

Migration of health-care workers from developing countries: strategic approaches to its management

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Abstract Of the 175 million people (2.9% of the world's population) living outside their country of birth in 2000, 65 million were economically active. The rise in the number of people migrating is significant for many developing countries because they are losing their better-educated nationals to richer countries. Medical practitioners and nurses represent a small proportion of the highly skilled workers who migrate, but the loss for developing countries of human resources in the health sector may mean that the capacity of the health system to deliver health care equitably is significantly compromised. It is unlikely that migration will stop given the advances in global communications and the development of global labour markets in some fields, which now include nursing. The aim of this paper is to examine some key issues related to the international migration of health workers and to discuss strategic approaches to managing migration.

Keywords Health personnel; Health manpower; Brain drain; Emigration and immigration/trends/legislation; Foreign professional personnel/supply and distribution; Physicians/supply and distribution; Nurses/supply and distribution; Salaries and fringe benefits; Socioeconomic factors; International cooperation; Developing countries; Developed countries (*source: MeSH, NLM*).

Mots clés Personnel santé; Exode des compétences; Emigration et immigration/orientations/législation; Personnel professionnel étranger/ressources et distribution; Médecin/ressources et distribution; Infirmières et infirmiers/ressources et distribution; Facteur socio-économique; Salaire et prime; Coopération internationale; Pays en développement; Pays développé (*source: MeSH, INSERM*).

Palabras clave Personal de salud; Recursos humanos en salud; Exodo intelectual; Migración internacional/tendencias/legislación; Personal profesional extranjero/provisión y distribución; Médicos/provisión y distribución; Enfermeras/provisión y distribución; Factores socioeconómicos; Salarios y beneficios; Cooperación internacional; Países en desarrollo; Países desarrollados (*fuentes: DeCS, BIREME*).

الكلمات المفتاحية: الموظفون الصحيون؛ القوى العاملة الصحية؛ هجرة العقول؛ الاتجاهات والتشريعات المتعلقة بالهجرة من البلدان وإليها؛ توفر وتوزيع الموظفين المهنيين الأجانب، توفر وتوزيع الأطباء؛ توفر وتوزيع المرضات؛ الأجور والمزايا الإضافية؛ العوامل الاجتماعية الاقتصادية؛ التعاون الدولي؛ البلدان النامية؛ البلدان المتقدمة (المصدر: رؤوس الموضوعات الطبية - إقليم شرق المتوسط).

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Voir page 599 le résumé en français. En la página 599 figura un resumen en español.

يمكن الاطلاع على الملخص بالعربية في صفحة 600.

Background

The movement of people from one place to another has shaped today's political, social and economic world and continues to be a major influence on society. In 2000 almost 175 million people, or 2.9% of the world's population, were living outside their country of birth for longer than one year. Of these, about 65 million are economically active (1). In absolute terms the number of people living outside their country at any one time (the stock of migrant population) has more than doubled since 1965, but as a percentage of the world's population the growth is much smaller, rising from 2.3% in 1965 to 2.9% in 2000 (1). Nevertheless, the rise in the number of people migrating is significant for many resource-poor countries because they are losing their better-educated nationals to richer countries: around 65% of all economically active migrants who have moved to developed countries are classed as "highly skilled" (2). This classification attempts to define both the level of education and the level of the job. Highly skilled professionals are generally assumed to have completed tertiary education and to have a professional job: in terms of the health-care workforce

this refers to physicians, nurses, dentists, and pharmacists.

The migration of health-care workers has closely followed general trends in international migration. The migration of health workers is not new: nurses and physicians have sought employment abroad for many reasons, including high unemployment in the health-care labour market in their home country (3). However, there are certain key features of the health-care labour market that give rise to new concerns about the international movement of health workers. First, new communication technologies are shaping a global labour market through electronic access which means that jobs, and often education for jobs by distance learning, are available internationally, as are visa applications and access to processes. Both Mahroum (4) and Findlay (5) have commented that certain sets of skills and competencies are so specialized or in such short supply that they are being sourced globally. Nurses are part of this global market (6) as many countries, both those that are high in resources and those that are low in resources, are reporting shortages of nurses. Physicians do not appear to fall into the same category: in some countries there is an oversupply of physicians.

