Transforming and Scaling up Health Professional Education and Training

Policy Brief on Financing Education of Health Professionals

World Health Organization 2013

World Health Organization

WHO Library Cataloguing-in-Publication Data

Transforming and Scaling Up Health Professional Education and Training. Policy Brief on Financing Education of Health Professionals.

I.World Health Organization.

ISBN 978 92 4 150638 0

Subject headings are available from WHO institutional repository

Layout L'IV Com Sàrl, Villars-sous-Yens, Switzerland.

Printed in Switzerland.

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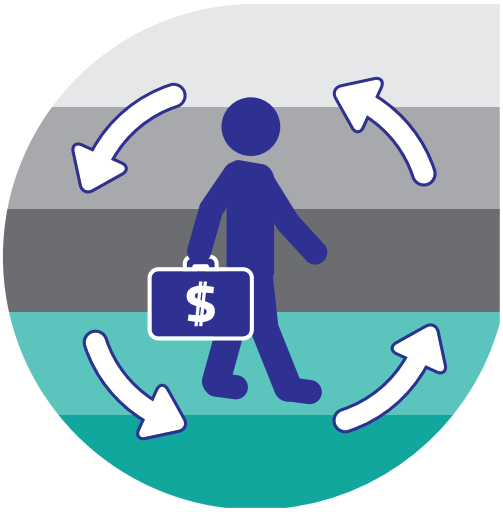
Acronyms

GNI	gross national income
NCLEX	National Council Licensing Examination
NLN	National League for Nursing
WFME	World Federation for Medical Education
WHO	World Health Organization



1. Introduction

The world currently has 4 million fewer health workers than are needed to achieve the Millennium Development Goals. One of the main reasons for this shortage is that the vast majority of countries are not training enough health workers to meet their needs.

The Taskforce on Innovative International Financing for Health Systems identified that 9% of the total costs of scaling up health systems was related to pre-service training of health workers *(1)*. The total global expenditure for health professional education is estimated to be about US$ 100 billion per year, but that represents less than 2% of total global health expenditure *(2)*. The average estimated cost per graduate is $113 000 for medical students and $46 000 for nurses; the highest estimated cost per graduate is in North America and the lowest in China *(2)*.

Almost 50% of countries worldwide have either one or no medical school. Thirty-five percent of the total number of institutions in the world are located in Brazil, China, India and the USA *(2)*. Investment needed in training facilities in some countries is substantial. For instance, in Ghana, Liberia, Rwanda and Sierra Leone it ranges from US$ 10 million to US$ 50 million *(3)*.

A number of challenges exist in the financing of pre-service education of health professionals.

First, the lack of country specific data on costs, such as the cost of training health workers and the opportunity cost of training different (health) professionals. Data are also missing on sources of revenue for educational institutions and quality of education *(2)*. All this information is however essential to enable evidence-based decisions on: (a) adequate levels of investment in production capacity; (b) an appropriate level of tuition charges; and (c) efficient allocation of financial resources between existing schools and hospitals, among different schools, by cadre and within cadre.

Second, information on skill mix, deployment and distribution of health workers in relation to the health care needs of the population is incomplete and scattered, which hinders the socially optimal production of health workers *(4, 5)*.

Third, the relevance of health workers' training is complicated by the fact that in most countries the Ministry of Health is only responsible for employment in the public sector, not for the type of health professionals who are educated, relative to those who are needed *(3)*. The Ministry of Education or Higher Education is generally in charge of the latter. In the absence of coordination between the two ministries, inadequate and mismatched resources are likely to be allocated to each of them, and "unneeded" health workers are likely to be produced.

Fourth, even if ministries adopt an integrated approach driven by population needs, and budget constraints are removed, the lack of experienced health professionals generates a shortage of qualified tutors and clinical teachers that threatens the capacity to improve the quantity and quality of graduates *(6-10)*.

Fifth, the lack of experienced health professionals is mainly due to migration, but new graduates emigrate as well *(11, 12)*. Supply-push factors such as inadequate compensation, poor working conditions and lack of career opportunities lead prospective health workers to leave their country of graduation *(6)*.

Therefore, if the ultimate goal of scaling up the education and training of health professionals is to offset workforce shortages, skill-mix imbalances and unequal distribution of health workers, individuals and institutional choices in the labour market will have to be taken into account *(13)*. It is indeed the labour market for human resources that determines the level of employment in a country, not population needs or the education sector alone. There is therefore the need to increase financial resources to produce the required health workers to meet the needs of the population, taking into account the labour market.

The aim of this policy brief is to provide empirical evidence of how health professional education is funded, and how the level, composition and mechanisms of financing affect the quantity, quality and relevance of health workers, and to use these experiences to identify policy recommendations that could guide the development of policies in other countries with similar socioeconomic backgrounds and needs.

2. Actors to finance health professional education

Financing health professional education entails the aggregate allocation of public and private resources to educational institutions. Public resources are mainly allocated by a country's Ministry of Education and/or its Ministry of Health. Provincial and local/district governments can also devote part of their budget to finance educational institutions, but contributions from the latter to medical schools are usually low, except in the Western Pacific region *(14)*. Governments' financial support to health professional schools can take several forms, such as investment in infrastructure, equipment and operating revenues; (students, research and other) grants as well as different forms of contracting.

Alternative sources of funding to public institutions can be grouped into three general categories. The first source is revenue generation or revenue replacement through the offering of paid services. The second category is student tuition. In Southeast Asia, the Americas and the Western Pacific region tuition is the most important source of income for 35% to 41% of medical schools and up to 50% of the Indian ones *(14)*. The third source includes new types of investors, such as banks and new types of funders such as multilateral donors, foundations, expatriate nationals, alumni and professional bodies. The evidence suggests that the last source only represents a small percentage of all income sources, at least for medical schools *(14)*.

