

Measuring expenditure for the health workforce: evidence and challenges

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Introduction

Many developing countries have voiced a need for investment in the health workforce, particularly in relation to achieving the Millennium Development Goals [1, 2, 3]. The *World health report 2006* estimates that USD 311 million will be required yearly to pay the salaries for the additional health workers needed in countries with shortages around the world, assuming the workers can be fully trained by 2015. This amounts to almost a tenth of current measured total world health spending, of which more than a third would need to be invested in the African Region of WHO. What does this scaling up mean for health budgets? How much do countries currently spend on their human resources for health (HRH) and how much should they spend? The wage bill already reaches more than 90% of domestic government expenditure on health in countries such as Ghana (unpublished report jointly prepared by the World Bank, Ghana Ministry of Health and Ghana Health Service, March 16, 2006). How can investments for the health workforce be monitored? No comprehensive international inventory of data on HRH expenditure exists; only a few cross-national studies are available [4, 5].

Objective

Managing health workforce expenditure requires the generation of evidence in order to support informed policy decisions. This background paper takes a step forward in exploring HRH expenditures and presents the results of a first measurement for the health workforce in WHO Member States in the years 1998–2003. This document contributes to the development of a set of core indicators to be collected on HRH expenditures.

The measurement framework

Health accounts measure and track resource flows in the health system to support the design, monitoring and evaluation of financing policies. Estimates of expenditure on HRH are contained in the health accounts as part of the resource flow monitoring [6]. The health accounts framework is set up in line with international standards [7].

Expenditure on HRH reflect the accounting principle: "Value = Price x Volume". It is a composite index of workforce characteristics (volume) and the remuneration (price), acknowledging the heterogeneity of skills involved in the production of health services.

Health workforce

For the purpose of this estimation, the health workforce is defined to be all persons, skilled and unskilled, engaged in actions whose primary intent is to enhance the health status of the population. This includes persons who directly provide health care (prevention, curative and rehabilitative care, ancillary services, medical good provision and public health) as well as administration and support workers who – as a kind of invisible backbone – help the health system function. Both employed and self-employed health workers are included.

The remuneration of HRH refers to a weighted value of employment in the health system, which takes into account working time; the educational attainment and the qualifications or skills of health workers; age and gender characteristics; and other labour market criteria, of which the employment relationship identifies employees and other occupational conditions such as employers and self-employed. The volume of HRH is measured by type and by head-count as well as full-time equivalent for a stock and flow analysis. Multiple approaches are needed due to the prevalence of part-time, short-term, multi-employment, rotation and migration in the health labour market.

Expenditure on HRH

The two largest components of measured expenditure on HRH are remuneration of employees and self-employed income. The definitions for these two components in health accounting are as follows:

- Remuneration of employees is the total compensation, in cash or in kind, payable by enterprises to employees in return for work performed during the accounting period. It includes wages and salaries and social contributions.
- Wages and salaries of health employees include remuneration in cash; benefits for activities such as regular interval payments, piecework, overtime, night work, weekend or other unsocial hours; allowances for working away from home or in disagreeable or hazardous circumstances; allowances linked to housing, travel or sickness benefits; ad hoc bonuses, commissions and gratuities; and in-kind provision of goods and services required to carry out their work, such as meals and drinks, uniforms and transportation.
- Social contributions paid for health employees involve actual or imputed payments to social schemes to secure an employee's entitlement to non wage benefits. The value of the social contributions include: contributions payable by employers to social security schemes or to private funded social insurance schemes to secure social benefits for their employees; or imputed social contributions by employers providing unfunded social benefits.
- Income of self-employed HRH consists of the gross operating surplus (or deficit) accruing from production by unincorporated enterprises owned by households. Self-employment income includes mixed elements of remuneration for work done by the owner, the employer or own-account HRH worker and other unpaid members of the household that cannot be separately identified from the return to the owner as entrepreneur. The operating surplus originating from owner-occupied dwellings should be excluded.

Data collection

Data were collated from a variety of sources. Estimates of the remuneration of health employees paid by general government as a share of general government expenditure on health for the years 1998 to 2003 were sent to the 192 Member States of WHO between November 2005 and January 2006 as part of an annual consultation on broader health expenditure estimates. A second indicator has also been: expenditure on HRH as a share of total expenditure on health. That indicator includes remuneration to health workers employed in the public and private sectors as well as to self-employed workers.