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Second, there are now targeted recruitment drives for health workers from resource-poor countries to fill vacancies in richer countries, especially nurses. Both the United States and the United Kingdom anticipate large shortfalls in the number of nurses they will need over the next 10–20 years, and overseas recruitment is an overt tactic to compensate for these shortages (6). In contrast, in some countries that are members of the Organization for Economic Co-operation and Development, the immigration of physicians has been falling in recent years, highlighting again that the global labour market in health workers is not homogeneous and showing that, in particular, there are key differences between nurses and physicians.

Third, the migration of health workers is susceptible to changes in the regulatory frameworks that control the training, recruitment and deployment of health professionals. This has two possible effects. The first is that governments can initiate bilateral agreements to recognize each other's qualifications, making it easier for health professionals to move from one place to another and continue working in the same field. The second effect is that the long lead times required for training to qualify for many specialized roles in health services can mean that the loss of even small numbers of health professionals cannot be compensated for in a short time. The temptation for richer countries then is to recruit qualified staff from overseas to compensate quickly for shortages (7).

It is against this background that international concern has been expressed about the loss of skilled health professionals from health-care systems in poorer countries that are already weak. It is often the anecdotal and dramatic stories of losses to health systems that get the most publicity, but they provide only a partial picture of health labour markets in developing countries. In order to develop realistic policy options for managing migration, evidence of the magnitude of the problem and an understanding of the context of the labour markets is needed.

How many health workers are migrating?

Until recently, the migration of health professionals had not been studied extensively. The last important piece of research undertaken by WHO in this field was in the mid-1970s, when Meija et al. (8) found that 6% of physicians and 5% of nurses were living outside their country of birth. While Meija and colleagues tried to be as rigorous as possible in collecting their data, they admitted that it was difficult to ensure its reliability. They also admitted that it was equally difficult to obtain qualitative data on the effects of migration on people and health systems. These difficulties in obtaining reliable quantitative and qualitative data probably account for the dearth of research in this area (9). However, it is also true that workforce development has, until recently, suffered from years of neglect by national and international health researchers, and this too may account for the lack of attention to migration. Data from countries that recruit or accept health professionals (destination countries) appear to be more reliable than data from the home countries of the professionals who travel to work abroad (the source countries). However, there remains little consistency in the classification of education and skills, and this makes international comparisons difficult. Nor is there much information on the itineraries of migrants, so while there is anecdotal evidence that health workers migrate from rural to urban areas and from there to other countries, and that they may register in one country before moving on to another, it is impossible to verify the number of people moving or how often

they move. Diallo discusses fully the challenges of collecting data on migration (9).

However, even with the limitations of the data, it is possible to be confident about the important trends in migration. The number of people migrating has never been higher than it is now, and the majority of migrants are highly skilled (10). Fig. 1 shows migration to the United Kingdom from 1991 to 2000: the United Kingdom exemplifies much of the migration to richer countries because the total number of immigrants is rising, and the highest proportion of economically active migrants is highly skilled. Nurses and physicians make up only a small proportion of the total number, but the loss to the source countries may be critical.

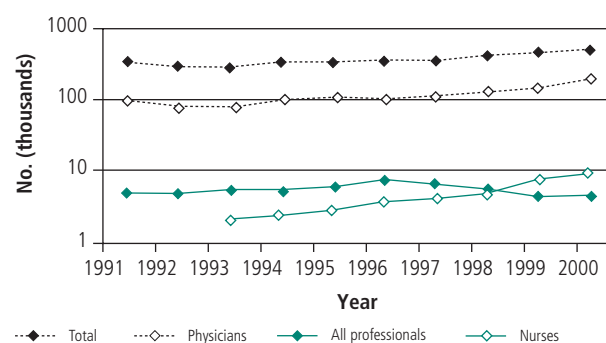
Table 1 compares the number of physicians and nurses practising in Portugal who migrated from Portuguese-speaking African countries with the number in their source countries, but the table must be read with some caution. Half of the physicians from Portuguese-speaking African countries who are in Portugal went to medical school there. Thus they are practising in their country of qualification, and if they migrated to Portugal to study medicine they may have built significant social and cultural links there, so for these migrants it may seem more like home than their country of birth. It should also be noted that among health workers classified as nurses, associate nurses (who have a lower level of qualification) are likely to be included in the number of nurses counted in the source countries, but nurses with the highest level of qualification are more likely to migrate (6).

