrated to the United States by a Certain Age

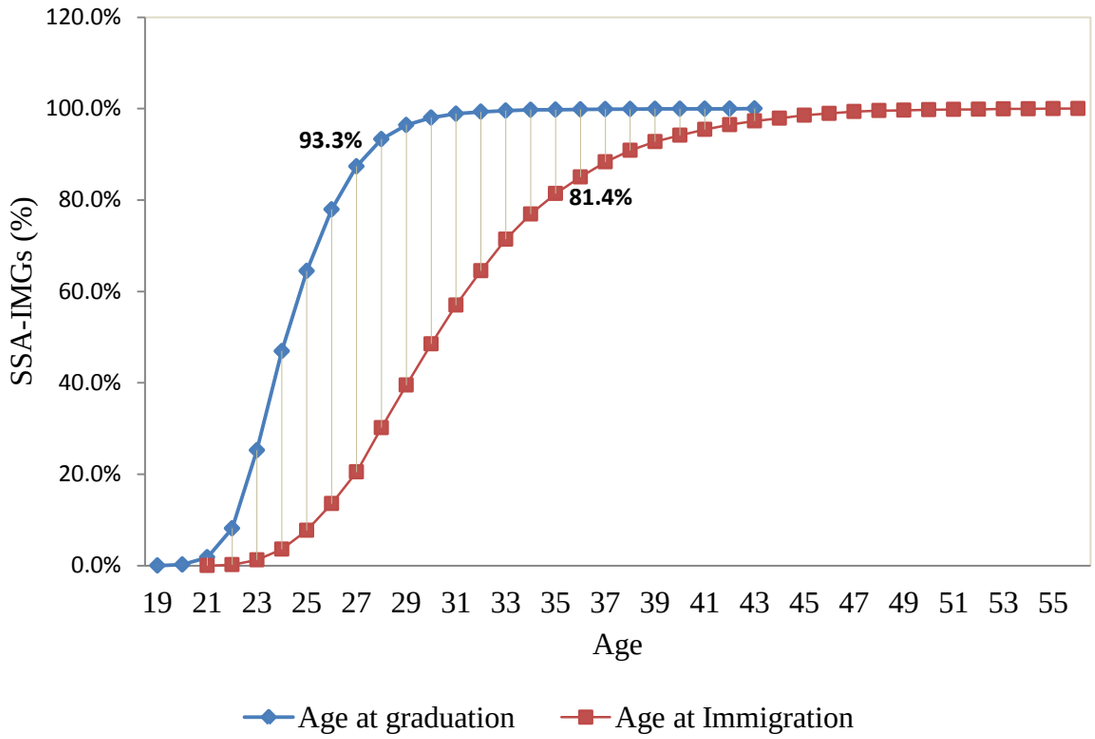
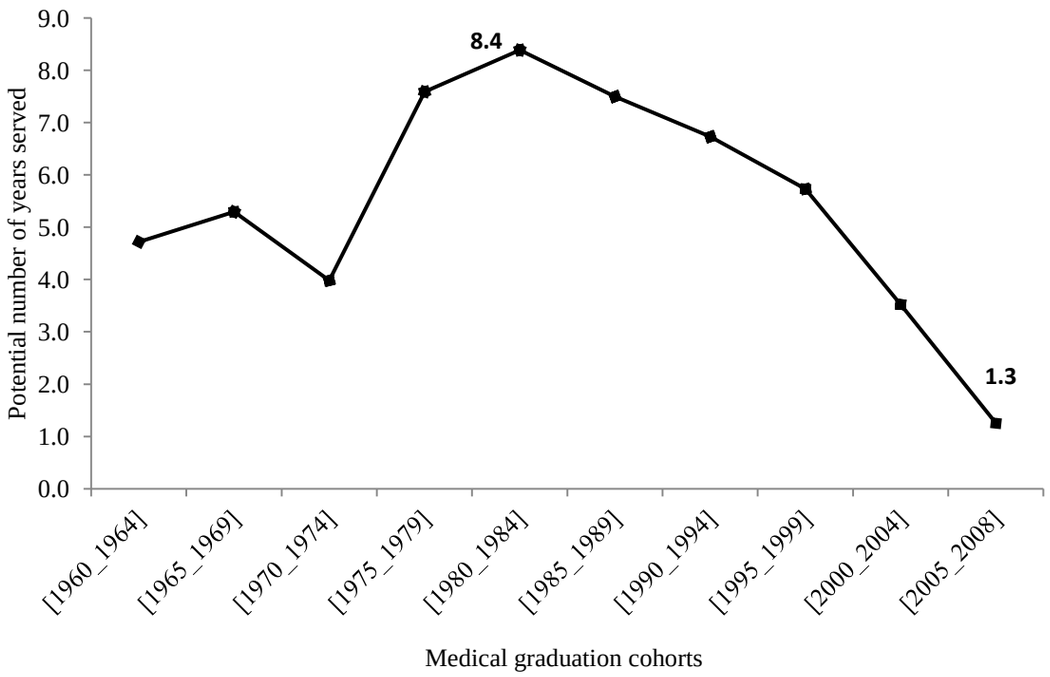


Figure 3

*Estimated Years of Service Provided by each Graduation Cohort Before Emigration**



*Based on N = 6,421 complete graduation and residency records; Estimated mean year of time between graduation and entry in the United States = 6.4 years (range: 1.3 [2005-2008] - 8.4 [1980-1984]).

The three graphs presented respectively in Figure 1, Figure 2, and Figure 3 are all reproduced or drawn from data reported in Tankwanchi (2012a). Together, these figures orient us to important timelines in the professional development and emigration decision-points of SSA-IMGs. The distinctive shapes of the three graph-lines in Figure 1 reflect the age distribution of SSA-IMGs at graduation, immigration, and at the present time. The peak of the red line represents the modal graduation age (24 years, *n*=1532), and its leptokurtic shape suggests that there is little variance in the chronological age of SSA-IMGs at the time of graduation.

The shape of the graduation curve (red line) sharply contrasts with that of current age (blue line). The platykurtic and multimodal distribution of the latter reflects the wide variation in age (and professional experience) among SSA-IMGs currently practicing in the United States. Most importantly, it captures the fact that many SSA-IMGs increasingly stay in the United States until their retirement years. Hence, return to the native countries cannot be assumed once immigrant physicians have moved to the United States.

The green line in Figure 1 represents the estimated age at immigration to the United States.[23] Its distribution is mainly mesokurtic but slightly skewed to the right. This suggests that, immigration of SSA-IMGs to the United States occurs mainly within a 10-year period following graduation (25 – 35 years), and reaches its highest peak at age 28 (n=621) and decreases steadily thereafter. As reported in Tankwanchi (2012a), the average SSA-IMG graduates from medical school at age 25, and immigrates to the United States at age 31.5, that is, between six and seven years after graduation. But, as shown in Figure 1, although SSA-IMGs' migration to the United States gradually decreases after early 30, immigration continues well beyond migrants' early-career years and reaches its lowest level after age 40. This trend is even more apparent in Figure

[23] Note: The author subtracted 5 years from the time of residency completion to estimate age at immigration. Rationale for the procedure is explained in Tankwanchi (2012a).