This is the first attempt to put together data of this nature for a large number of countries. Detailed rules and methodology are consistent with System of National Accounts rules adopted by the United Nations [7] and by the System of Health Accounts [8].

Expenditure on HRH: the numerator of HRH indicators

Expenditure on HRH in the general government

Data include the remuneration paid out by the general government entities and is the sum of government outlays to compensate health workers (regardless of the origin of funds: that is, it might include resources provided by donors or international lending agencies). It is composed of wages and salaries plus social contributions paid to employees.

General government involves entities covering a territorial authority (federal/central), such as the ministry of health, ministry of defence and the ministry of education, subnational governments (state and local governments), social insurance health schemes and extrabudgetary entities, such as state universities and special boards. The figures for social security expenditure on health include the purchase of health goods and services by schemes that are mandatory and controlled by a government.

Data sources are health accounting reports and administrative records, such as the reports of executed budget published by the ministries of finance, central statistical offices and in statistical yearbooks or annual institutional reports by the ministries of health. Some data were obtained directly from various government departments. Additional secondary sources accessed included country reports, notably those produced under International Monetary Fund and World Bank auspices.

Expenditure on health workers in the private sector

Data include: (1) the remuneration paid out to HRH by private entities as wages and salaries plus social contributions; (2) self-employed income to HRH as employers and own-account workers.

Data sources include health accounts reports, national accounts reports, business surveys, economic censuses, statistical yearbooks and country reports produced under International Monetary Fund and World Bank auspices.

Information on expenditure on health: the denominator of indicators

Expenditure on health comprises the outlays earmarked for health maintenance or restoration or enhancement of the health status of the population, regardless of the result of the consumption. The denominators are expenditure on health, total and by the general government entities. These aggregates have been collated by the WHO-NHA Unit since 1999 and are submitted annually for comment to all Member States. Results are published as annex tables in the yearly *World health report*.

Total expenditure on health (THE) has been defined as the sum of general government expenditure on health (frequently referred to as public expenditure on health) and private expenditure on health. General government health expenditure (GGHE) is estimated as the sum of outlays by government entities to purchase health care services and goods, mainly by ministries of health and social security agencies. Private health expenditure (PvtHE) includes total outlays on health by private entities: notably commercial insurance, non-profit institutions, households acting as complementary funding sources to the previously cited institutions or disbursing unilaterally on health commodities.

General government and private expenditure on health can be financed through domestic funds or through external resources. They include both recurrent and investment expenditure (including capital transfers) made during the year. Furthermore, total expenditure on health includes subsidies to producers, and transfers to households (chiefly reimbursements for medical and pharmaceutical bills).

Results

A considerable share of the financial resources available to improve health by general government entities is used to pay for the health workforce. For the purposes of the 2006 *World health report*, information on the share of general government expenditure devoted to human resources was available for 64 countries over various years (266 observations). The estimates ranged from 9% to 80% of general government on health (GGHE), with a mean of 42.2% and a 16% standard deviation. Results are presented grouped by WHO regions in Table 1. Governments in the 14 African countries devoted a much lower proportion of their total expenditures to the health workforce (29% on average) than those in the other 50 countries (45% on average). The difference is statistically significant ($p < 0.0001$).