Little is known about whether migrants return to their home countries because it is more difficult to collect information about emigrants than immigrants (5). Findlay (5) has commented that "return migration" from the United Kingdom, as calculated using the International Passenger Survey, declined during the 1990s, but immigration has been rising. Thomas-Hope (11) has suggested that it is common for migrants to return to their Caribbean country of origin for both short and longer periods. Migrants returning to many Caribbean countries tend to be high-level professionals or white-collar workers (11).

Why are health workers migrating?

The decision to migrate is essentially a personal one and therefore susceptible to changing personal circumstances. Nevertheless, it is important to consider the overall economic and social context in which decisions to migrate are made: wars, deprivation, and social unrest may all provoke waves of migration. State interventions

Fig. 1. Total no. of doctors, nurses and other professionals migrating to the United Kingdom, 1991–2000. Total migration compared to physicians, nurses and all professionals



WHO 04.8G

Table 1. Physicians and nurses migrating from Portuguese-speaking African countries to Portugal

Source country	No. of physicians		No. of nurses	
	In Portugal	In source country	In Portugal	In source country
Angola	820	961	383	14 288
Guinea-Bissau	358	197	253	1 299
Sao Tome and Principe	238	67	84	183
Cape Verde	231	71	40	232

undoubtedly influence migration. For example, changes in conditions for visas and work permits may encourage the immigration of workers in certain occupational categories (5), while the active recruitment of workers from countries such as India (12) and the Philippines (13), which have an oversupply of health professionals, encourages migration.

The migration of health workers is primarily demand led, with workforce shortages in some destination countries (such as the United States and United Kingdom in particular) triggering active overseas recruitment strategies. The availability of employment, particularly in the developed world, has a significant impact on the decision to migrate. While international differences in wages and working conditions might lead many health-care workers to prefer working in a country other than their country of birth, the labour market in the destination country may be saturated. In other words, individuals are more likely to migrate when they are reasonably sure they will find suitable employment in a destination country. The shortages of health-care personnel in richer countries has a significant impact on the flow of health-care workers throughout the world. The dramatic increase in recent years in the number of nurses leaving the Philippines and certain African countries, for example, was greatly influenced by high rates of nursing vacancies in Canada,

the United States, and the United Kingdom (5, 7). The flow of health workers from developing countries to developed countries is likely to continue or even to grow unless there is a commitment from developed countries to train more health workers to meet their own needs instead of recruiting from overseas (14).

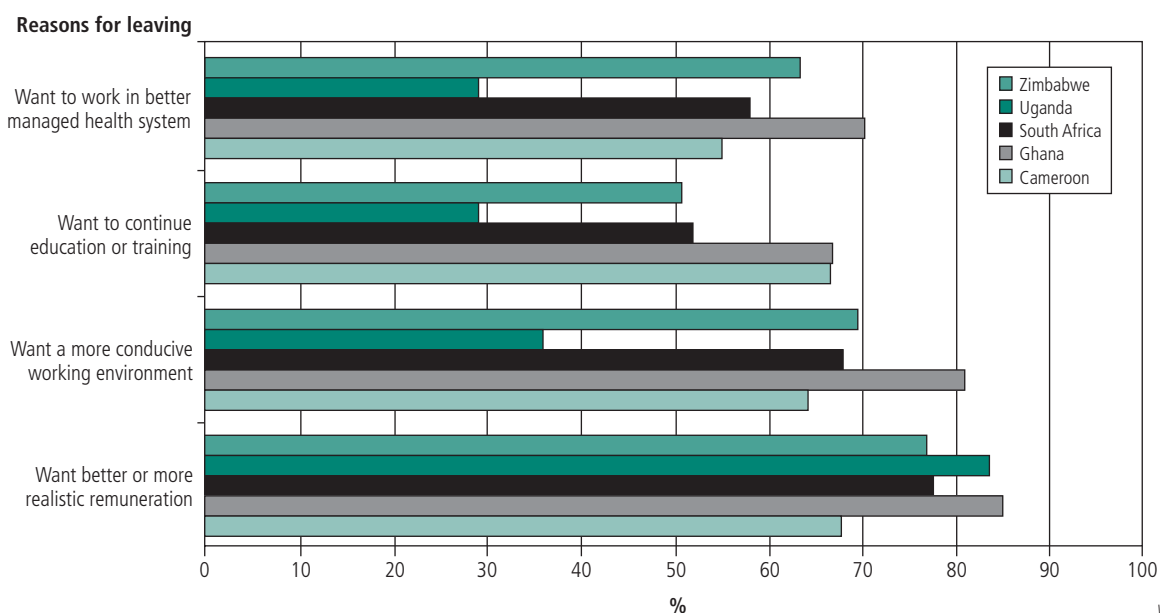
Continuing disparities in working conditions and pay between richer and poorer countries offer a great deal of “pull” towards more developed countries. A survey of health-care workers in six African countries (15) who intended to leave their home country demonstrates that although the relative importance of factors affecting migration varies from person to person, there are common patterns within countries (Fig. 2). In Cameroon, for example, a lack of promotion opportunities, poor living conditions, and a desire to gain experience ranked above poor wages as reasons why health-care professionals chose to migrate. By contrast, in Uganda and Zimbabwe wages were the most important factor. Clearly, when national policies are designed to try to retain health-care workers their strategies must be specific to the country or region in question: there is no universal strategy.