2, which plots the cumulative proportion of SSA-IMGs who graduated from SSA medical schools and immigrated to the United States by a certain age. The blue line in Figure 2 shows that well over 90% of all SSA-IMGs completed medical school by age 28, while the red line indicates that about 80% moved to the United States by age 35.

Most interestingly, Figure 3 captures the ominous trend that characterizes recent emigration from SSA to the United States. For each semi-decennial graduation cohort, Figure 3 plots the differences between estimated average year of entry in the United States and average year of graduation from SSA medical schools. Assuming that SSA-IMGs came straight to the United States from their native countries, the plotted differences are good proxies for the potential number of years each graduation cohort provided patient-care services in their home countries after graduation and prior to emigration. The downward trend depicted in Figure 3 began in the mid-1980s when the domestic physician workforce in many SSA countries started migrating in droves in response to the austerity measures of the SAPs. Since then, SSA-IMGs have been providing fewer and fewer years of service to their native countries before emigrating. From 1980 to 2008, the average time between graduation and immigration to the United States had fallen by nearly 85% (from 8.4 years to 1.3 years). This steep decline reflects the increasingly fast pace of the physician brain drain and foretells the challenges of stemming migration in an era of increased globalization. Short of bold interventions like the one advocated here, it is doubtful that current migration trends observed among SSA physicians can be curtailed.

A Threshold Age for Admission into US Residency Programs

In an effort to curtail the unsustainable trend of early-career migration observed among recent SSA-IMGs appearing in the AMA Physician Masterfile, age 35 is proposed as the

minimum threshold age for admission of SSA-IMGs into US residency programs. As suggested by the data presented above, the average SSA-IMG graduates from medical school at age 25 and will accumulate about 10 years of professional experience by age 35. Clemens (2011) has argued that the majority of medical students in SSA provide patient-care services while still in medical school that is fairly comparable to that of graduated physicians. When taking this fact into account, the average number of years of service provided by SSA-IMGs before immigrating to the United States at age 35 may exceed 10 years.

Ten years of medical service provided by prospective migrant physicians before leaving their native SSA countries may not be sufficient to address the severe shortage of skilled health workers in countries of emigration, or to offset the net loss of scarce health human resources resulting from migration. However, 10 years of service is more than five times the number of years of medical service provided to the home country by the last graduation cohort of SSA-IMGs appearing in the 2011 AMA Physician Masterfile (see Figure 3). A junior medical faculty at Jimma University (Ethiopia) who teaches and advises medical students over a 10-year period would contribute to the training of at least 2,000 medical students and the graduation of five classes totaling 1,000 medical graduates.[24] Likewise, an obstetrician who practices at the Lilongwe Central Hospital in Malawi for 10 consecutive years would deliver 60,000 babies with the assistance of a few nurses (see, Farmer 2010). Thus, 10 years of medical services provided to the home country is significant, and even more so in the face of dire conditions of service and inadequate and inconsistent remuneration (see, e.g., Hagopian et al., 2005; Mullan et al., 2011; Tankwanchi, 2012b).

[24] First-year enrollment at Jimma University faculty of medicine was projected to increase from 250 students in 2009 to 350 in 2011(Mullan et al., 2011). Assuming 80% retention rate during the 6-year medical program, Jimma University will produce at least 1000 medical doctors over the next 10 years.

Many SSA-IMGs who immigrate to the United States to complete their residency and fellowship choose to stay in the United States long after, spending the bulk of their most productive years serving medically underserved communities (see, e.g., Tankwanchi, 2012b). The significant increase (38%) in the number of SSA-IMGs in the United States since 2002 reflects such a trend. As reported in Tankwanchi (2012a), the average age of SSA-IMGs identified in the 2011 AMA Physician Masterfile was 48 years, and the average length of time spent in the United States in 2011 was 16 years. This suggests that the average SSA-IMG reaching the conventional retirement age in the United States would have practiced for at least 30 years by age 65. So, it does not seem unreasonable to recommend that would-be migrant physicians practice for 10 years in their native countries before emigrating.

Tankwanchi (2012a) estimated that SSA-IMGs currently move to the United States about six and a half years after graduation. By age 33, over 70% of SSA-IMGs had entered the United States, and by age 35, a little over 80%, and by age 37 nearly 90%. Clemens (2011) reported a slightly higher estimate of 7.2 years elapsing between receipt of medical degree in Africa and immigration to North America. However, he aggregated migration data of SSA-trained and North African-trained physicians. Findings from Clemens (2009) also suggested that about 70% of African immigrant physicians migrated directly from their native countries to North America.

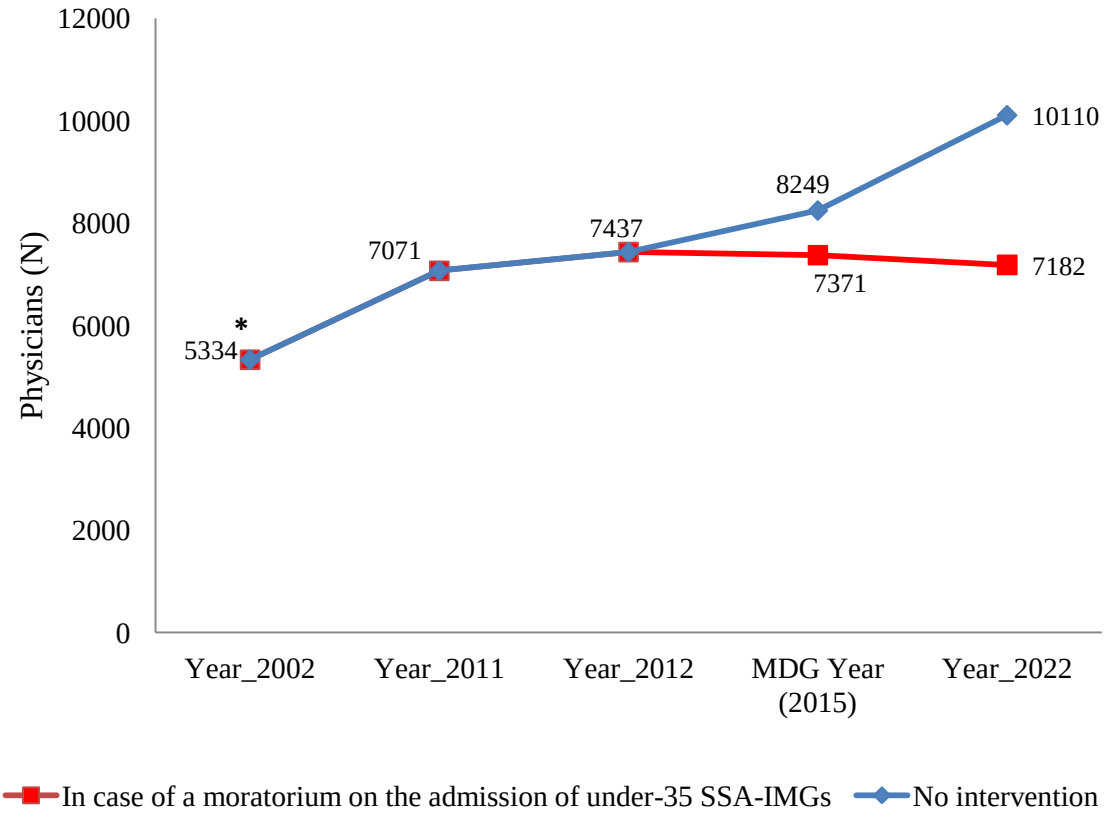
Holding constant the current yearly immigration growth rate of $r = 0.05$[25], we can derive a constant k[26] representing the incoming yearly number of SSA-IMGs added to the US physician workforce. If no immigration restriction is enforced, we can expect that over 360 additional SSA-IMGs will integrate into the US physician workforce each year for the next 10 years. Thus, there will be over 3,600 new entries of SSA-IMGs in the 2022 AMA Physician Masterfile, as