Public investment, on the other hand, represents in most cases the largest portion *(2)*. This can be justified on the ground that health professional education is a public good, not a private one. The market alone is responsible for failing to produce and distribute it efficiently *(15)*. Indeed, a financial investment in education is a financial investment in human capital that does not guarantee a return on investment in that specific area of training (e.g. a nurse or doctor may seek employment elsewhere). Moreover, the social value of training a health professional is greater than the private benefit it procures to the individual health worker. For both reasons, the student will be unable to pay the true cost of his/her education, and the private market will be unable to support enough students to ensure an optimal number for the society as a whole *(16)*. It is therefore in the interest of governments to encourage education in health-related fields *(17)*. The key question is: how?

2.1 Public vs. private

Governments can finance and deliver health education. However, public financial resources should not be allocated exclusively to public schools. Governments can also inform and/or finance prospective students, regulate and possibly mandate how private investment in health education may be undertaken. All these types of public interventions have a cost that can be moderated by operating mixed systems of public instruments *(17)*. In practice, that is what governments tend to do.

To scale up the number of students attending both public and private institutions, public direct or indirect financial support to students is provided in some countries to cover tuition and fees (e.g. indirect: Thailand, direct: USA) and in other cases even living expenses and books are covered (e.g. Finland, Ghana, Iceland, Norway and Sweden). When public financial support is available to students attending private institutions, the government indirectly sponsors the private sector (e.g.

Tanzania, USA). In the absence of such cross-subsidization, the growth of the private market does not necessarily contribute to increase the supply of health workers (e.g. St. Kitts). However, encouraging private (for-profit) higher educational institutions through heavily subsidized public loans (e.g. Tanzania, USA) might not be a sustainable long-term strategy for low -income countries with overwhelming repayment defaults in loan schemes (e.g. Kenya, the Philippines). Alternatively, the government can regulate the private market to ensure that fees are affordable to most students (e.g. India), that access to students from underserved areas is encouraged, and that social purpose is at the centre of motivations, not solely financial returns (e.g. Thailand). In addition to (or in the absence of) such regulation, public investment in infrastructure is needed to improve overall national capacity and/or reduce regional inequalities in the location of training facilities (e.g. Australia, Thailand) as well as to ensure enrolment from minorities, rural and provincial students (e.g. Australia, Thailand).

Regulation is also important to ensure that the quality of private education is not compromised (e.g. Thailand vs. the Philippines and India). However, quality of both private and public institutions is threatened by the lack of experienced health professionals (e.g. India, sub-Saharan Africa) which also hinders the capacity to scale up the education of health professionals because of a shortage of qualified teachers (e.g. USA) When governments deliver health education, revenues can be effectively increased by charging moderate tuition fees or higher fees to foreign students (e.g. OECD countries). The next section presents empirical evidence to show how financing and regulation of health professional education has been used to affect the quantity, quality and relevance of health workers.

2.2 Empirical evidence

- **To scale up training of health professionals, research findings show that students attending both public and private institutions need public direct or indirect financial support to pay tuition charges.** For instance, Thailand heavily subsidizes the education of nurses, midwives, junior sanitarians and other paramedics. Tuition fees paid by these students represent only 5% of the actual costs of their education *(18)*. In the United States the government provides financial assistance through federal loans to US citizens attending both public and private institutions. Students rely heavily on such help to finance their medical education. In 2003, between 81% and 85% of all medical students were indebted, a frequency that was fairly constant over time until 2004, unlike the level of indebtedness. There were a fivefold and almost a sevenfold increase in the median levels of debt for public and private education respectively between 1984 and 2004. During the same period, tuition and fees increased by 50% in public medical schools and by 135% in private ones in constant dollar terms *(19)*. Evidence about students' need to have access to public loans, scholarships or grants in order to gain greater access to university level education also comes from other OECD countries *(20)*.

- **Even when studies are fully subsidized**, i.e. the sponsorship includes tuition, board and lodging, transport and utilities, ***students may still need support for living expenses and books.*** This situation prevails in Ghana, and also in some OECD countries such as Finland, Iceland, Norway and Sweden. In Ghana medical schools are public and education is totally free and sponsored by the government. The Social Security system and the National Insurance Trust offer loans for complementary expenses at an interest rate almost five times lower than those of local banks *(21)*. In Finland, Iceland, Norway and Sweden no tuition fees are charged, but public grants, public loans or both are offered to cover living expenses. These countries have above average enrolment rates in university level education. In Ireland and Mexico tuition fees are not charged but students' financial assistance systems are less developed and enrolment rates are below average *(20)*.

- **In general, public financial support combined with private investments can contribute to scale up training of health professionals.** In Tanzania the government provides loans and grants to private school students. This contributed to increase enrolment of first year medical students in the private sector from 25 in 1998 to 70 students in 2010 *(10)*. In the United States federal loans are also available to prospective students willing to attend foreign schools that have comparable accreditation standards. Between 1998 and 2008, 90% of these loans were attributed to students at three off-shore private schools in the Caribbean. In 2010 the physician workforce comprised nearly 5% of internationally graduated citizens *(22)*.

- **Regulation of the private sector rather than its indirect sponsorship through students' subsidies can also contribute to increase the number of health professionals.** In India, by law, private sector dental colleges must make available half of their seats to meritorious students at subsidized fees *(23)*. In 2005 the number of dental surgeons would have been less than half the observed level in the absence of the private sector. Indeed, between 1950 and 2005 the number of dental colleges increased from 3 to 206, 85% of which were private institutions. The enrolment capacity of undergraduate students in the private sector grew to ten times that of the public sector, so that 90% of total enrolment was private.