An analysis by Vujicic et al. (16) showed that wage differentials between source and destination countries are currently so large that reducing them by small amounts is unlikely to affect migratory flow. This suggests that other factors, such as working conditions and professional development, will have to play a significant part in influencing the decision to migrate.

The decision to migrate may also be influenced by family wealth. When professionals from poorer countries migrate to richer countries, they often do so with the intention of sending a portion of their wages back to their families (17). The value of remittances (the money sent back to their home countries by migrants) is increasing and is, in many countries, the most stable source of external finance. In terms of economic development, it should be noted that remittances, for most of the 1990s, have exceeded the amount of official development aid flowing into source countries.

In general, migration is influenced by social networks, which offer support to new migrants and, often, connections to employment (3, 7, 11, 17). Bach (3) has pointed out that

Fig. 2. Factors affecting health professionals' decision to migrate from five African countries (15)



WHO 04.75

the growth inside destination countries of organizations for nurses working overseas is an example of the types of networks that may foster further migration. Nurses in these organizations have links with nurses and nursing organizations in their home countries and can advertise opportunities. These networks then assist new migrants with social and cultural assimilation. A similar picture emerges for countries with colonial and political ties, where there are already established cohorts of migrants.

Managing the migration of health-care workers

To manage migration effectively it is necessary for governments and other agencies to develop a more strategic approach towards regulating the flow of health workers between countries. Each country has to develop its own strategy for dealing with the issue of migration in its own context. It is clear that migration does not exist outside the development of health systems and that a range of policy and strategy interventions is required to address the broader health-systems issues that influence the retention, recruitment, deployment, and development of health workers.

Improving data collection

Having reliable data about the health-care workforce is key to good workforce planning. Establishing and maintaining appropriate information systems on human resources, including a database on migration, is a vital first step. Diallo (9) discusses the use and reliability of available data sources and acknowledges the difficulties in finding accurate data. He recommends a process of triangulation of different sources to give the most comprehensive overall picture.

Data from destination countries are much more accurate than data from source countries. One easily implemented strategy would be to set up a regular exchange of data between countries; this would include information on the number of health workers entering the destination country.

Financial and non-financial incentives

In many developing countries health-care systems are suffering from years of underinvestment, and for health-care workers this has resulted in low wages, poor working conditions, a lack of leadership, and few incentives of any kind. Korte et al., studying the motivation of health-care workers in four developing countries in Africa^a, have observed that low job satisfaction and motivation affect the performance of health workers as well as acting to push people to migrate. Their study has found that non-financial incentives are important in motivating health care workers both to do a good job and to continue working in public health services; these incentives include training, study leave, the opportunity to work in a team, and support and feedback from supervisors. Some incentives were found to work well to retain staff in rural areas. These included providing housing and transport, agreeing the number of years that will be spent in a rural location (rather than expecting a worker to remain there indefinitely), offering further training, and offering financial incentives. These findings support previous work on motivation (18, 19), and indicate that even simple, relatively low-cost measures may have a positive effect on the motivation of health workers and on retention.