[25] r = (SSA-IMGs in the 2012 AMA Physician Masterfile)/(SSA-IMGs in the 2011 AMA Physician Masterfile) – 1.
[26] k = (SSA-IMGs in the 2011 AMA Physician Masterfile)*r

opposed to fewer than 1,000 new additions in the event of the enactment and strict enforcement a 10-year moratorium on the recruitment of under-35 SSA-IMGs (see Figure 4).

Figure 4

Past, Current, and Projected Numbers of SSA-Trained Physicians in the US Physician Workforce



*Note: Data for Year 2002 are from Hagopian et al. (2004). Year 2011 data are from Tankwanchi (2012a). Year 2012 data were carefully selected and retrieved in September 2012 from *Redi-Med Interactive Database System* (www.redimeddata.com), and include only physicians aged ≤70. Data for Year 2015 and Year 2022 were estimated using the current annual migration growth rate, r = (Year 2012/Year 2011) -1 = (7437/7071) -1 ≈ 0.055. Thus, k=7071*.055 = 366; Year 2015 = [(7071 + 4k) - (286 physicians aged > 70 by 2015)]; Year_2022 = [(7071+11k) - (980 physicians aged > 70 by 2022)].

The rudimentary calculations described above assume no attrition other than the potential retirement of 980 physicians who are currently between 61 – 70 years old and will exceed age 70 by 2022. However, it must be viewed as quite conservative. Indeed, the rate of medical migration to the United States is likely to increase over the next 10 years due to an exploding elderly population threatened with unmet healthcare needs, and a projected shortage of primary and non-

primary care physicians in the United States exceeding 91,000 in 2020 by one estimate (see, e.g., AAMC, 2010; 2011). Notwithstanding the need for more physicians in the United States, a view which by the way is not without some reservation (see, e.g., Goodman, 2004; Goodman & Grumbach, 2008), the shortage of physicians in SSA countries is much profound, and the urgency for bold action more pronounced.

Discussion

The goal of this paper was to discuss a policy recommendation advocating a moratorium on admission into US residency programs of early-career SSA-IMGs (aged < 35). While the rationale for such a seemingly radical proposal has been fleshed out, a number of questions still persist: What if the proposed 35-year minimum threshold age overshoots or underestimates the projected 80-percent decrease of SSA-IMGs recruits? What is to stop under-35 SSA-IMGs from coming to the United States several years earlier and applying for residency once they meet the 35-year age requirement? What suggests that such a moratorium will not create unintended consequences such as a significant increase in immigrant physicians 35 years old and older? To which extent does such a moratorium respect the freedom of movement of prospective migrant physicians or promote transformative psychopolitical validity (i.e., wellness) in the countries of origin? What is to stop the targeted SSA-IMGs from moving to a country aside from the U.S.? Although all these questions cannot be definitively answered, it is important to contend with them.

Is Age 35 a Realistic Cut-off Point for 80% of the Data?

Age 34 and age 35 are respectively the third quartile and fourth quintile of the cumulative distribution function of age at immigration. Put another way, respectively 75% and 80% of SSA-

IMGs immigrated to the United States by age 34 and age 35. However, it must be understood that proxies for the chronological ages of SSA-IMGs at the time of immigration to the United States were estimated from the dates of residency completion available in the 2011 AMA Physician Masterfile. Likewise, it must be underscored that the estimation of SSA-IMGs' chronological ages at the time of immigration to the United States would be more accurate were they extrapolated from data available in the ECFMG database. All prospective immigrants to the United States who graduated from foreign medical schools and are planning on practicing medicine in the United States must first establish contact with the ECFMG in order to start up the ECFMG certification process which will qualify them to apply for admission into US residency programs.

Thus, the ECFMG maintains a comprehensive database with relevant background information on all IMGs prior to admission into US residency programs (e.g., primary-source verification of medical education credentials, results of USMLE Step 1 and Step 2, dates of submission of supporting documents for ECFMG certification). A careful analysis of this information would most likely provide a more accurate proxy for SSA-IMGs' year of immigration to the United States, thus capturing the proportional distribution of ages along the immigration curve more accurately. As explained in Tankwanchi (2012a), I made several attempts to obtain raw data from the ECFMG database. However, the ECFMG reportedly does not share such information with external investigators, and my multiple requests were unsuccessful. Given that the enforcement of the proposed policy may ultimately fall within the purview of the ECFMG, it behooves the latter to make recommendations for the increase (or decrease) of the proposed 35-year minimum threshold age for the recruitment of SSA-IMGs into US residency programs.

Would They Not Still Migrate Earlier or Leave in Droves at Age 35?

Only a complete ban on medical migration—an unlikely proposition—would likely halter ambitious physicians from immigrating to the United States. This analysis does not consider it practical, desirable, or necessary to go to such an extreme. In the presence of opportunity for immigration to the United States, only the personal values and individual circumstances of any newly graduated and ambitious physicians can prevent them from emigrating. If the United States were to adopt the policy proposed in this paper, it would not prevent any SSA-IMGs from immigrating to the United States before their 35th birthday, and many would likely do so. However, it is also likely that it would delay the early-migration plans of many junior physicians who would otherwise be bent on moving to the United States shortly after graduation. As clearly shown on the migration graph in Figure 1, the largest migration cohorts are found among SSA-IMGs between age 28 and age 31. And it is likely that the greatest impact of the proposed moratorium will be felt within that age group.

