UNDERSTANDING THE LABOUR MARKET OF HUMAN RESOURCES FOR HEALTH IN SUDAN

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Abstract

Universal health coverage depends on having the necessary human resources to deliver health care services. Sudan is among the African countries currently experiencing a crisis in the area of human resources for health (HRH). The major causes of the crisis include migration and maldistribution of the health workforce. The imbalance between the number graduates of medical and health care trainings institutes and the actual number of graduates which enter the health labour market is alarming. The lack of jobs in both the public and the private sector, together with the challenges of retaining health workers in the country, and ensuring an appropriate distribution throughout the country and in rural and urban areas, means that many facilities lack an appropriate health workforce. Low salaries and unfavourable working conditions have an effect on health workers’ daily activities. This document provides an overview of the HRH labour market in Sudan, highlighting the importance of a comprehensive approach to understanding the driving forces that affect the supply and demand for health workers, in order to provide a basis for developing effective HRH polices that can contribute to progress towards universal health coverage.

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Abbreviations and acronyms used in this document

AHS Academy of Health Sciences
EPI Expanded Programme of Immunization
FMoH Federal Ministry of Health
GDP gross domestic product
HPE health professional education
HRH human resources for health
IFAD International Fund for Agricultural Development
ILO International Labour Organization
IMF International Monetary Fund
LFS labour force survey
MA medical assistant
MDG Millennium Development Goal
NHRHO National Human Resources for Health Observatory
OECD Organisation for Economic Co-operation and Development
PHC primary health care
SSWA Secretariat of Sudanese Working Abroad
UHC universal health coverage
UNESCO United Nations Educational, Scientific and Cultural Organization
WHO World Health Organization
1. Introduction

Universal health coverage (UHC) seeks to ensure that: all people have access to the health services they need, whether promotive, preventive, curative, rehabilitative or palliative; that the services are of sufficient quality to be effective; and that the use of these services does not cause financial hardship (WHO, 2010). Universal health coverage depends on having the necessary human resources to deliver health care services. Human resources for health (HRH) include public and private sector doctors, nurses, midwives, pharmacists, technicians and other paraprofessional personnel, as well as untrained and informal-sector health workers, such as practitioners of traditional medicine, community health workers, and volunteers (WHO, 2006).

The Millennium Development Goals (MDGs), especially those related to health, are unlikely to be fully achieved in Sub-Saharan Africa, because of deficiencies in health systems and HRH. The World Health Organization drew attention to the HRH shortage in its 2006 World Health Report (WHO, 2006). Sudan faces a critical shortage of HRH, in part as a result of low production and maldistribution. The imbalance between the number graduates of medical and health care training institutes and the actual number of graduates which enter the health labour market is alarming.

Migration and brain drain of health care professionals has become a major concern for Sudan. Many health workers leave the regions in which they were trained in order to seek the resources and lifestyles that richer countries can provide. Migration has acute effects in a country like Sudan, which faces issues of workforce renewal, training, and retention of workers and assignment of staff to rural areas; furthermore, there is no migration management strategy. Other challenges include the global economic recession, the unstable political situation in the region and the separation of the south of the country, which greatly affected the Sudanese economy (Abuagla, 2013). The health sector is highly affected by the meagre financial resources of the country. This is reflected in the inadequate creation of jobs and the non-implementation of health policies, such as expansion of services and recruitment of health workers.

The lack of jobs in both the public and the private sector, together with the challenges of retaining health workers in the country, and ensuring an appropriate distribution throughout the country and in rural and urban areas, means that many facilities function with a deficient and unbalanced health team. Low salaries and unfavourable working conditions have an effect on health workers’ daily activities.

This document provides an overview of the HRH labour market in Sudan, highlighting the importance of a comprehensive approach to understanding the driving forces that affect the supply and demand for health workers, in order to provide a basis for developing effective HRH polices that can contribute to progress towards universal health coverage.
2. Country context

Historically, Sudan has always been inhabited by people of different ethnic groups, tribes, religions and cultures. Modern Sudan evolved from the condominium government jointly established in 1899 by the United Kingdom and Egypt, which ended in 1956 when a unified Sudan achieved self-determination. The country, however, was affected by social, economic and political conflicts, which eventually escalated into civil war. The more acute phases of the conflicts in 1956–72 and 1983–2004 led to famine and the displacement of the population, both within Sudan and to neighbouring countries.

Sudan is the third largest country in Africa, with a surface area of 1.8 million km²; it is bordered by the Central African Republic, Chad, Egypt, Eritrea, Ethiopia, Libyan Arab Jamahiriya and South Sudan, and is dominated by the Nile and its tributaries. Sudan has over 800 km of coastline along its northeastern border, providing access to the Red Sea. The south of the country has a tropical climate while the north is arid desert; it is generally flat with mountains to the east and west. Khartoum is the capital, located at the confluence of the White Nile, which flows north from Lake Victoria and the Blue Nile, which flows west from Ethiopia.