- **Without regulation, private schools do not necessarily contribute to increase the supply of health workers in the national health labour market.** For instance, in the Caribbean island of St Kitts the off-shore nursing school caters solely to international students. Meritorious prospective nursing students from St Kitts can get a scholarship, but only to study nursing in Cuba *(24)*. Thailand banned for-profit medical schools to ensure that social purpose drives those institutions *(18)*.

- **The expansion of the private sector per se does not ensure adequate coverage of training capacity.** The growth of dental education in India exemplifies this type of market failure. Only 20-30% of all new private dental colleges were created in states with the poorer 50% of the population, and these states captured just 25% of the total enrolment capacity in the private sector. States with the richest 50% of the population on the other hand captured 92% of the enrolment capacity in programmes on Master of Dental Surgery, and 80% of college training places for dental laboratory technicians and dental hygienists *(23)*.

- **Public investment in infrastructure is needed to reduce the inequitable geographical distribution of training institutions.** Research findings show that the location of training institutions is correlated with the location of newly trained health professionals *(25)*. For this reason, among others, Thailand has prioritized regional medical schools. These measures, along with others mentioned above and below, were relevant, and contributed to the nine-fold increase in the number of rural doctors observed between 1976 and 2001 *(18)*. On the contrary, the inefficient allocation of dental education in India might have played a major role in the inequitable distribution of dental services. In 2005, 87% of all registered dentists were located in the states with the wealthiest 50% of the population *(23)*.

- **Evidence from both developing countries** *(26, 27)* **and high-income ones** *(28,29)* **suggests that graduates from underserved areas are more likely to practise in such regions.** Adequate regulation could have mitigated geographical disparities in dental care coverage in India. In India the mandate to provide subsidized tuition fees does not prioritize the type of students who should be eligible for such rates. In practice, 85% of these seats are reserved for states' residents who live mainly in wealthier regions *(23)*. On the contrary, Thailand recruits provincial students on courses for nursery, midwifery, junior sanitarians and other paramedics from among residents *(18)*. In Australia

the first regional medical school opened in 1999 with a target to enrol 25% of its students from designated rural areas and 5% of indigenous Australian students. The school's curriculum (focused on rural and remote, indigenous and tropical health), its location, the strong presence of staff with a rural orientation and its support of rural attachments attracted 50% of students from underserved areas and 10% of indigenous students *(30)*.

- **Increasing private investment in health professional education might be at the expense of the quality of training** *(2).* In Thailand students from private not-for-profit medical schools are submitted to compulsory licensing examinations in order to address the issue of quality of training *(18)*. In the Philippines the number of nursing schools increased from 40 to around 470 between 1980 and 2010. The vast majority of these institutions are private, and some operated for profit. In 2006 only 12 of the 470 nursing schools had a pass rate of over 90% for the nursing licensure exam, while in 40 schools no students passed. On average only 42% of all nursing students passed the exam *(31)*.

- **Quality and quantity are both threatened by the lack of experienced health professionals as qualified tutors, and clinical teachers are missing.** Medical colleges in India only have between 66% and 80% of the faculty members required by the Medical Council of India norms *(32)*. In the United States the budgeted nursing faculty shortage in 2007 was 8.8%. In the same year 30 709 qualified applicants for entry-level degree nursing programmes were denied admission. Insufficient faculty staff was cited as one of the major reasons limiting enrolment *(33).* In Ethiopia, Ghana and Malawi nursing faculty shortages have pushed the three countries to appoint educators with either no preparation in teaching, or no experience in the practice of midwifery *(9)*. In sub-Saharan Africa many medical schools have to rely on expatriate faculty staff, and emergency programmes rely on their volunteer work *(34)*. In South Africa the Walter Sisulu University managed to reduce its faculty staff shortage by an agreement with local hospitals that forced clinicians to participate in teaching *(35)*. Finding ways to reduce faculty shortages is essential in order to scale up education.

- **When tuition fees are high, or other financial barriers to access education at university level are important, access to public loans has been used to sustain enrolment** (e.g. OECD countries, Ghana, Tanzania). However, loan schemes in low- income countries generally have higher built-in subsidies, lower repayment ratios and even smaller recovery ratios leading to substantial expenditure for the government *(36)*. For instance, in Kenya and Ghana student loans schemes have repayment ratios of almost 28% and 39% respectively, but recovery ratios represent only 5.6% and barely 11% of the amounts invested due to considerable repayment default. In the Philippines the difference between repayment and recovery ratios is 66% vs. 1.3%. In any case, in low-income countries higher built-in subsidies of loan schemes seem to be unavoidable given the lower income differentials of graduates in most of these countries *(36)*. Therefore, encouraging private (for-profit) higher educational institutions that need to be indirectly sponsored through heavily subsidized public loans might not be a sustainable strategy for low-income countries. Low tuition fees with low built-in loans might be a preferable option *(37)*. Governments can effectively increase their revenue by charging moderate tuition fees at public facilities *(20)*. Charging higher fees to foreign students has also proved an effective way of increasing resources, as evidenced by OECD countries *(20)*.

- **Countries with an important diaspora, particularly of first-generation migrants, might consider diaspora bonds as an important source of long-term foreign financing.** Diaspora bonds are usually long-dated securities that can only be redeemed upon maturity. Hence, revenues from such bonds can be used to finance investments. India, Israel, South Africa and Sri Lanka have all issued

such bonds. Between 1951 and 2007 Jewish diaspora bonds raised over US$ 25 billion. In India, since 1991 US$ 11 billion were raised and in Sri Lanka US$ 580 million were collected between 2001 and 2007. (This important source of financing has been used by Israel only to finance major public sector projects, but none of those concerned the health-care sector.) However, this is an interesting source of funding that deserves greater attention *(38).*

- **Public and private financial investment in health professional education can be minimized when health workers, community leaders and donors combine efforts to do so.** In the Philippines the Zamboanga School of Medicine opened in 1993 with initial working capital of only US$ 500. Volunteer doctors developed the curriculum and taught it for a nominal fee of US$ 20 per month. A partner foreign university provided its problem-based learning curriculum at no cost. Local leaders raised funds from international philanthropic donors to support affordable student fees. The Ateneo de Zamboanga University provided rooms at its campus rent-free. The School is now part of the University and has three direct employees *(39)*.