The concern that many SSA-IMGs may still migrate to the United States several years before they meet the 35-year age eligibility for residency recruitment should be allayed. As articulated in Tankwanchi (2012b), international migration is not merely a matter of take-off and landfall. It often entails some conscientious preparation, especially so when the destination country is relatively far away, the decision to leave contentious, and the probability for early return uncertain. Moreover, the new ecological setting is rife with competition and risks. Fear of failure and threats of alienation are real concerns to would-be migrant physicians, and indeed many IMGs, over 40% between 1986 and 2005, fail to obtain admission into US residency programs (ECFMG, n.d.; Tankwanchi 2012a). In the presence of a well-publicized moratorium, newly graduated physicians with relatively secure employment in SSA and the possibility to complete specialization locally will likely reconsider immigrating to the United States where

they may be underemployed for several years before obtaining clearance to apply for recruitment into US residency programs. In an increasingly competitive space such as US graduate medical education, it does not reflect well on the resume of any ambitious IMGs to be removed from medical practice or scholarship for too long. Any newly graduated physicians from SSA may be better off practicing in their native countries until they reach 35 years, at which time they may migrate to the United States to realize whatever professional ambitions and life goals they harbor.

Likewise, the concern that the proposed 35-year age restriction may spur large-scale migration among many mid-career and more senior physicians than would otherwise occur absent the moratorium should also be mitigated. Beyond age 35, prospective migrant physicians have to be especially motivated or particularly dissatisfied with their predicament in their home countries to emigrate solely on economic grounds. In a sample of 30 migrant physicians from SSA, 27 of whom trained and practiced in SSA before moving to the United States, only two women physicians (i.e., less than 10%), moved to the United States after age 35 (Tankwanchi, 2012b). Interestingly, both were pediatricians by training and came to the United States primarily for medical reasons. It would seem that, as SSA-IMGs reach or pass age 35, opportunities to emigrate may increase while interest and motivation may wane. This may be due to the fact that at that age, many SSA-based physicians are quite stable in their career, and would not want to compromise it for a new adventure. The following confession from a 35-year old non-migrant physician from Ethiopia provides some evidence to this observation:

> I personally visited the U.S. recently for two weeks. My major purpose was to visit a new place and meet friends. But, since the trend and advice of many was to consider working as a physician in the U.S., I tried to see how my friends were doing there. I thought about my future plan after coming home as the plan at the time was not to stay [in the U.S.].

> [After further thought,] I did not want to stay in the U.S. My reasons were: my long time separation from clinical practice, the difficulties of starting a new life in the U.S., and potential opportunities I might get as public health worker.

Physicians' Individual Human Rights and Freedom of Movement

Concerns about infringements on individual human rights are often thrust into policy discussions of international migration of health workers (see, e.g., Physicians for Human Rights, 2004; Hagopian, 2007; WHO, 2006; WHO, 2010). Most notably, Article 13 of the *Universal Declaration of Human Rights*—which asserts individuals' freedom to move out of their native countries—is cited as a non-negotiable right of all migrants. However, prospective immigrants' freedom to move out of their native countries in no way guarantees their legal right to enter into another country. If this were the case, then the need for travel visas and border controls would be moot, and the refusal of a visa to bona fide applicants wishing to visit or establish right of domicile in another country would be considered a violation of their fundamental right. Yet every year, millions of applicants are denied a visa to the United States. In 2010, an excess of two million applicants (N=2,170,154) were found ineligible to receive a US visa for various reasons including "physical or mental disorder" and "communicable disease" (US Department of State, n.d.).

If the above applicants were coming to the United States to seek treatment for their conditions, can it not be implied that their rights to health, their dignity, and their freedom of movement have been equally violated? Especially so in light of the fact that the native doctors who could have treated them are now residing in the United States? If regulating the immigration of doctors in order to promote a minimum of health equity infringes upon their freedom of movement, then the same should be said about all applicants with communicable diseases and

mental health conditions that are denied entry to the United States every year. Moreover, if regulating the immigration of doctors automatically calls to mind the potential violation of their freedom to move, then threats to the right to health and the right to life induced from large-scale migration of doctors should be a far greater concern. Therefore, in the hierarchy of human rights, the right to life precedes all other rights, and any threat to the former is a far greater threat to human freedom than regulating the immigration of doctors. Hardly can the right to life be protected without promoting the right to health. It cannot be denied that lives are lost and the quality of life is diminished throughout Africa as the result of scarcity and emigration of human resources for health.

While theoretically, migrating physicians have the right to mobility, the nation-states they wish to enter exercise the sovereign right to control their borders and to regulate who they let in (e.g., the foreign doctors), who are left out (e.g., the applicant with a communicable disease or a mental illness), and who are expulsed (e.g., undocumented aliens). Refusal rates for B1/B2 (visitor) visa applications in 2010 were 40% for Cameroonian applicants, 49.1% for Ethiopians, 58% for Ghanaians, 40.2% for Kenyans, 57.6% for Liberians, 33.7% for Nigerians, 69.6% for Somalis, and 4.1% for South African applicants (U.S. Department of State, n.d.). These figures further support the fact that it is not everyone who wants to exercise his/her freedom to move to the United States who is given that opportunity. Further, if opportunity is quantified in terms of economic edge, material possession, or extrinsic reward, it is reasonable to believe that, in absolute value, most SSA-IMGs immigrating to the United States will likely earn more money and amassed more commodities when compared to their non-migrant physician counterparts left behind in SSA. However, if professional opportunity is expressed in terms of demand/need for medical services and the potential for physicians to make a difference in their communities, it is hardly disputable that SSA-IMGs have more opportunities in their native African countries.

Targeted Physicians Might Immigrate to a Third Country

The idea that many SSA-IMGs contemplating migrating to the United States would instead move to other countries in response to the moratorium cannot be fully dismissed. However, such a concern should also be mitigated. While the international destinations of SSA-IMGs may be increasingly diverse, there is something to be said about the pursuit of the American Dream that lures a significant number of migrating physicians to the United States even when the prospects for professional integration and social mobility are fraught with challenges. Defining the American Dream may be elusive, as the "latent content" of that dream may vary significantly depending on the perspectives/aspirations of each dreamer. However, the "manifest content" of the American Dream is by and large a vision of material possessions, political freedoms, individual liberties, and possible worlds (Barsky, 2007). Available evidence suggests that there are many SSA-IMGs who did not succeed to gain admission into US residency programs, but chose to stay put in the United States instead of moving to other countries or returning to their native countries to practice medicine. This may be due in part to the fact that the vision of the American Dream is still very appealing to these SSA-IMGs despite all the difficulties of professional integration encountered by them in the United States.