The total population, as estimated by the Sudan Central Bureau in 2011, is 32,725,742 (Federal Ministry of Health, 2011e). The Sudanese population is composed of more than 150 ethnic groups. Natural population growth is significant, resulting in a young demographic profile, with 62.2% of the population aged less than 25 years. The country’s main language is Arabic, and English is the second official language. Most Sudanese are Muslim, and there is a Christian minority.

2.1. Economy

Since 1997, Sudan has been working with the International Monetary Fund (IMF) to implement macroeconomic reforms, including a managed float of the exchange rate and a large reserve of foreign exchange. The Sudanese pound was reintroduced in January 2007 at an initial exchange rate of 2 Sudanese pounds to the US dollar. Sudan began exporting crude oil in the last quarter of 1999, and the economy boomed as a result of increases in oil production, high oil prices, and significant inflows of direct foreign investment until the second half of 2008.

The past four years have seen political uncertainties and major changes. Sudan’s gross domestic product (GDP) expanded by 5.2% during 2010 to US$ 2300 per capita, an improvement over the 4.2% growth in 2009, but significantly below the more than 10% per year growth in 2006 and 2007 prior to the global financial crisis. A continued strong performance in agriculture was offset by a broad-based slowdown in the rest of the economy. Oil production declined by about 2%, to 460,000 barrels per day. Twelve-month inflation stood at 9.8% in November 2010, reflecting the increase in international food prices, and an expansionary monetary policy. Average inflation is projected to remain at 11% (Federal Ministry of Health, 2012a). While the oil sector continues to drive growth, services and utilities play an increasingly important role in the economy; agriculture remains important, as it employs 80% of the workforce and contributes one-third of GDP.
The 2011 South Sudan referendum on self-determination had a severe effect on the Sudanese economy, as the subsequent secession of South Sudan took with it 75% of the oil production. Although efforts are being made to bridge the economic gap thus created, the economy is still suffering, adding to the adverse effects of the global crisis in 2009. Clearly, such a difficult macroeconomic environment creates an unfavourable financial situation in the health sector.

2.2. Poverty and employment

The incidence of poverty in Sudan is very high, particularly in rural areas. The International Fund for Agricultural Development (IFAD) estimated that, in 2007, more than half of the population was living below the poverty line of US$ 1 a day, and that almost half of those living in rural areas were surviving under abject poverty conditions, especially in conflict-affected areas.

The health profile of the country is dominated by communicable diseases, with malaria and childhood infections responsible for over 40% of hospital admissions. The main causes of death, according to the 2011 statistical report (Federal Ministry of Health, 2011c) were heart diseases, septicaemia, respiratory infections, malaria, diarrhoeal diseases and gastroenteritis. The life expectancy at birth is 59 years; the infant mortality rate is 60 per 1000 live births and the maternal mortality ratio is 216 per 100 000 live births (Federal Ministry of Health, 2012). Some 61% of the population has access to safe water.

From 2000 to 2008, the employment situation improved for the general population, but not for young people. The labour market in the country is characterized by an extremely high level of informal employment, underemployment and unemployment (ILO, 2013), in both rural and urban areas.

Open unemployment increased from 16.5% in 1990 to 18.8% in 2011. Unemployment particularly affects young people and women. The unemployment rate for young people is more than double the rate among adults: 33.8% compared with 14.8%. For young women, the rate is 44.8% compared with 28% for adult women. Graduates from medical school generally have difficulty finding work, because they have to first undergo an internship.

An estimated 42% of the working population is living in poverty. Although there is no direct measure for underemployment, there is a wide consensus that income-related and skill-related underemployment is common, reflecting a mismatch between education and the labour market. It seems also that the informal sector is becoming the major employment provider.

According to the Labour Force Survey (LFS) for 2011 (Ministry of Human Resource Development and Labour, 2013), the participation rate in the labour force for the population over 10 years of age is 43.5%. There is a great discrepancy between the participation of males (60.2%) and that of females (25.5%). In urban areas, the labour force participation rate is 40.3% and in rural areas 45.5%. Of the men who participate in the labour force, 81.2% are employed, equivalent to an effective employment of 34.9% of the total population.
2.3. Migration

There are between 1.2 and 1.7 million Sudanese citizens and people of Sudanese origin currently living abroad. Some 51.3% of Sudanese abroad live in countries with a low or medium level of human development, mostly neighbouring African countries; 48.7% are in countries with a high or very high level of human development, primarily countries of the Gulf Cooperation Council, Europe and North America. There are between 880,000 and 1,338,000 Sudanese economic migrants, over half of whom are located in Saudi Arabia, with most of the rest in other Arab countries and a small proportion in Western countries (IOM, 2011).

Sudanese generally consider emigration as a temporary experience intended to improve their knowledge and revenue; they tend to maintain close ties with their family and country. Many emigrants left the country for economic or political reasons, especially during the periods of civil war, particularly at the beginning of the 1990s.