The evidence presented above highlights the need for public financial investments in pre-service education. Given that the current global recession has reduced both public and private spending, investment must be directed where it is most needed. The next section presents empirical evidence on how financial resources are allocated to lower levels for pre-service education.

3. Allocation of resources

There are different allocation investments to scale up the education of health professionals. These include financing facilities, teaching, and students attending either national or international public and/or private institutions. When the focus is on students, which is the most effective allocation? Nationally trained vs. trained abroad, in terms of quantity, quality and relevance of health workers? When teaching is prioritized, which curriculum should be preferred? What is the opportunity cost of training different health workers? Both aspects are considered in this section from an economic perspective. However, there is little information on the latter, even though it is crucial to provide economic incentives to tackle the skill-mix imbalances in the health sector.

Evidence on allocation of resources among schools is scarce. Most studies compare the efficiency of different health workers in providing the same type of services, such as midwives/nurses/gynaecologists *(40, 41)*. When studies on cost are performed, it is generally found that investing in midwives and nurses is cost-effective *(42, 43, 44, 45, 46)* although the evidence is mixed in highly developed health-care systems *(47).* That being said, in Vietnam it is 14 times more costly to train a doctor than a nurse *(48)* and in the United States, in 1998, it was estimated that 14 advanced nurse practitioners could be trained for the same cost as one allopathic physician *(49)*. Cost analysis comparing health workers other than nurses and midwives is even scarcer. In the few studies found, the main purpose was to evaluate the cost of training a particular worker. For instance, in Ethiopia a study on the cost of training doctors showed that the salary of one expatriate doctor in the public sector over six years corresponds to the cost of educating four doctors *(50)*. More information is needed on the cost of different training by different providers. However, in low-income countries the lack of experienced health workers limits the possibility of scaling up training of some types of health professionals, at least in the very short term *(9, 51, 52)*.

There is substantial information on investments on training students, particularly where migration is seen as a policy to train health professionals abroad. This perspective can be justified on the ground that education of health workers and the health labour market are both globalized. As such, an increase in the number of graduates does not necessarily entail an equal increase in the number of health professionals who will be working in the country, nor large investments in additional health-care education capacity. If one adopts this view, it can be argued that some countries rely on migration to respond to an increasing demand for health workers *(2)*. The comparative advantage of prioritizing training abroad, in the short term, is that it results in an increase in training capacity either at no cost (when neither students nor foreign institutions are financed) or at a low cost when financial support is available for studying abroad. The consequences for the country of emigration in terms of quantity, quality and relevance of health workers depend on the extent to which such emigration is regulated and results from a deliberate policy. The following section presents empirical evidence on how training abroad can affect the quantity, quality and relevance of health workers.

3.1 Empirical evidence

- Some small countries/countries with small populations without medical schools send their doctors to be trained abroad. Botswana, Lesotho and Swaziland use this strategy with the condition that prospective physicians commit to working in their own country after graduation *(53)*. Other small countries have entered into agreements with neighbouring countries to train nurses at minimal cost. The partnership between Antigua and Grenada, settled by the Ministries of Health of both countries in 2003, exemplified this: Grenada had an excess training capacity in nursing *(54)*.

- High-income countries used migration of international workers as a strategy to manage short-term scarcities *(55)*. However, in recent years some countries such as Australia, Canada, the UK and the USA have been unable to reverse a declining relative or absolute supply trend *(6)*. In these four countries, international medical graduates constitute between 23% and 28% of the physicians workforce. Lower-income countries supply between 40% and 75% of these doctors. In the USA almost 86% of African medical school graduates come from Ghana, Nigeria and South Africa *(56)*. Since the education and training of health professionals is both subsidized and costly to government in most countries, savings on these fronts is also, potentially, an important rationale for high-income countries' reliance on migration. By doing so, Australia, Canada, the UK and the USA have saved at least US$ 4.55 billion in total *(57)*.

- Training abroad can also be cost-effective for high-income countries, even when financial support is available to students. For instance, the cost of US students enrolled in foreign medical schools is limited to US$ 138 500. By contrast, those enrolled in US medical schools might borrow up to US$ 224 000 *(22)*.

- The loss in investment returns for the source countries is substantial. At a conservative estimate the direct financial loss for nine sub-Saharan African countries (Ethiopia, Kenya, Malawi, Nigeria, South Africa, Tanzania, Uganda, Zambia and Zimbabwe) with an HIV prevalence of 5% or greater or with more than one million people with HIV/AIDS and with at least one medical school, amounts to US $2.17 billion *(57)*.

- Migration also increases the financial burden of health professional production for the source country, as more health workers than are needed have to be trained *(3)*. The cost of this overproduction can again be substantial. For instance, the cost of educating a nurse in Kenya from primary school to college of health sciences is estimated to be US$ 43 180, and for every nurse who emigrates the loss in investment returns is estimated to be US$ 338 868 in 2006. In that year 1213 Kenyan nurses and midwives were working in seven OECD countries *(58)*.