Nevertheless, the prospect of making substantially more money is thought to be a pivotal factor in the decision to migrate (20, 21), and in many source countries, introducing a competitive wage will be impossible. Targeted incentives may be a more realistic possibility, particularly if traditional donor rules (that do not support recurrent health sector costs, such as wages) can be relaxed in the face of the crises in human resources in many countries, and donor money can be used for salaries. In some countries, educating a group of community-based health workers to offer health advice and simple treatments may improve accessibility to health services, especially in rural areas, and such workers are far less likely to migrate internationally.

Agreements between countries

Recognizing the inevitability of migration and building in opportunities for health workers to work overseas for limited periods of time is possible through bilaterally negotiated agreements, for which temporary visas are granted, or through institutional agreements to take (or even exchange) workers. This type of scheme is being tried between the United Kingdom and South Africa, apparently with some success (1). The Caribbean Community (CARICOM) has devised a scheme to encourage skilled professionals to work overseas on a rotational basis, going for three years or so and then returning. CARICOM hopes at least to limit the effects of a loss of skilled labour on Caribbean countries (6).

Ethical codes of conduct with regard to migration are being widely developed and advocated. They seem at best, though, to have a transitory effect, and it is difficult to know how they can be implemented (6). Agreements between countries could specify that the destination country will invest in institutions in the source country so that, in effect, some source countries will act as providers of health-care personnel for destination countries by training a surplus of health workers. This sort of system has traditionally been in place in the Philippines, where private nursing schools train nurses who intend to migrate, though some commentators now contend that the loss of nurses is becoming detrimental to the health system (22).

One obvious compensation mechanism would be to have destination countries pay source countries for the financial investment made to educate health professionals, though this would not be easy to implement. Far fewer physicians, with their more expensive training, are likely to migrate, but large numbers of nurses are migrating. Although it is cheaper to train nurses, the loss of their education and experience is significant. If financial compensation can be negotiated bilaterally and the agreements honoured, then this will provide targeted repayment to investments in human capital.

The General Agreement on Trade in Services (GATS) comprises a set of legally enforceable rules that govern the trade in goods and services. Mode 4 of GATS concerns the movement of people, and in relation to the trade in health services, it particularly focuses on the provision of health services by individuals from another country on a temporary basis. The possible impact of GATS on health care is controversial. In terms of migration, some countries will benefit from agreements to send their health workers abroad, but all countries have the opportunity to negotiate agreements. Early indications are that countries are more likely to enter into agreements for the modes that govern the supply of services and commercial presence (modes 1–3), such as private hospitals and

^a R Korte et al., unpublished data presented at migration and development conference, Berlin, 20–21 October 2003.

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clinics and a range of other commercial health-related facilities, than they are to make commitments to mode 4 (23, 24). One other anticipated difficulty with GATS is that it does not define what is meant by “temporary movement”. This might act as an advantage for source countries by restricting the amount of time for which health workers can get visas. However, GATS will reinforce the move towards the international harmonization of qualifications, which already has some momentum in nursing (25).

Action by destination countries

Destination countries may address workforce issues that affect migration. Ironically, some of their problems are the same as those of the source countries, though without the extreme adverse effects that result from the loss of health workers from already struggling health-care systems.

Improving staff retention is an obvious but necessary strategy that destination countries can implement. This may be done through a range of incentives, such as introducing flexible employment contracts, improving working conditions, offering performance-related pay, and offering overtime pay. Implementing retention strategies will reduce the number of posts for migrants, and therefore the attraction of moving. Increasing the number of people entering the health professions is also crucial, especially in the United Kingdom and the United States.

The ethical issues weigh most heavily perhaps on those destination countries that use agencies to recruit large numbers

of health professionals from developing countries. If the entire process is facilitated by an agency then visas, transport and living conditions are often arranged in advance, and little effort is needed by the recruit.

Conclusions

The migration of health-care workers may be a feature of globalized labour markets, and it may be here to stay. Although knowledge about the itineraries of health-care workers who migrate is incomplete, it is thought that migration is influenced by many factors, some of which are amenable to strategic interventions. A greater understanding of the qualitative factors that influence health workers (that is, some of the key influences on the decision to migrate) will assist policy-makers in devising strategies to recruit and retain health staff in both source and destination countries.