Alternatively, failing to obtain admission into US residency programs in no way suggests that the migrating physicians will be more successful in Canada or the United Kingdom. Brain waste, or the underemployment of highly skilled migrants (Mattoo, Neagu, & Ozden, 2008) is a real downside of medical migration irrespective of destination countries. As Castles and Miller (2009) observed, "the image of surgeons working as waiters … reflects reality for some" (p. 65) migrant physicians.

Desired Outcomes and Potential Ripple Effects

At the current pace of immigration, at least 1,000 additional SSA-IMGs will enter the US physician workforce by the time member states of the WHO convene in May 2015 at the 68th World Health Assembly (WHA) to evaluate the effectiveness of the *WHO Code of Practice on the International Recruitment of Health Professionals* (WHO, 2010). But, if the proposed moratorium were in place, say by April 2013, it would give about two full years to the United States to evaluate its impact and potential limitations by May 2015, at which time the United States could exhort other doctor-receiving countries and signatories of the Global Code to enact a similar moratorium. A moratorium on the recruitment of early-career SSA-IMGs concurrently enforced by major doctor-importing countries like the United States, Canada, Australia, and the United Kingdom will have a swifter and much broader impact on the retention of the domestic physician workforce in SSA, and would ensure that the recommended policy does not merely create a medical carousel (see, e.g., Bundred & Levitt, 2000; Martineau, Decker, & Bundred, 2004; Ncayiyana, 1999).

Imposing a moratorium on the admission of under-35 SSA-IMGs into US residency programs does in no way cancel US-funded global health initiatives currently implemented in the SSA region. In fact, it may significantly increase the likelihood that many medical graduates from MEPI-sponsored institutions will stay and practice in their native countries after graduation. Moreover, as suggested above, such an example can be emulated by other OECD countries with significant stocks of SSA-IMGs such as Canada, the UK, or Australia. Enforcing such a policy will require little or no financial burden to the US tax payer. There is already a body within the United States charged with monitoring credentials and assessing the readiness of IMGs to enter US graduate medical education, namely the Educational Commission of Foreign Medical Graduates (ECFMG), to enforce such a policy as part of its pre-residency certification

requirement. However, effective enforcement of such a moratorium by ECFMG may require an act by the US Congress.

Conclusion

About three years ago, the Committee on the U.S. Commitment to Global Health (2009) observed that global health entails a multipronged and synergic effort that no government can achieve on its own. However, it stressed that the United States can take the lead "by setting an example of meaningful … commitments … and respectful partnership" (p. 3). The present position paper argued that if the U.S. Government is committed to strengthen health systems in the SSA region, it is imperative to take action to curtail the large-scale migration of early-career physicians trained in SSA who are seeking admission into US graduate medical education. Enforcing a moratorium on the recruitment of SSA-IMGs below age 35 would be a bold step toward the goal of retaining African-trained physicians in Africa. In no way does the enactment of the proposed policy preclude the implementation of alternative prescriptions such as funding the creation of new medical schools in SSA (see, e.g., Eichbaum et al., 2012), or compensating countries of emigration and medical schools so that they may train many more physicians (see, e.g., Physicians for Human Rights, 2005; WHO, 2010). Likewise, the adoption of such a moratorium does not negate the important role of SSA countries which have the ultimate responsibility to improve the local conditions that spur migration and adjust domestic medical training to the needs and demands of their respective populations (WHO, 2006). If the recommended policy advocated herein were implemented alongside current efforts such as MEPI and NEPI, it would be a significant milestone in the quest for global health equity.

CHAPTER V

CONCLUSION

The purpose of this dissertation research project was to explore three broad questions related to data, theory, and policy on medical migration from SSA to the United States. The first article used data from the 2011AMA Physician Masterfile to identify all physicians native to SSA and all graduates of SSA medical schools that are currently practicing medicine or are in residency programs in the United States. Together, these migrant physicians exceed 10,300 and outnumber the aggregate population of physicians reported in 32 SSA countries with fewer than 775 physicians each (WHO, 2011). Findings from the first article help fill an important void in the current literature of medical migration. The paper does not only report the most recent data on SSA physicians in the United States, but also provides one of the most detailed analyses of SSA physicians' patterns of immigration to a popular destination country. The field of international migration research is highly dynamic; and as such, it is necessary to track migration data trends constantly. Likewise, migration data are very-time sensitive, and it is necessary to report new data as soon as they are identified. Thus, the potential impact of this paper on research and policy may not be fully realized or will be diminished significantly unless it is published urgently.

The second paper used in-depth interviews with migrant and non-migrant physicians in the United States and in SSA to render a thorough account of multilevel factors and idiosyncratic processes influencing migration to the United States of SSA-trained physicians. This paper was a critical complement to the first paper in that it provided a detailed account of migration motives, and the precipitating and mitigating factors influencing migration behaviors among SSA-trained

physicians. While this study may deepen our understanding of the underlying dynamics of physician migration, it is not merely the findings that are important but also the process by which these findings were uncovered and organized. By applying the eco-psychopolitical validity paradigm to migration research, the central argument of the second paper was that determinants of migration can be abstracted to three basic dynamics: oppression, liberation, and wellness. Within any given domain of capital, the latter dynamics intervene at three main levels: the micro/personal, the meso/organizational, and the macro/collective. While this position may appear self-evident to some social theorists familiar with ecological approaches to human development, designing a framework that enables its empirical testing and the integrative analysis of its basic components is not so obvious. In that regard, applying the eco-psychopolitical validity paradigm to the exploration of medical migration is a welcome addition and a valuable contribution to the current field of international migration research. Similar to the first paper, the potential of this paper to influence policy and spur migration scholars' interests may not be fully realized unless this paper is published timely.

The third and last paper built on findings from the previous two articles to recommend a 10-year moratorium on the recruitment into US residency programs of early-career SSA-IMGs under the age of 35. Enactment of such a measure, it is argued, will likely compel many prospective SSA-IMGs contemplating immigration to the United States to practice in their native countries for a minimum number of years necessary to recoup public investments made in their education and to ensure the growth of the domestic physician pipeline. While it is difficult to anticipate the political ramifications of the enactment of such a policy, it is even more difficult to evaluate its potential limitation without first enacting and enforcing it. A possible way forward may be to pilot the policy on select African countries with high US immigration rates and very low physician densities. Ghana and Ethiopia will be two very fitting cases.

The severe shortage of health professionals in developing countries has implications for global disparities in health outcomes and brings to the fore a fundamental problem of health equity. Together, the three papers comprising this dissertation speak to the need of promoting health equity in a complex world rife with gaping inequalities between countries. As the late WHO Director, Lee (2003) observed, "in some parts of the world, [namely the "West"], there is a continued expectation of longer and more comfortable life, while in many others there is despair over the failure to control disease although the means to do so exist" (p. vii). Oftentimes, the pressure to meet expectations for longer and comfortable life in Western countries comes at the expenses of the wellbeing of people from other parts of the world who too often, may have the same needs and aspirations as their Western counterparts, but are too poor and relatively powerless, and may look too different to deserve sufficient consideration or empathy (Farmer, 2010).