- Even when exporting human resources for health results from a deliberate policy as a crucial component of the export economy, as in the Philippines, it might result in considerable loss in investment returns and brain drain. For instance, in 2005, 3 500 physicians left the country as nurses and 4 000 more were being trained as such *(31)*. In 2006, 80% of doctors working in the public sector in the Philippines had applied or intended to apply to work overseas not as doctors but as nurses as the latter were being recruited in high-income countries *(59)*. The expansion of the Filipino nursing educational sector driven by the global shortage of nurses has contributed to exacerbate the skill-mix imbalance in the country, deplete the health-care system and impoverish the quality of nursing education. In 2004, 85% of Filipino nurses worked overseas *(60)*.

- Exporting health workers can result in important financial gains, but the net benefit of this export market is questionable in the absence of prioritization of the health sector. Filipino nurses are one of the country's most valuable exports *(31)*. To secure collection of remittance the government established an official system and imposed a compulsory repatriation of waves which varies between 50% and 70% for Filipino land-based workers, and is as high as 80% for Filipino ship workers *(61)*. The revenue generated by all migrant workers accounted for US$ 10.7 billion in 2005. A large proportion of this amount is generated by international service providers, with nurses constituting the largest group among the latter (*62)*. In comparison, the same year only US$ 250 million was invested in health, i.e. 3.2% of the Philippines' gross domestic product *(31)* and only 2.3% of the remittance flows.

- Financial compensation is perceived as a means of reversing the cost advantage of the source country. The Philippines advocates bilateral agreements with importing countries, involving compensation for each health-care professional recruited, together with partnership agreements between hospitals whereby the importing ones compensate exporting ones to improve training and working conditions in the Philippines *(59)*. The Caribbean has a managed migration programme which promotes migration of skilled health workers but under mutually beneficial arrangements for both developed and developing countries *(54)*. For instance, the island of St Vincent also trains nurses for export, but it has a bilateral agreement with the United States such that health care provider institutions recruiting nurses from St Vincent reimburse the training cost of each migrating nurse to the government. The funds received are to be reinvested in nurse training. In Jamaica, on the other hand, temporary migration is facilitated. Nurses work in the United States (Miami) for two weeks per month and in Jamaica for the rest of the month.

The evidence above suggests that training abroad is a cost-effective measure for high-income countries, and feasible for countries with relatively small population sizes and good relationships with countries that have an overcapacity in their medical education system. However, it is an investment loss and a burden for those source countries that do not train enough health workers. The policy of training health professionals for export, on the other hand, might reduce beyond expected levels the quantity of health workers willing to work in the country and the quality of training in the field that is exported. It might also exacerbate any skill-mix imbalance at the expense of the type of health worker that is exported. Geographical disparities can be tackled with financial incentive programme. These are explored in the next section.

4. Financial incentive programmes

There are two types of financial incentive programmes: those that aim to increase the number of students in particular underserved areas, and those that try to retain graduates in such areas *(53)*. In this section we focus on the former, with special attention to direct financial incentives for students. No evidence was found on targeted investments on schools with a higher percentage of graduates serving underserved communities (lump sum) or on other mechanisms such as reimbursing schools for each graduate working in underserved communities.

4.1 Empirical evidence

- Conditional scholarships can be used to: (1) increase enrolment of students from underserved areas and ensure they will practise in such regions; (2) enforce regional learning experience that has been shown to correlate with the likelihood of choosing to practise in underserved areas *(63)*; and (3) enhance the relevance of health workers. They have been estimated to be highly cost-effective in increasing the number of health workers treating HIV/AIDS in sub-Saharan Africa *(64)*.

- The Thai and Australian experiences exemplify the first purpose of such programmes: to increase the quantity of minority students and the supply of health workers in provincial areas. The education of nurses, midwives, junior sanitarians and other paramedics is heavily subsidized. In return, students recruited locally have to sign two- to four -year contracts with the rural public health office where the practical training is carried out *(18)*. In Australia enrolment rates of medical students from rural areas increased from 10% to 25% between 1989 and 2000 following the introduction of conditional scholarships along with other interventions. The length of commitment is to be noted: six to seven years of practice in rural or regional areas after graduation *(30)*.

- In Australia conditional scholarships have also been used to enforce regional learning experiences, as also in South Africa. Indeed, scholarships are available to undergraduate medical students willing to spend two weeks per year for four years in the same rural community *(30)*. In South Africa scholarships are given conditionally on students being integrated into the workforce within the district during the period of their studies. All beneficiaries found that such experience contributed to their success *(65)*.

- In addition to conditional scholarships, countries can also use non-monetary incentive programmes to encourage the allocation of health services in rural areas. Evidence on this comes from Thailand, where clothing, dormitory accommodation, food and learning materials are provided free of charge during the training of provincial nurses, midwives and other paramedics (18). In South Africa beneficiaries of the loan repayment programme were all followed by a mentor during their studies. Ongoing contact with participants was found to be a key component of the success of the programme *(65)*.

- Loan repayment programmes are conditional programmes that assist graduate students in repaying their educational loans. They can be used to reduce the inequitable geographical distribution of health-care professionals *(19, 26, 30)*. They seem to be more effective in doing so than service option educational loans *(66)* which may dissuade more competitive students from enrolling in schools offering such programmes *(67)*. However, we found no evidence that these schemes were used in developing countries to increase the relevance of health workers.

- Instead of loan repayment programmes, developing countries seem to rely more heavily on compulsory service to increase the number of health workers in remote areas. Civil service/ Commissions are frequently used but rarely evaluated *(53)*. The Thai experience suggests that it does contribute to scaling up the number of regional students. A South African experience suggests, though, that the lack choice of placement in remote areas threatens the long-term success of the programme *(68)*.

5. The labour market

Increases in the number of health professionals who are trained results in increases in the number of health workers who are actively working in the health sector if the conditions of employment in the health labour market are favourable.