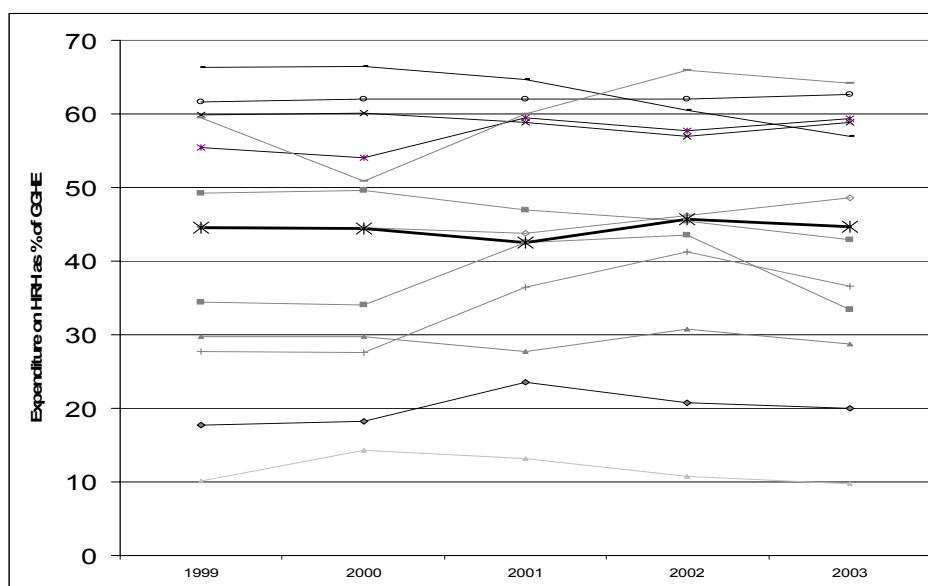
Table 1. Remunerations as share of government expenditure on health

WHO region	Number of countries with data accessed	Wages, salaries and allowances of employees as percentage of general government health expenditure (GGHE)
Africa	14	29.5%
South-East Asia	2	35.5%
Europe	18	42.3%
Western Pacific	7	45%
Americas	17	49.8%
Eastern Mediterranean	5	50.8%
World	64	42.2%

Note: grouped proportions are simple averages of the country proportions, showing the ratio in a typical country in the region. "Data" refers to the latest available year for each country.

For some countries, data were accessed for several years. The share of government expenditure on HRH over time is displayed in Figure 1 for the 12 countries for which data for the entire period could be found. No consistent pattern of rise or fall was observed. As expenditure on health by general government has increased in absolute current per capita values, a stable share implies an equivalent increase in the level of HRH spending over the period. The very substantial differences in the proportion of general government expenditure paid in wages, salaries and other allowances is obvious – in this case varying from approximately 10% to over 65%.

Figure 1. Government expenditure on HRH as % of general government expenditure on health in 12 countries, 1999–2003



In addition to the government sector results shown above, data have also been accessed covering the entire health workforce. Table 2 reports total remuneration of employees and self-employed incomes as a share of total expenditure on health. Both numerator and denominator include the government and non-government sectors. Data were available for 43 countries over several recent years, with 254 country years of data in total. On average, the remuneration of health workers accounted for 68.9% of total health expenditures (standard deviation of 21.7%).

Table 2. Expenditure on HRH as share of total expenditure on health in 43 countries

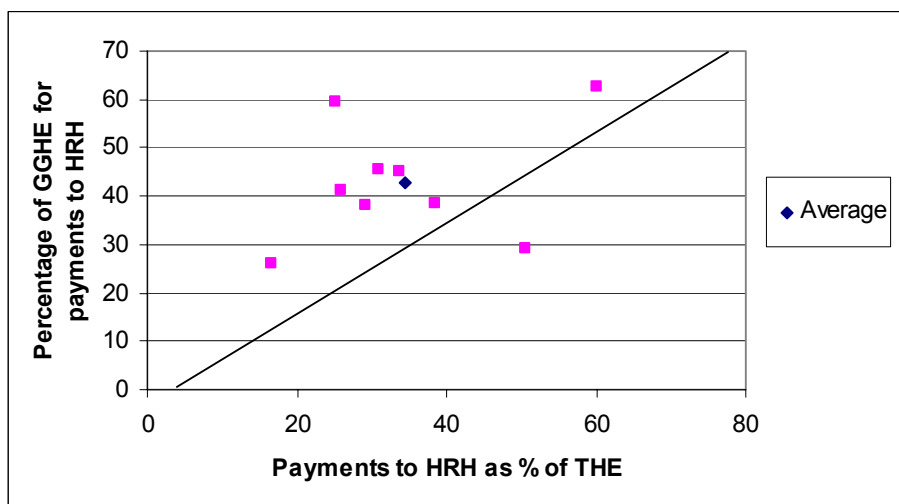
WHO region	Number of countries with data accessed	Remuneration of private and government health workers as percentage of total expenditure on health
Africa	2	49.7
South-East Asia	-	-
Europe	29	73.4
Western Pacific	4	60.2
Americas	7	43.8
Eastern Mediterranean	1	19.1
World	43	49.4

Note: the area shares are simple averages of the country proportions, showing the ratio in a typical country in the region. "Data" refers to the latest available year.