Malicious intent cannot automatically be ascribed to the United States and other developed countries benefitting from the international migration of medical professionals from SSA and other resource-constrained countries. After all, most migrant physicians travel to the United States on their own volitions and at their own expenses. However, it is somewhat disingenuous, socially irresponsible, and inconsistent with the non-maleficence principle of medical ethics for a very rich country like the United States to rely so heavily on health professionals from very poor countries like those in SSA, without considering the potential harm that such a dependency create on countries of origin of migrant physicians. The *World Health Report 2006* articulated this point clearer and more forcefully:

> When large numbers of doctors and nurses leave, the countries that financed their education lose a return on their investment and end up unwillingly providing the wealthy countries to which their health personnel have migrated with a kind of "perverse

> subsidy". Financial loss is not the most damaging outcome, however. When a country has a fragile health system, the loss of its workforce can bring the whole system close to collapse and the consequences can be measured in lives lost. In these circumstances, the calculus of international migration shifts from brain drain or gain to "fatal flows." (World Health Organization, 2006, p. 101)

Thus, until such time as the physician-population ratio in Ethiopia, Ghana, Liberia, and other SSA countries with large fractions of physicians in the United States reaches the minimum level recommended by WHO (1 doctor per 5000 people), it will be necessary to take some bold and radical measures to curb the ongoing migration of skilled health workers from SSA. As one of the nations that is benefiting the most from the service of migrant physicians from developing countries, the United States has a moral responsibility and the unique potential to help stop these "fatal flows" (WHO, 2006). Not only can the United States regulate the immigration of SSA physicians seeking admission into US residency programs, it can also use the significant amount of resources provided to several African countries through PEPFAR, the US Global Health Initiative, or the Millennium Challenge Account to leverage African governments to improve the local conditions that give rise to the need to emigrate.

Inasmuch as the United States and other well meaning international partners may be inclined to help address the health worker crisis afflicting SSA countries, African countries must play a prominent role in effecting change. As pointed out by the authors of *Leveraging Migration for Africa*, "a high level of skilled migration is rarely the root problem but rather a symptom of myriad other development problems. Without properly addressing [the latter] …efforts to … minimize the costs of skilled migration will not be fully effective. Indeed, they may be futile" (Ratha et al., 2011, p. 109). Thus, the ultimate onus is on African countries affected by the large-scale emigration of their physicians to improve the domestic conditions that compel physicians

to emigrate. While this may represent quite a daunting task for many SSA countries, it is a challenge that must be embraced. Toward that goal, the following desiderata are highlighted.

Improve Conditions of Service in Government-run Health Facilities

Substandard conditions of service in public-sector hospitals across Sub-Saharan Africa are among the primary drivers of medical migration (see, e.g., Awases, Gbary, Nyoni, & Chatora, 2004; Connell, Zurn, Stilwell, Awases, & Braichet; Hagopian et al., 2005; Luboga, Hagopian, Ndiku, Bancroff, & McQuide, 2010; McCoy et al., 2008). SSA governments may be limited in their resources, but absent political will and accountable management, financial constraint alone cannot explain the poor conditions of service and waste of resources consistently reported by migrant and non-migrant physicians. It is therefore imperative for SSA governments to consider as a priority improvement of conditions of service in public-health settings. This means renovating, upgrading and maintaining public health facilities to levels more or less comparable with international standards; providing and ensuring proper maintenance of modern diagnostic and therapeutic equipments in public hospitals and clinics; ensuring the availability of adequate stocks of drugs and medical supplies in health facilities; and keeping health facilities clean, with adequate supply of electric power and potable water.

Increase Opportunities of Medical Specialization Locally/Regionally

Since 2000, the number of new public and private medical schools and enrollments has increased substantially in several SSA countries (Mullan et al., 2011). However, this scale-up of medical training has not extended to postgraduate medical education or residency programs. As a result, less than 25% of medical graduates are able to pursue medical specialization in their home countries (Mullan et al., 2011). Increasing residency opportunities locally or at the regional level

will encourage many medical graduates who would otherwise go abroad for medical specialization to stay home. Some physicians from Ghana explained to me that the main reason they contemplated going abroad after completing their mandatory housemanship was to pursue medical specialization. However, the creation of the *Ghana College of Physicians and Surgeons* in 2003 convinced them to stay in Ghana. Not only is it important to ensure that medical graduates complete post-graduate medical specializations locally, it also essential that they finish within an acceptable timeframe. The idea of spending six to ten years in a medical specialization program in Nigeria that may take no more than three or four years to complete in the United States is a major disincentive for many medical graduates.

Pay Health Workers Well and Pay Them on Time

It is necessary to adequately remunerate local physicians, nurses, and auxiliary health workers. A Nigerian female medical graduate explained that before she moved to the United States from her native Nigeria in 2006, she was not paid for six months. It is somewhat romantic to expect that any physician who is not paid for six consecutive months will have any incentive to stay in her home country, especially when the latter is aware of professional opportunities abroad. In the short term, it may be helpful and even necessary for resource-constrained countries in SSA to consider identifying and applying for external sources of funding to supplement salaries and benefits of their health professionals. The *Global Fund to Fight AIDS, Tuberculosis, and Malaria* may be a potential source of external funding for African countries with heavy burden of HIV/AIDS, malaria, and tuberculosis. However, such assistance can only be temporary and contingent upon applicant countries' demonstrated strategy to sustain funding after grant received from the *Global Fund* has been exhausted (Physician for Human Rights, 2005). The *Millennium Challenge Corporation* (MCC, n.d.) may be another potential source of

external funding. Since 2004, 15 eligible African countries have received multi-year grants totaling US$5.8 billion from the MCC.

Ultimately, long-term financing and sustainability of health systems (including financing of human resources for health) can only be accomplished through SSA countries' own internal resources. It is doubtful that the economic predicament of most African countries is as dire today as was the case during the formal implementation years of the SAPs. Since 1999, the SAPs have been replaced by the *Poverty Reduction Strategy Papers* (PRSP) approach, which, in combination with the *Initiative for Heavily Indebted Poor Countries* (HIPC) and the *Multilateral Debt Relief Initiative* (MDRI), has reportedly enabled many debt-burdened African countries to benefit from significant foreign debt relief and accelerate their progress toward meeting a key target of the *millennium development goals*: halving poverty by 2015 (International Monetary Fund [IMF], 2012). As of June 2012, a total of 36 HIPC countries, 30 of which are located in SSA are reportedly guaranteed full debt relief in the amount of US$76 billion by the IMF and other multilateral institutions and bilateral creditors (IMF, 2012). Debt reduction frees up financial resources for social spending, and since the implementation of the HIPC initiative, health and education expenditures have reportedly increased markedly in participating countries (IMF, 2012). This is to say that many SSA countries likely have more resources today than 20 years ago. If these resources are managed judiciously, these countries can effectively attain to the material/financial needs of their health professionals.