Once people have been trained to join the supply of health-care professionals they have to decide whether to remain in the country or leave (motivated for instance by prospects of higher payment, better, more stimulating and safer working conditions). If they choose not to migrate, they still have to decide whether they are willing to work, and if so, whether they are willing to work in health or in another (better paid) sector. Then how much to work and where? In a public or private institution? On a full-time or part-time basis? In urban or rural areas? And so forth. Answers to each of these questions determine the labour market supply size, but each one is influenced by demand-side factors. For instance, public and private institutions offer different wage rates, have different provider payment practices, labour regulations and rules that are more or less attractive to health professionals (including new graduates) relative to the working conditions found in other labour markets or other countries *(69)*. Therefore, to increase actual levels of employment towards those needed in a country, it is important to take into account the dynamics of the health labour market *(13)*. This means for instance that in some countries, in the short-term, investing in training might not be the most successful strategy (e.g. Malawi) as the labour market does not have the capacity to absorb new health professionals. Such countries have a problem, not on the supply side, but on the demand side. Other countries that seem to be in equilibrium still need to use financial incentives to preserve achievement in the long run (e.g. Thailand) and some countries need to deal with the perverse consequences of demand -side pull factors that were once implemented to retain workers in the public sector without careful consideration (e.g. Kenya).

The following section presents empirical evidence on the importance of taking into account the health labour market in order to scale up the production of health professionals in a country and prevent loss of investment.

5.1 Empirical evidence

- In Malawi in 2004, 680 posts for nursing officers were vacant in the public sector while 1 200 nurses were either unemployed or inactive. Low wages and bad working conditions in the public sector discouraged their applications. The government then embarked on a six-year plan supported by the UK government to increase annual salaries for health-care workers by 50% *(13)*.

- In Thailand, to reward doctors in rural settings, the government introduced special allowances based on the remoteness of the district in which they work. This hardship allowance can be as much as three times more than the basic salary. The government has also attempted to discourage doctors practising privately during off-duty hours by introducing a non-private practice allowance. To increase productivity, a separate payment is made for special procedures during non-official hours. Specialists in uncommon medical fields also received special allowances. All these measures contributed to increase the number of rural doctors from 300 in 1976 to 2 725 in 2001.

- In Kenya in 2004 the housing allowance accounted for 21% of the government's total wage bill and could represent as much as 30% of an individual's remuneration package *(4)*. The allowance for living in the capital was the highest, which increased reluctance to work in remote areas. Moreover, a study by the Ministry of Health showed that 31.2% of the staff surveyed received a higher housing allowance than that to which they were entitled. So the housing allowance represented a strong incentive for resisting transfers. A hardship allowance also existed but was not sufficient to attract staff to remote areas, and some leakage was observed in its implementation. The Ministry of Health estimated that, in the absence of leakage in the implementation of both the housing allowance and the hardship allowance, an additional 200 doctors and 600 nurses per year at 2005 salary scales could have been hired *(4)*.

6. Key messages/ recommendations

Several policy recommendations can be extracted from the empirical evidence provided in this policy brief.

- Public financial support combined with private investment can contribute to scaling up training of health professionals. Financing health professional education entails the aggregate allocation of public and private resources to educational institutions and students.

- To scale up the number of students attending both public and private institutions, public direct or indirect financial support to students is needed to cover tuition, fees and in some cases even living expenses and books.

- Charging moderate tuition fees, with higher fees for foreign students, is an effective way of increasing public financial resources.

- Governments' financial support to students can take several forms, but in low-income countries providing heavily subsidized public loans might not be a sustainable financial strategy in the long run due to very low repayment ratios and recovery ratios.

- Expatriate nationals are an interesting unexploited source of long-term foreign financing, particularly for countries with important first-generation migrants.

- Private investment in health professional education can also help to increase the number of health workers, but without appropriate regulation the evidence suggests that fees are unaffordable to most students, and the quality and relevance of the people trained is compromised.

- Quality and quantity are both threatened by the lack of qualified tutors and clinical teachers.

- Public investment in infrastructure is needed to reduce regional inequalities in the location of training facilities and to ensure enrolment from students from underserved areas.

- Public and private financial investment in health professional education can be minimized when health workers, community leaders and donors combine efforts to do so.

- When public financial resources are limited, investment needs to be targeted where it will achieve the highest impact on the quantity, quality and relevance of health workers. However, information on the opportunity cost of training different types of health professionals other than midwives, nurses and doctors is scarce. Data are essential to provide economic incentives to tackle skill-mix imbalances in the health sector. Investing in midwives and nurses is cost-effective, particularly when population's access to public health services is limited for financial reasons. Such decisions should also take into account the needs of the population.

- Training health professionals abroad is a cost-effective measure for high-income countries, and feasible for countries with relatively small population sizes and good relationships with countries that have an overcapacity in their medical educational system. However, it is an investment loss and a burden for those source countries that do not train enough health workers.

- The policy of training health professionals for export might reduce beyond expected levels the quantity of health workers willing to work in the country, and the quality of training in the field that is exported. It might also exacerbate skill-mix imbalance at the expense of the type of health worker who is exported.

- Geographical inequalities in access to health services can be tackled by training health professionals who are willing to work in underserved areas. Conditional scholarships can be used: regional experience has shown that these improve the likelihood of professionals choosing to practise in underserved areas. Enrolment of students from underserved areas should be increased with a requirement that these health workers will practise in such regions. Loan repayment programmes have been used for the latter purpose in high-income countries. Developing countries rely more heavily on compulsory service to increase the number of health workers in remote areas, but evidence of its effectiveness is scarce, and conclusions are mixed.