The two data sets described in Tables 1 and 2 do not overlap to any great extent: for example, data on remunerations as a share of government expenditure on health are available for a different set of countries than for data on remuneration and incomes as a proportion of total health expenditures. Furthermore, whereas the first dataset contains only 8 OECD countries, the second data set of 43 countries includes 27 OECD countries and an additional 8 European countries.

The simple averages from the two tables cannot be used to answer the question of whether the percentage of THE devoted to the health workforce is higher or lower than the percentage of GGHE. This requires comparison of the two figures in the same country. Data limitations prevent this comparison from being made for more than nine countries, and results are presented in Figure 2. This suggests that employment remuneration amounts to a greater share of government expenditure than the proportion of remuneration of employees in private health care delivery.

Figure 2. Comparison of the share of health expenditure allocated to human resources in the government versus the total health system, nine countries



In summary, the data confirm that payments to health workers constitute a considerable proportion of government and of total expenditure on health – between 40% and 50% on average in the sample. However, heterogeneity exists across countries. There is not enough evidence to show that this share has increased, or decreased, over time.

An attempt to assess whether there was a relationship between these proportions and other factors such as GDP per capita found no significant association with other health system variables.

Discussion

Human resource accounting studies [9, 10, 11] have noted a lack of standardized recording regarding: (1) the classification of human resources working in the health system; (2) the remuneration and other payments for these resources; and (3) the actual cost of the workforce. The exploratory study reported here has enabled to develop at least some information on country expenditures on HRH in selected countries. These observations may not be typical of all countries. Their inclusion was simply a function of the availability of data at the time of preparing the first-round assessment.

This exercise shows, however, that:

- Some data can be accessed for at least two thirds of WHO Member States. Efforts are continuing to update the data base for a more complete analysis.
- Expenditure data retrieved as a value-added component in national accounts requires harmonization in terms of boundaries and a disaggregation of general government and private components. A crosswalk between national accounts and health accounts boundaries is needed.
- The coexistence of different payment schemes for the provision of services, e.g. contracting and outsourcing, adds complexity to the task of tracking expenditure on HRH. Health accounts provide a useful framework to increase the transparency of resources used regardless of their role in the production of services and products within the health system (e.g. the intermediate consumption for national accounts).
- Disaggregated data for general government expenditures are not readily accessible. When accessible, partial data obtained refer mainly to MoH and/or SS. Data on remuneration of employees in other entities is frequently missing.
- Data for the private sector can be retrieved from health accounts reports and data on value added from the national accounts. Theoretically, the latter should include all compensation of employees (government and private) and also identify the self-employed income. In some countries it is also feasible to further disaggregate the data when required.
- Comparisons across countries require that the same entities are represented in all components. Homogenization was not achieved in this first exploratory exercise. This could potentially account for some of the variation in the ratios across countries.

The collection of data requires a complementary effort to understand their content and meaning, such as, for example, whether the data collected for each country at a point in time are typical of countries sharing similar structures.

Conclusion

Monitoring and evaluation of HRH interventions that aim at scaling up the health workforce and productivity require information on HRH expenditure. HRH expenditure is one of the key measurements of a health system because it represents, on average, a significant share of resources in the health system as this exercise demonstrates. The data currently presented are limited by their partial availability and heterogeneity in the data sources accessed, thus should be considered a gross estimate. Among the major challenges emerging from this exploratory data collection is the need to improve the classification and the recording systems of the data required to create a sound evidence base for expenditure on HRH.

Though the focus of this exercise is the expenditure on HRH, this information cannot be interpreted on its own. Its interpretation requires information as well on the entire set of resources involved in health production: investment, purchase of key inputs such as pharmaceuticals, technical equipment,

infrastructure, etc. From these, the initial steps can be taken to inform the description of an optimum resource allocation profile for the health system.

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