

Brain drain from developing countries: how can brain drain be converted into wisdom gain?

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SUMMARY

Brain drain is defined as the migration of health personnel in search of the better standard of living and quality of life, higher salaries, access to advanced technology and more stable political conditions in different places worldwide. This migration of health professionals for better opportunities, both within countries and across international borders, is of growing concern worldwide because of its impact on health systems in developing countries. Why do talented people leave their countries and go abroad? What are the consequences of such migrations especially on the educational sector? What policies can be adopted to stem such movements from developing countries to developed countries?

This article seeks to raise questions, identify key issues and provide solutions which would enable immigrant health professionals to share their knowledge, skills and innovative capacities and thereby enhancing the economic development of their countries.

INTRODUCTION

Brain drain is the migration of skilled human resources for trade, education, etc.¹ Trained health professionals are needed in every part of the world. However, better standards of living and quality of life, higher salaries, access to advanced technology and more stable political conditions in the developed countries attract talent from less developed areas. The majority of migration is from developing to developed countries. This is of growing concern worldwide because of its impact on the health systems in developing countries. These countries have invested in the education and training of young health professionals. This translates into a loss of considerable resources when these people migrate, with the direct benefit accruing to the recipient states who have not forked

out the cost of educating them. The intellectuals of any country are some of the most expensive resources because of their training in terms of material cost and time, and most importantly, because of lost opportunity.

In 2000 almost 175 million people, or 2.9% of the world's population, were living outside their country of birth for more than a year. Of these, about 65 million were economically active.² This form of migration has in the past involved many health professionals³: nurses and physicians have sought employment abroad for many reasons including high unemployment in their home country.

International migration first emerged as a major public health concern in the 1940s when many European professionals emigrated to the UK and USA.⁴ In the 1970s, the World Health Organization (WHO) published a detailed 40-country study on the magnitude and flow of the health professionals.⁵ According to this report, close to 90% of all migrating physicians, were moving to just five countries: Australia, Canada, Germany, UK and USA.⁵

In 1972, about 6% of the world's physicians (140 000) were located outside their countries of origin. Over three-quarters were found in only three countries: in order of magnitude, the USA, UK and Canada.⁶ The main donor countries reflected colonial and linguistic ties, with a dominance of Asian countries: India, Pakistan and Sri Lanka. By linking the number of physicians per 10 000 population to gross domestic product (GDP) *per capita*, the countries that produced more physicians than they had the capacity to absorb were identified⁷ as Egypt, India, Pakistan, Philippines and South Korea. However, the lack of reliable data and the difficulties of defining whether a migrant is 'permanent' or 'temporary' still exist.

One may claim that this migration from developing countries is both useful and unavoidable. There are definite advantages—enabling the migrant to spend time in other countries—but at the same time, the very low emigration rate of professionals *from* USA or UK may be as disturbing a sign as the high rates of immigration *to* these countries.

Young, well-educated, healthy individuals are most likely to migrate, especially in pursuit of higher education and economic improvement.^{8,9} The distinction between 'push' and 'pull' factors has been recognized.¹⁰ Continuing disparities in working conditions between richer and poorer countries offer a greater 'pull' towards the more developed countries. The role of governments and recruitment

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Table 1 Number of South Asian immigrants (age 25 and older) to the USA by level of educational attainment, 2000

Country	Total Immigrants	Educational level		
		Primary and less	Secondary	Tertiary
South Asia				
Bangladesh	69,180	6,000	20,095	43,085
India	836,780	41,185	127,540	668,055
Pakistan	165,425	11,630	43,365	110,430
Sri Lanka	2,820	495	5,695	15,630

Immigrants defined as foreign born population in the USA age 25 years or over. Primary education or less corresponds to 0–8 years of schooling; secondary to 9–12 years of schooling, and tertiary to more than 12 years of schooling [Source: A Study of 24 Labor-Exporting Countries. World Bank report, June 2003]

Table 2 Stock of foreign students in OECD countries, 1998 (obtained from OECD 2002 [http://www.oecd.org/home/])

Rank	Country	No. of students	% from OECD
	USA	430,800	39.0
	UK	209,600	59.8
	Germany	171,200	56.3
	France	148,000	26.8
	Australia	109,400	18.4
	Japan	55,800	38.2
	Canada	32,900	42.1
	Spain	29,000	65.7
	Austria	28,000	65.6
	Turkey	18,700	8.9
	Total OECD	1,327,000	44.5

OECD, Organization for Economic Cooperation and Development

agencies in systematically encouraging the migration of health professionals increases the pull.¹⁰ Migrant health professionals are faced with a combination of economic, social and psychological factors, and family choices¹¹, and reflect the ‘push–pull’ nature of the choices underpinning these ‘journeys of hope’. De-motivating working conditions, coupled with low salaries, are set against the likelihood of prosperity for themselves and their families, work in well-equipped hospitals, and the opportunity for professional development.¹²