Although the individual's motivation to migrate is of considerable importance, there are structural causes, too, that have to be taken into consideration at the national and international level. The continuing disparities between richer and poorer countries mean that there will be significant wage disparities that act as a factor pulling health-care workers towards destination countries. Overall economic revitalization is, in the long term, what will make a difference to this picture, and that requires multinational cooperation that is supported by international agencies. ■

Conflicts of interest: none declared.

Résumé

Migration des agents de santé en provenance des pays en développement : approches stratégiques de la gestion de ce phénomène

Sur les 175 millions de personnes (2,9 % de la population mondiale) qui vivaient hors de leur pays d'origine en l'an 2000, 65 millions étaient économiquement actives. L'essor de l'émigration a des conséquences notables dans de nombreux pays en développement, qui perdent leurs ressortissants les plus instruits au profit de pays plus riches. Les médecins et le personnel infirmier représentent une faible proportion des professionnels hautement qualifiés qui émigrent mais, pour un pays en développement, la perte de ressources humaines dans le secteur de la santé peut

signifier que la capacité du système de santé à délivrer des soins de manière équitable sera gravement compromise. Il est peu probable que l'émigration cesse, du fait des progrès des moyens de communication et du développement du marché mondial du travail dans certains domaines, dont font maintenant partie les soins infirmiers. Le présent article a pour but d'examiner quelques aspects clés de l'émigration des agents de santé et d'envisager des approches stratégiques de la gestion de ce phénomène.

Resumen

Migración de personal sanitario de los países en desarrollo: enfoques estratégicos para su gestión

De los 175 millones de personas (2,9% de la población mundial) que vivían fuera de su país natal en 2000, 65 millones formaban parte de la población activa. El aumento del número de migrantes tiene importantes consecuencias para muchos países en desarrollo, que pierden así a sus ciudadanos mejor formados en beneficio de los países más ricos. Los médicos y enfermeras representan una pequeña parte de los trabajadores altamente calificados que deciden migrar, pero la pérdida de recursos humanos que ello acarrea para los países en desarrollo en el sector de la salud puede poner seriamente en peligro la capacidad del sistema

sanitario para proporcionar atención de salud de forma equitativa. No es probable que se logre poner fin a las migraciones, teniendo en cuenta los avances de las comunicaciones mundiales y la progresiva globalización experimentada por los mercados de trabajo en algunos sectores, entre los que se encuentra hoy la enfermería. El objetivo de este artículo es examinar algunos temas clave relacionados con la migración internacional de personal sanitario y analizar posibles enfoques estratégicos para gestionar las migraciones.

ملخص

هجرة العاملين الصحيين من البلدان النامية:

الأساليب الاستراتيجية لتدبيرها

البلدان النامية للموارد البشرية العاملة في القطاع الصحي قد يعنى انخفاضاً ملموساً في قدرة النظام الصحي على إيتاء الرعاية الصحية على نحو يتسم بالعدالة والإنصاف. ومن غير المحتمل أن تتوقف الهجرة، نظراً للتقدم في سبل الاتصال على مستوى العالم وإنشاء أسواق عالمية للعمل في بعض المجالات، ومنها مهنة التمريض. وتستهدف هذه الورقة دراسة بعض القضايا الرئيسية المتعلقة بالهجرة الدولية للعاملين الصحيين، ومناقشة الأساليب الاستراتيجية لتدبيرها.

ملخص : من بين ١٧٥ مليون شخص (أي ما يمثل ٢,٩٪ من عدد سكان العالم) يعيشون خارج البلدان التي وُلدوا فيها، وفقاً لتقديرات عام ٢٠٠٠، فإن ٦٥ مليوناً منهم هم من النشطين اقتصادياً. وتؤدي الزيادة في عدد المهاجرين من بلدانهم إلى بلدان أكثر ثراءً إلى تأثيرات جسيمة في العديد من البلدان النامية التي تفقد بذلك مواطنيها الحاصلين على مستوى جيد من التعليم. ويمثل الأطباء والمرضات نسبة بسيطة من المهاجرين ذوي المهارات العالية، غير أن فقدان