Exemplar Leadership, Effective Management, and Good Governance

As long as African leaders do not personally experience the collapsing health systems of their respective countries, strengthening health systems in Africa may rank very low among their priorities. "If politicians came to the hospitals here [in Nigeria], they would be improved,"

Hagopian and colleagues (2005) were told by Nigerian medical students during their investigation of medical migration in West Africa. Many physicians that I interviewed echoed this sentiment. Several insisted that their countries had enough natural resources and needed little to no assistance from developed countries, excerpt for preventing African leaders who bankrupt their countries to retire scot-free in Western safe heavens. As Naim (1999) pointed out, the most critical medicine in the therapy of a sick country is also the most elusive and random: the quality of its leadership. The importance of good governance and effective public management cannot be overemphasized, and both are predicated upon the quality of the political leadership. Historically, many African countries have been poorly managed by leaders with problematic qualifications and questionable principles who do not always have the best interests of their people at heart (see, e.g., Ayitteh, 2005; Collier, 2006; Meredith, 2005; Moyo, 2009).

Exemplar leadership is long-overdue in many African countries since health systems cannot be transformed and sustained over time without transforming the political leadership and governance structure that helped create and entrench their deteriorating conditions. A promising sign of good leadership is exemplified in the recent decision of Malawi's recently appointed President Joyce Banda to clean out the Malawian presidential fleet by selling off the presidential jet and 60 Mercedes limousines purchased by her deceased predecessor (Laing & McElroy, 2012). Such actions are even more commendable in a country where poverty is endemic and health needs, including HIV/AIDS, enormous. Leaders of other African countries may need to follow such an example and start living at a level commensurate with the resource constraints of their heavily indebted poor countries.

In sum, this dissertation reinforces the fact that the physician brain drain from SSA to the United States is a contentious and complex social issue, and any lasting solution to it should reflect that complexity. However, awareness of complexity cannot become an excuse for

paralysis or inaction, and necessity for a long-term vision cannot obviate the urgency for immediate and bold action.

APPENDICES

Appendix A

Table A1

Selected Statistics for SSA-Trained Physicians with Missing and Reported Birth Country

	Birth country	N	Mean	Std. Deviation	Std. Error Mean
Age	Missing data	5,171	48.86	10.838	0.151
	Complete	2,199	49.45	9.96	0.212
Graduation age	Missing data	5,171	24.99	2.322	0.032
	Complete	2,199	25.18	2.511	0.054
Graduation year	Missing data	5,171	1,987.12	11.129	0.155
	Complete	2,199	1,986.72	9.926	0.212

Table A2

Independent Samples Test Comparing Mean Age, Graduation Age, and Graduation Year of SSA-Trained Physicians with Missing and Reported Birth Country

		Levene's Test		t-test for Equality of Means					95% Confidence	
		F	Sig.	t	df	Sig. (2-tailed)	Mean Difference	Std. Error Difference	Lower	Upper
Age	Equal variances assumed	31.08	0	-2.2	7372	0.028	-0.592	0.269	-1.12	-0.06
	Equal variances not assumed			-2.27	4493.66	0.023	-0.592	0.26	-1.102	-0.08
Graduation age	Equal variances assumed	13.68	0	-3.21	7370	0.001	-0.194	0.061	-0.313	-0.08
	Equal variances not assumed			-3.11	3873.78	0.002	-0.194	0.063	-0.317	-0.07
Graduation year	Equal variances assumed	52.26	0	1.455	7370	0.146	0.399	0.274	-0.139	0.937
	Equal variances not assumed			1.524	4621.27	0.128	0.399	0.262	-0.115	0.913

Appendix B

Appendix B1

Sample Script for Physician's Solicitation Requested by the American Medical Association as Condition for the Purchase of 2011 AMA Physician Masterfile Data

Dear Dr. X:

Many thanks for taking the time to read my request. My name is Benjamin Siankam. I am a graduate student at Vanderbilt University, currently working on my doctoral dissertation research. My research focuses on the international migration of medical doctors from Sub-Saharan Africa to the United States. Your participation in the study is being requested because you were born or trained in a Sub-Saharan African country and you are currently living and practicing medicine in the United States. My purpose is to gain a deeper and fuller understanding of the critical antecedents, logics, and motives associated with your decision to emigrate, and how you are adjusting socially and professionally in the United States. Moreover, I am interested in knowing what your long-term plans are, and what ties you still maintain with your country of origin. If you are willing to participate in the study, I would like to contact you either by phone or email so that we can set up a one-on-one interview at the venue of your choosing.

I would truly appreciate your candid and voluntary participation, and look forward to hearing back from you.

Gratefully,

Benjamin Siankam
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Department of Human & Organizational Development
Vanderbilt University, Nashville, TN 37203
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Akhenaton.tankwanchi@gmail.com
Cell Phone: (xxx) xxx-xxxx

Appendix B2

Background Information and Demographic Data Sheet

I. Personal Information

Year of birth:

Gender:

Country of national origin:

Current marital status (if married or divorced please indicate year):

Marital status at the time of emigration:

Number and age(s) of children:

Country of national origin of spouse:

II. Education Professional Training, & Experience

Post-secondary education degrees & certificates:

Medical school attended & date of graduation:

Length of practice at home before migration:

Residency program in the U.S.:

Year of entry into the program:

Year of completion:

State and date of first licensure:

State(s) of current licensure:

Field of medical specialty:

III. Migration milestones

Year of emigration from country of origin:

Year of entry in the U.S.:

Other foreign countries where you trained or practiced prior to coming to the U.S.:

Visa at time of entry in the U.S. (e.g., J-1, F-1):

Permanent resident since:

Naturalized US citizen since:

If you are not a US citizen, do plan to become one? When?

IV. Professional Information

Current employer(s):

Employed since:

Public or private:

Position:

Average number of work hours per week:

Other income generating activities:

Annual income:

Membership in professional organizations:

Occupation of spouse:

V. Extra-Professional Activities

Alumni associations:

Hometown associations:

Sport club:

Cultural associations:

Volunteer organizations:

Other:

Appendix B3

IRB-Approved Sample Interview Questions for US-based Physician Participants

I. Reasons for career choice & awareness of medical needs of native country:

- I would like to hear from you why you decided to become a doctor, and how you feel about your career choice.
  - *Possible follow-up questions:*
    - If you could start all over, would you make the same career choice?
    - Was the desire to reduce health problems and suffering in your country of origin the prime reason you chose a career in medicine? If so, how important a reason was it?
- Please share with me what you know and how you feel about the health system and medical needs of your country of origin.
- To the best of your knowledge, what are the factors (internal or external; organizational or institutional) that compromise the health capacity needs of your country of origin?
- What is your knowledge of and what was your experience with HIV/AIDS patients in your country of origin?