In many cases, the country is not only losing its investment in the education of health professionals, but also the contribution of these workers to health care. For example, healthcare expenditure in India is 3% of GDP compared to 13% of GDP in the USA and the ratio of doctor to patients in India is 1:2083 compared to the USA where the ratio is 1:500.¹³ Moreover, in many developing

countries healthcare systems are suffering from years of underinvestment, which, for health professionals, has resulted in low wages, poor working conditions, a lack of leadership and very few incentives.¹⁴

Employers in receiving countries take a different position; they have their own shortages of skilled people in specific fields and can drain a developing country of expertise by providing job opportunities.¹⁵ Kupfer *et al.* provided the strategies to discourage migration to the USA, a major recipient country.¹⁶ However, keeping the social, political and economic conditions in the developing countries in mind, can we stop the brain drain? Probably not!

Higher education is one of the principal conduits of permanent emigration.¹⁷ The majority of doctors acquire specialized and postgraduate professional qualifications in the host country. Half of the foreign-born graduate students in France, UK and USA remain there after completing their studies.¹⁸ Among the doctoral graduates in science and engineering in the USA in 1995, 79% of those from India and 88% from China remained in the USA.¹⁹ The recent study on brain drain from 24 major countries published by the World Bank²⁰ also presented data on South Asian immigration to the USA (Table 1). Migration to OECD (Organization for Economic Cooperation and Development) countries is also shown in Table 2. Yet more data showing the momentum and demand for skilled people by high tech and research and development (R&D) industries illustrating accelerated flows of highly skilled workers to OECD countries are shown in Figure 1.

These statistics suggest that if developing countries provided world-class education and training opportunities, as well as opportunities for career advancement and employment, the migratory flow could be reduced.²¹ However, in reality, this may not make much difference. On the plus side, foreign-born graduates acquire expensive skills which are not available within their countries. On the negative side, these skills and knowledge never migrate back to their own countries.

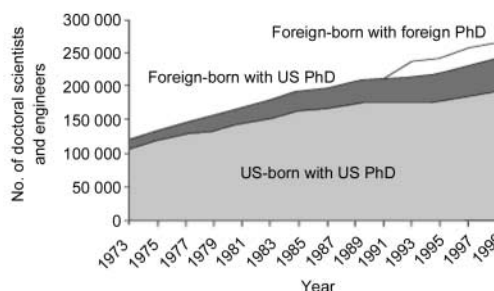


Figure 1 Employment of scientists and engineers with doctoral degrees in academia in the USA, 1973–1999. (Adopted from National Science Board. *Science and engineering indicators, 2002* [www.nsf.gov/sbe/srs/seind02/start.htm])

Besides the pull–push factors described earlier, some researchers from developing countries cite other reasons for not returning after training which include: lack of research funding; poor facilities; limited career structures; poor intellectual stimulation; threats of violence; and lack of good education for children in their home country.²⁰ Incentives for migrants to return to developing countries have been insufficient to override the limitations at home—both real and perceived—and the attraction of opportunities found abroad. Many of these countries have made significant investments in infrastructure and education but have not achieved the scientific development, technological and innovative capability either to retain or to recover the human capital that they have generated. Is there a solution to this problem? This raises the question of whether one can justify losing human capital or whether one should make the additional investment in science and technology and bring about the innovations that will stop the loss and convert it into wealth generation.

CONVERTING BRAIN DRAIN INTO WISDOM GAIN

Developing countries, especially South Asia, are now the main source of healthcare migration to developed countries. This trend has led to concerns that the outflow of healthcare professionals is adversely affecting the healthcare system in developing countries and, hence, the health of the population. As a result, decision-makers in source countries are searching for policy options to slow down and even reverse the outflow of healthcare professionals. Is it possible to do so? Maybe not, bearing in mind the current political and economic situations of the source countries and globalization. The increasing demand for health care in the higher income countries is fuelled to a large extent by demographic trends, e.g. the ageing of the baby-boom generation.²²

The opening up of international borders for goods and labour, a key strategy in the current liberal global economy, is accompanied by a linguistic shift from ‘human capital flight’ and ‘brain drain’ to ‘professional mobility’ or ‘brain circulation’.²² Solutions should therefore be based on this wider perspective, interrelating health workforce imbalances between, but also within developing and developed countries.

At current levels, wage differentials between source and destination country are so large that small increases in healthcare wages in source countries are unlikely to affect significantly the supply of healthcare migrants. According to the results of a study in Pakistan, a small proportion of people funded for a doctorate face on return major non-financial disincentives for good performance.²³ Thus the financial component of such flows is only part of the picture and in some cases not the major push or pull factor.

Moreover, there is a need to review the social, political, and economic reasons behind the exodus, and to provide security and opportunities for further development locally. Lowering of standards should not be accepted; instead local conditions should be reviewed and rectified.