References

1. United Nations Population Division. *Populations Database 2002*. Available from: <http://www.esa.un.org/unpp>
2. Stilwell B, Diallo K, Zurn P, Dal Poz MR, Adams O, Buchan J. Developing evidence-based ethical policies on the migration of health workers: conceptual and practical challenges. *Human Resources for Health* [Online journal] 2003;1:8. Available from: <http://www.human-resources-health.com/content/1/1/8>
3. Bach S. *International migration of health workers: labour and social issues*. Geneva: Sectoral Activities Programme, International Labour Office; 2003 (WP 209).
4. Mahroum S. Europe and the immigration of skilled labour. *International Migration Quarterly Review* 2001;39 Suppl 1:27-43.
5. Findlay A. *From brain exchange to brain gain: policy implications for the UK of recent trends in skilled migration from developing countries*. Geneva: International Labour Office; 2002 (International Migration Papers, No. 43).
6. Buchan J, Parkin T, Sochalski J. *International nurse mobility: trends and policy implications*. Geneva: World Health Organization; 2003. WHO document WHO/EIP/OSD/2003.3.
7. Martineau T, Decker K, Bundred P. *Briefing note on international migration of health professionals: levelling the playing field for developing country health systems*. Liverpool: Liverpool School of Tropical Medicine; 2002.
8. Meija A, Pizurki H, Royston E. *Physician and nurse migration: analysis and policy implications*. Geneva: World Health Organization; 1979.
9. Diallo K. Data on the migration of health-care workers: sources, uses, and challenges. *Bulletin of the World Health Organization* 2004;82:601-7.
10. Carrington WJ, Detragiache E. *How big is the brain drain?* Washington (DC): International Monetary Fund; 1998 (IMF Working Paper WP/98/102).
11. Thomas-Hope E. *Skilled labour migration from developing countries: study on the Caribbean region*. Geneva: International Labour Office; 2002 (International Migration Papers, No. 50).
12. Khadria B. *Skilled labour migration from developing countries: study of India*. Geneva: International Labour Office; 2002 (International Migration Papers, No. 49).
13. Abella M. *Sending workers abroad*. Geneva: International Labour Office; 1997.
14. McDonald P, Kippen R. Labour supply prospects in 16 developed countries, 2000–2050. *Population and Development Review* 2001;27:1-32.
15. Awases M, Gbary A, Nyoni J, Chatora R. *Migration of health professionals in six countries: report*. Brazzaville: WHO Regional Office For Africa; 2003 (Draft report).
16. Vujcic M, Zurn P, Diallo K, Dal Poz M. The role of wages in slowing the migration of health care professionals from developing countries. *Human Resources for Health* [Online journal] 2004;2:3. Available from: <http://www.human-resources-health.com/content/2/1/3>
17. Connell J. *The migration of skilled health personnel in the Pacific Region: 2002 report of study commissioned by WHO Western Pacific Regional Office*. Manila: Western Pacific Regional Office, WHO, 2002.
18. Stilwell B. *Health worker motivation in Zimbabwe*. Geneva: WHO; 2001 (Internal report for the Department of Organization of Health Care Delivery).
19. Wibulpolprasert S. Inequitable distribution of doctors: can it be solved? 1999 *Human Resources for Health Development* 1999;3:2-22.
20. Stalker P. *Workers without frontiers: the impact of globalization on international migration*. Geneva: International Labour Office; 2000.
21. Xaba J, Phillips G. *Understanding nurse recruitment: final report*. Pretoria: Democratic Nursing Organization of South Africa (DENOSA); 2001.
22. Lorenzo F. *Nurse supply and demand in the Philippines*. Manila: University of the Philippines, Institute of Health Policy and Development Studies; 2002.
23. Secretariat, World Trade Organization. *Health and social services: background note*. Geneva: World Trade Organization; 1998. (Also available from http://docsonline.wto.org/gen_browseDetail.asp?preprog=4)
24. Nielson J. *Movement of People and the WTO*. Available from: <http://www.oecd.org/dataoecd/48/41/1960878.pdf> (OECD working paper on migration).
25. International Council of Nurses. *Framework of competencies for the generalist nurse*. Geneva: International Council of Nurses; 2003.