- Unless combined mechanisms are in place to increase the financial resources necessary to scale up the production of health workers, coupled with strategies to provide appropriate employment conditions to absorb the newly trained health workers in the labour market, there is a risk of incurring loss of investment and brain drain. To increase actual levels of employment where it is needed in a country through increasing the number of graduates, the dynamics of the health labour market have to be taken into account. In countries where the shortage of health workers in public facilities is driven by a comparative disadvantage of the public sector, rather than by the supply of health workers, investing in training is not an appropriate strategy in the short term. The implementation of demand-side pull factors must be carefully considered to avoid perverse consequences, such as increasing geographical inequalities in access to health services.

References

1. World Health Organization. Constraints to Scaling Up the Health Related Millennium Development Goals: Costing and Financial Gap Analysis. *Background to the Working Group 1 report to the Taskforce on Innovative International Financing for Health Systems.* Geneva, World Health Organization, 2009.
2. Frenk J et al. Health professionals for a new century: transforming education to strengthen health systems in an interdependent world. *Lancet,* 2010, 376:1923-58.
3. Task Force on HRH Financing. Financing and economic aspects of health workforce scale-up and improvement: framework paper. Geneva, World Health Organization, 2008.
4. Vujicic M et al. *Working in health: financing and managing the public sector health workforce,* Washington, DC, World Bank, 2009.
5. *Scaling up, saving lives: Task force for scaling up education and training for health workers.* Geneva, World Health Organization, 2008.
6. Clark PF, Stewart JB, Clark DA. The globalization of the labour market for health-care professionals. *International Labour Review,* 2006, 145:37-64.
7. Ananthakrishnan N. Acute shortage of teachers in medical colleges: existing problems and possible solutions. *National Medical Journal of India,* 2007, 20:25-29.
8. Allan J D, Alderbron J. A systematic assessment of strategies to address the nursing faculty shortage, U.S. *Nursing Outlook,* 2008, 56:286-97.
9. Fullerton JT et al. Quality considerations in midwifery pre-service education: exemplars from Africa. *Midwifery,* 2011, 27:308-15.
10. Mullan F et al. Medical schools in sub-Saharan Africa. *Lancet,* 2011, 377:1113-21.
11. Stoddart GL, Barer ML. Will increasing medical school enrollment solve Canada's physician supply problems? *Canadian Medical Association Journal*, 1999, 161:983-4.
12. Mullan F. The metrics of the physician brain drain. *The New England Journal of Medicine,* 2005, 353:1810-8.
13. Vujicic M, Zurn P. The dynamics of the health labour market. *The International journal of health planning and management,* 2006, 21:101-15.
14. Boelen C, Boyer H. A view of the world's medical schools: defining new roles International association of medical colleges. *International Association of Medical Colleges*, 2011.
15. Hsiao WC. Abnormal economics in the health sector. *Health Policy,* 1995, 32:125-39.
16. Leffler KB, Lindsay CM. 1981. Student discount rates, consumption loans, and subsidies to professional training. *Journal of Human Resources,* 1981, 16:468-76.

17. Musgrove P, World Bank. *Public and private roles in health: theory and financing patterns,* Washington, DC, World Bank, 1996.

18. Wibulpolprasert S, Pengpaibon P. Integrated strategies to tackle the inequitable distribution of doctors in Thailand: four decades of experience. *Human Resources for Health,* 2003, 1:12.

19. Jolly P. Medical school tuition and young physicians' indebtedness. *Health Affairs (Millwood),* 2005, 24:527-35.

20. OECD 2012. Education Indicators in focus. OECD, Feb 2012.

21. Dovlo D, Nyonator F. Migration by graduates of the University of Ghana Medical School: a preliminary rapid appraisal. *Human Resources for Health Development,* 1999, 3:40-51.

22. Scott GA. Education should improve monitoring of schools that participate in the Federal Student Loan Program. *GAO Reports*, 2010, 1-78.

23. Mahal AS, Shah N. Implications of the growth of dental education in India. *Journal of Dental Education,* 2006, 70:884-91.

24. Health Systems and Services Profile St Kitts and Nevis. Washington, DC, Pan American Health Organization, 2010.

25. Bolduc D, Fortin B, Fournier MA. The effect of incentive policies on the practice location of doctors: a multinomial probit analysis. *Journal of Labor Economics,* 1996, 14:703-732.

26. Daniels Z.M et al. Factors in recruiting and retaining health professionals for rural practice. *Journal of Rural Health,* 2007, 23:62-71.

27. De Vried E, Reid S. Do South African medical students of rural origin return to rural practice? *South African Medical Journal,* 2003, 93:789-93.

28. Rabinowitz HK. Recruitment, retention, and follow-up of graduates of a program to Increase the number of family physicians in rural and underserved areas. *New England Journal of Medicine,* 1993, 328:934-939.

29. Rabinowitz HK et al. A program to increase the number of family physicians in rural and underserved areas: impact after 22 years. *The Journal of the American Medical Association,* 1999, 281:255-260.

30. Dunbabin JS, Levitt L. Rural origin and rural medical exposure: their impact on the rural and remote medical workforce in Australia. *Rural and Remote Health,* 2003, 3:212.

31. Masselink LE, Lee SY. Nurses, Inc.: expansion and commercialization of nursing education in the Philippines. *Social Science Medicine,* 2010, 71:166-72.

32. Ananthakrishnan N. Acute shortage of teachers in medical colleges: Existing problems and possible solutions. *National Medical Journal of India*, 2007, 20:25-29.

33. Allan J D, Alderbron J. A systematic assessment of strategies to address the nursing faculty shortage, U.S. *Nursing Outlook*, 2008, 56:286-97.

34. Palmer D. Tackling Malawi's human resources crisis. *Reproductive Health Matters*, 2006, 14:27-39.

35. Mullan F, Frehywot S. Non-physician clinicians in 47 sub-Saharan African countries. *Lancet,* 2007, 370:2158-63.

36. Shen H, Ziderman A. Student loans repayment and recovery: international comparisons. *Higher Education,* 2009, 57:315-333.