CONTRIBUTIONS BY SHARING KNOWLEDGE AND SKILLS TO DEVELOPING COUNTRIES

It is time to understand and accept that health professionals’ mobility is part of life in the 21st century. Countries need to recognize that they compete with the best institutions in the world for quality manpower. It is time to bury the archaic concept of brain drain and turn to assessing the performance of health professionals and systems, wherever they are in the world. The turn of the 21st century has not only brought technology, but also modes by which scientists around the world can be connected in no time. In this globalized world the physical location of a person may or may not have any relation to the ability to make an impact on human health. Health professionals in the developed world may have most of their work portfolios in the developing world. Easy communication, quick travel, and greater collaborations between developed and developing countries are increasingly more common and we need to develop ways in which foreign professionals can contribute to their countries of origin.

Remittances from expatriates living abroad constitute a significant proportion of foreign revenue for many developing countries.²⁴ In Bangladesh for example US\$ 2 billion is received from citizens who have emigrated overseas, and these remittances are the second largest source of foreign revenue.²⁵ The transfer and management of remittance revenues are potentially exploitable factors in plugging the brain drain. Formalizing the transfer of remittances might permit the generation of revenues that could be invested nationally in the social and economic development of the developing home country. However, the magnitude and economic importance of remittances, economic development and growth, and ultimately social equity, depend on the endogenous capacity of each nation’s human resources. If only a small percentage of the multimillion dollar sums sent home by emigrants could be invested in research and development, might not opportunities for highly skilled and educated nationals improve at home? And would this not in turn spur economic development? Maybe to some extent—but without resources and skills, this may not have a huge impact on health and disease prevention.

It has been estimated that foreign scientists from developing countries who are involved in research and development produce 4.5 more publications and 10 times more patents than their counterparts at home.²⁶ Why is

there such a vast difference in productive capacity? The context and conditions in which science and technology are able to prosper require political decisions, funding, infrastructure, technical support, and a scientific community; these are generally unavailable in developing countries. The value and effectiveness of individuals depends on their connection to the people, institutions and organizations that enable knowledge creation, and together constitute a propitious environment. These expatriate scientists and healthcare professionals can contribute their knowledge, clinical and research skills to their native countries by developing collaborative training programmes, research projects and teaching their own countrymen. This requires the commitment of foreign scientists and receptiveness at the other end. Scientists, political leaders and decision-makers in developing and developed countries, and international development agencies, need to appreciate the social and synergistic nature of knowledge sharing so that policies and education systems are designed to promote and enable research and development.

Healthcare services are a rapidly growing sector of the world economy and trade in health services has created diverse means of accessing these services across borders. For example, information technology can provide telemedicine services and telepreventive services. These information technologies can be used as a mode of sharing knowledge and research skills in a cost-effective manner.

One such large network is already in place called supercourse [www.pitt.edu/~super1]²⁷ which has connected more than 20 000 scientists, healthcare professionals and researchers together through IT connectivity, and they share their knowledge in the form of teaching lectures (currently there are more than 2000 lectures) for free to a global audience. A similar kind of connectivity needs to be developed by expatriate citizens who can contribute their knowledge and skills to their countries of origin without any major costs. Policies are needed to ensure that these favourable outcomes are realized as an equitable access to the benefits of the international trade in health services.

The availability of both high-quality education and opportunities in research are the keys to retaining and attracting regional talent. The steps taken by China towards becoming a leader in biological research and biotechnology illustrate the empowerment. The scientific leadership positioned China to become the only developing country participating in the Human Genome Project.²⁸ Experience gained through the participation of its institutions in the Human Genome Project (including large-scale sequencing, the use of bioinformatics and the coordination of multi-centre research protocols) provided the platform for developing biotechnology that can be applied to human diseases and agriculture. The opportunities generated by the

Chinese in biotechnology attract both international collaboration in joint ventures and gifted scientists from China and abroad.

A similar example can be replicated in other developing countries with the help of their foreign expatriate citizens who have developed skills in research that are needed in their native countries. This approach to creating targeted educational opportunity together with political decision and investment in science and technology infrastructure provides a good example of a resourceful way of redirecting the brain drain. It is tempting to think that such on-site programmes involving national talent at home and abroad coupled with creative distance learning strategies could create networks of expatriates thus enabling their countries of origin to gain access to a world-class education in specific disciplines in the developing world.

CONCLUSION

Scientists who have emigrated for several reasons are recoverable assets who can play a part in developing opportunities at home. However, recovery requires the opening of diverse and creative conduits. The health services in the developing world must be supported to maintain their skilled personnel. Only when health staff, whatever their cadre, have the tools they require to do their job, training opportunities, a network of supportive colleagues, and recognition for the difficult job they do, are they likely to feel motivated to stay put when opportunity beckons from elsewhere. Foreign professionals could be used to develop innovative graduate education opportunities at home and technology to be transferred to areas of national priorities for research and development. Ultimately, involving individuals who are living abroad in creating opportunities at home favours both the retention and repatriation of national talent. Building an enlightened leadership and an enabling national scientific community, with the help of expatriate citizens, for the coherent development of scientific and technological capacity in developing countries will be mutually beneficial.

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