II. Professional satisfaction and quality of life:

- Please tell me how you ended up in America? For example: What factors were important to you when you chose your country of immigration? Who influenced your decision? Who assisted you?
- Overall, how would you describe your feelings vis-à-vis your life and work in America?
  - *Possible follow-up question:*
    - What do you like the most about living and working in the United States? And what do you like the least?
- Besides medicine, what other income generating activities were you involved in then, and are you involved in now?

- Please comment on your level of security, freedom, and your identity while in your native country and in the United States.

III. Doctors' critical experiences and determinants of migration:

- Take me back to the time when you were still in SSA country, what were your circumstances (socially and professionally) when you decided to leave?
- Tell me about some personally meaningful experiences or relationships that you consider key to your decision to emigrate and adjust to life in the United States?
- To the best of your knowledge, did cultural factors at any levels (family, community, or national) play any role in your decision to emigrate? If so, how?
- Did physical environmental factors (e.g., personal or professional facilities, equipment, disease or other public health conditions, etc.) play any role in your decision to leave? How so?
- I would like to hear about the prevailing political climate in your country of origin while you were living and working there, and its effects on your professional and family lives, and on your decision to leave.
- Likewise, I would like for you to describe the prevailing economic conditions in your country of origin when you were living and working there, and their effects on your professional and family lives, and on your decision to leave.

IV. Attachment to home:

- Do you have any plans to permanently return to your native country? If so, what are your short and long-term plans with regards to your permanent return, and what concrete steps have you taken thus far to implement your plans?
- Since immigrating to the United States, how often have you been home, alone or with your family?
- What feelings of obligation do you harbor vis-à-vis your country and all those who help you to be where you are now?
- How involved have you been in helping with the health capacity need and community development in your country?
- What do you miss the most about your home country?
- Tell me about your relationships with any hometown associations, or alumni groups. How involved are you? What kinds of activities do you take part in?

- As a physician-citizen from a developing country, do you believe that you have any public roles or social obligations? If so, what and how important do you perceive them to be?

V. Personal theory of migration:

- Arguably, the dominant theory out there is that most if not all medical doctors leave their countries primarily for economic reasons. Based on your personal experience, what is your opinion on that?
- Another theory holds that, "*people vote with their feet*," and migrant physicians are essentially political actors that are making a political statement by emigrating or by not returning home after completion of their training abroad. What is your take on that? And how do you identify as a politic actor?
- Do you think that your leaving your country has affected, for better or worse, the circumstances of anyone? And if so, who has benefited the most from it, and who has suffered the most, and how do you feel about it?
- Assuming policymakers in your home country and in the United States are devising an action plan to stop, reverse, and prevent the emigration of medical professionals, and you have been invited to advise them on the basis of your personal experience. What would be your suggestions?

AppendixB4

IRB-Approved Sample Interview Questions for Sub-Saharan Africa-based Physician Participants

I. Reasons for career choice & awareness of medical needs of native country:
   - I would like to hear from you how and why you decided to become a doctor, and how you feel about your career. Essentially, I would like to know who/what inspired you. Who influenced your decision (Was it a personal or a family decision)? And, who funded your medical education?
   - If you could start over again, would you make the same career choice?
     - *Possible follow-up questions:*
       - Was the desire to reduce health problems and suffering in your country of origin the prime reason you chose a career in medicine? If so, how important a reason was it?
       - Beside medicine what else could you see yourself doing well and enjoying?
       - Do you have any additional income generating activity not related to medical practice?
       - Please share with me what you know and how you feel about the health system and medical needs of your country of origin.
       - To the best of your knowledge, what are the factors (internal or external; organizational or institutional) that compromise the health capacity needs of your country of origin?

II. Professional satisfaction and quality of life:
   - Overall, how would you describe your feelings vis-à-vis your life and work in your native country?
     - What development in your professional career would you welcome the most?
     - What changes in your social/family life would you like to see the most?
     - As a physician-citizen from a developing country, do you believe you have any public roles or social obligations? If so, what and how important do you perceive them to be?

III. Migration Plans:

- In my discussion with some of your colleagues who immigrated here to the United States, they tended to suggest that most of the doctors who are still practicing back home do so because they don't have any means to leave (e.g. migration channel, network, finances, host in the destination country) and that they will emigrate when the first opportunity presents itself. Do you agree with that impression? Is it the case for you? If not, why haven't you leaved your country?
- Overall, what do you think may be the main differential factor between the doctors who leave the country and those who decide to stay?
    - *Possible follow-up question:*
        - Have you ever considered emigrating? If so when and where did you plan to go? How many times have you considered leaving? When was the last time you thought seriously about it?
        - Do you sometime have some regrets that you did not leave your country to go practice medicine overseas just like your classmates/colleagues did?
        - Have you ever travelled to the United States or elsewhere? If so, how many times? What was the reason for your travel?
        - Have you ever participated in the Diversity Visa program (Green Card Lottery)?
        - Do you have any plans to send your children abroad for education?

IV. Questions Related to Policy:

- By and large, medical education is provided free of charge to the students in most SSA countries. Do you think that it makes sense for the government of your country to continue funding the medical education of prospective doctors when it is clear that a significant proportion of medical graduates will leave the country to go and practice in the United States and other wealthier countries?
    - Assuming the policymakers in your home country are devising an action plan to stop, reverse, and prevent the emigration of medical professionals, and you have been invited to advise them on the basis of your professional experience and personal relationship with migrant physicians. What would be your suggestions?

Appendix C

Table C 1

Number of Domestic Physicians in 32 SSA Countries Compared with SSA Physicians in the United States

32 SSA countries with lowest numbers of domestic physicians (WHO, 2011)	Domestic physicians (n)
Liberia	51
Gambia	62
Guinea Bissau	78
Sao Tome & Principe	81
Lesotho	89
Sierra Leone	95
Comoros	115
Seychelles	121
Equatorial Guinea	153
Swaziland	171
Djibouti	185
Burundi	200
Eritrea	215
Rwanda	221
Malawi	257
Niger	288
Somalia	300
Tanzania	300
Cape Verde	310
Central African Republic	331
Chad	345
Togo	349
Gabon	395
Congo	401
Mauritania	445
Benin	542
Mozambique	548
Botswana	591
Zambia	649
Mali	729
Senegal	741
Namibia	774
Subtotal	10,132
Potentially active SSA physicians in the 2011 AMA Physician Masterfile	10,377

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