37. Johnstone DB. *Student loans in international comparative perspective: promises and failures, myths and partial truths.* Buffalo, NY, University at Buffalo, 2000.

38. Ketkar S, Ratha D. *Development finance via diaspora bonds.* Washington, DC, The World Bank, 2009.

39. Cristobal F, Worley P. Can medical education in poor rural areas be cost-effective and sustainable: the case of the Ateneo de Zamboanga University School of Medicine. *Rural and Remote Health,* 2012, 12:1835.

40. Rana TG, Rajopadhyaya R, Bajracharya B, Karmacharya M, Osrin D.. Comparison of midwifery-led and consultant-led maternity care for low risk deliveries in Nepal. *Health Policy and Planning,* 2003, 18:330-337.

41. Matendo R et al. Reduced perinatal mortality following enhanced training of birth attendants in the Democratic Republic of Congo: a time-dependent effect. *Journal of Health Population Nutrition Population,* Oct; 29 (5): 532-40.

42. Pathmanathan I. *Investing in maternal health in Malaysia and Sri Lanka.* Washington, DC, World Bank, 2003.

43. Ten Hoope-Bender P et al. Human resources and access to maternal health care. *International Journal of Gynaecology and Obstetrics,* 2006, 94:226-33.

44. Anderson RE, Anderson DA. The cost-effectiveness of home birth. *Journal of Nurse-Midwifery,* 1999, 44:30-35.

45. Fagerlund K, Germano E. The Costs and Benefits of Nurse-Midwifery Education: Model and Application. *Journal of Midwifery & Womens Health,* 2009, 54:341-350.

46. Friedman H, Liang M. Costs of pre-service midwifery education. New York, UNFPA, 2011.

47. Hendrix MJC et al. Cost analysis of the Dutch obstetric system: low-risk nulliparous women preferring home or short-stay hospital birth — a prospective non-randomised controlled study. *BMC Health Services Research*, 2009, 9.

48. Bicknell WJ, Beggs AC, Tham PV. Determining the full costs of medical education in Thai Binh, Vietnam: a generalizable model. *Health Policy and Planning,* 2001, 16:412-20.

49. Starck PL. The cost of doing business in nursing education. *Journal of professional nursing : official journal of the American Association of Colleges of Nursing*, 2005, 21:183-90.

50. Berhan Y. Medical doctors profile in Ethiopia: production, attrition and retention. In memory of 100-years Ethiopian modern medicine & the new Ethiopian millennium. *Ethiopia Medical Journal,* 2008, 46 (Suppl 1):1-77.

51. Gerein N, Green A, Pearson S. The implications of shortages of health professionals for maternal health in sub-Saharan Africa. *Reproductive Health Matters*, 2006, 14:40-50.

52. Namate DE. The Cost of Registered Nurse-Midwifery Education in Malawi. *Journal of Advanced Nursing,* 1995, 22:410-15.

53. Barnighausen T, Bloom DE. Designing financial-incentive programmes for return of medical service in underserved areas: seven management functions. *Human Resources for Health*, 2009, 7:52.

54. Salmon ME et al. Managed migration: The Caribbean approach to addressing nursing services capacity. *Health Services Research,* 2007, 42:1354-72.

55. Folland S, Goodman AC, Stano M. *The economics of health and health care*, Boston, Prentice Hall, 2010.

56. Hagopian A et al. The flight of physicians from West Africa: Views of African physicians and implications for policy. *Social Science Medicine,* 2005, 61:1750-60.

57. Mills EJ et al. The financial cost of doctors emigrating from sub-Saharan Africa: human capital analysis. *British Medical Journal,* 2011, 343 doi: http://dx.doi.org/10.1136/bmj.d7031.

58. Kirigia JM et al. The cost of health professionals' brain drain in Kenya. *BMC Health Services Research*, 2006, 6:89.

59. Mackey TK, Liang BA. Rebalancing brain drain: exploring resource reallocation to address health worker migration and promote global health. *Health Policy,* 2012, 107(1):66-73. doi: 10.1016/j.healthpol.2012.04.006.

60. Aiken LH et al. Trends in international nurse migration. *Health Affairs (Millwood),* 2004, 23:69-77.

61. Goss JD, Lindquist B. Conceptualizing international labor migration: a structuration perspective. *International Migration Review*, 1995, 29:317-51.

62. Lorenzo FM et al. Nurse migration from a source country perspective: Philippine country case study. *Health Services Research*, 2007, 42:406-18.

63. Rourke J et al. The relationship between practice location of family physicians in Ontario and rural background and rural medical education. *Canadian Journal of Rural Medicine*, 2005, 10:213-239.

64. Barnighausen T, Bloom DE. "Conditional scholarships" for HIV/AIDS health workers: educating and retaining the workforce to provide antiretroviral treatment in sualb-Saharan Africa. *Social Science Medicine,* 2009, 68:544-51.

65. Ross AJ. Success of a scholarship scheme for rural students. *South African Medical Journal,* 2007, 97:1087-90.

66. Pathman DE et al. 2004. Outcomes of states' scholarship, loan repayment, and related programs for physicians. *Medical Care,* 2004, 42:560-8.

67. Miller JB, Crittenden RA. The effects of payback and loan repayment programs on medical student career plans. *Journal of Rural Health*, 2001, 17:160-4.

68. Reid S. Compulsory community service for doctors in South Africa—an evaluation of the first year. *South African Medical Journal,* 2001, 91:329-36.

69. Glassman A et al. Planning and costing human resources for health. *Lancet,* 2008, 371:693-5.–

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ISBN 978 92 4 150638 0