The Secretariat of Sudanese Working Abroad (SSWA) is a governmental institute responsible for validating work contracts and providing permits for Sudanese leaving the country. The SSWA database provides estimates of the numbers and distribution of Sudanese abroad by occupation; however, the data on the socio-professional profile of Sudanese abroad are not accurate. In March 2010, about 794,000 Sudanese registered as workers, including those who went abroad for the purpose of seeking employment. Most of these emigrants, i.e. 97.5%, are registered in Saudi Arabia (551,768 or 69.5%), United Arab Emirates, Libyan Arab Jamahiriya, Iraq and other Gulf countries. The majority of Sudanese working abroad are low-skilled workers (75%); approximately 12% are white-collar employees, but there are also significant numbers of skilled practitioners, such as medical professionals, teachers, lecturers, engineers, managers and entrepreneurs.

Table 1. Sudanese health professionals working abroad and registered with SSWA, by occupation and sex, 2010

<table>
<thead>
<tr>
<th>Category</th>
<th>Total</th>
<th>Men</th>
<th>Women</th>
</tr>
</thead>
<tbody>
<tr>
<td>Medical specialists</td>
<td>999</td>
<td>76.2%</td>
<td>23.8%</td>
</tr>
<tr>
<td>General practitioners</td>
<td>6545</td>
<td>74.2%</td>
<td>25.8%</td>
</tr>
<tr>
<td>Medical assistants</td>
<td>175</td>
<td>74.3%</td>
<td>25.7%</td>
</tr>
<tr>
<td>Veterinarians</td>
<td>931</td>
<td>60.5%</td>
<td>39.5%</td>
</tr>
<tr>
<td>Pharmacists</td>
<td>909</td>
<td>70.6%</td>
<td>29.4%</td>
</tr>
<tr>
<td>Professors</td>
<td>876</td>
<td>83.6%</td>
<td>16.4%</td>
</tr>
<tr>
<td>Associate and assistant professors</td>
<td>579</td>
<td>71.5%</td>
<td>28.5%</td>
</tr>
<tr>
<td>Lecturers</td>
<td>1298</td>
<td>68.9%</td>
<td>31.1%</td>
</tr>
<tr>
<td>Total</td>
<td>12,312</td>
<td>73.0%</td>
<td>27.0%</td>
</tr>
</tbody>
</table>

Source: Secretariat of Sudanese Working Abroad
It is not easy to estimate the size of the Sudanese diaspora. Sudanese communities in destination countries have been growing, especially in neighbouring countries hosting refugees and in the West (the Netherlands, Germany, the United Kingdom, the United States and, more recently, Canada and Australia).

The previous decades witnessed emigration of a number of Sudanese with tertiary education. Around 2000, about 40% of Sudanese immigrants in countries of the Organisation for Economic Co-operation and Development (OECD) had been educated to tertiary level. Often they were working in occupations that required lower qualifications than they possessed. According to the United Nations Educational, Scientific and Cultural Organization (UNESCO), approximately 2900 Sudanese go abroad for tertiary education each year, to the West as well as to other countries such as Egypt, Kenya, India, Malaysia, Pakistan and Uganda.

2.4. Human resources for health

In Sudan, as in many other developing countries, the information system is still weak and needs a lot of investment. This is also the case in the health system; a strong, reliable health information system would help make better use of available resources, including HRH.

The establishment of the National HRH Observatory (NHRHO) in 2006 paved the way for the establishment of a strong human resources (HR) information system. The system was based on an HRH survey in 2006, which was conducted in collaboration with WHO and provided an incomplete, but nevertheless useful, picture of the health workforce in the country. At the end of 2010, a plan was developed to update the 2006 data, by conducting a nationwide HRH survey. The survey was conducted by the NHRHO in collaboration with the General Planning Directorate at the Federal Ministry of Health.

According to the Labour Force Survey of 2011, the health and social sector provides employment for 1.8% of the total population (1.2% of men and 3.5% of women) (Ministry of Human Resource Development and Labour, 2013).
3. **Health labour market framework**

This section summarizes the dynamics of the health labour market, as put forward by Scheffler et al. (2012).

An assessment of the health labour market needs to study both the demand and the supply sides, in order to determine shortages (or surpluses) of health workers.

The supply of health workers is determined by the number of qualified health workers (doctors, nurses and other care providers) willing to work for a given wage rate in the health care sector. Thus, training is a key determinant of this aspect of the labour market. The number of trained health workers depends on many factors, including the number of training institutions, the length of the training, the education level, the cost of training, the individual interest in working in the area and the expected probability of getting a job after training.

The demand for health workers, which is linked to the demand for health care, is measured in terms of the hiring of health workers by public and private institutions. Each of these institutions competes with different wage rates, budgets, provider payment practices, labour regulations and rules that determine hiring and wage decisions.

In general, the higher the wage, the larger the number of available health workers willing to work for the health sector. But additional considerations, including working conditions, safety and career opportunities, will also influence the decision to work in the health sector or in another sector or even another country.

The interaction between the supply and demand for health workers determines the wages and other compensation, the number of health workers employed, the number of hours they work, their geographical distribution and their employment settings.

4. **Data**

This report is based on an extensive desk review, incorporating a systematic search for relevant, available on-line literature. Several key documents, papers and reports were selected to obtain a picture of supply and demand in the health labour market in Sudan (Federal Ministry of Health, 2011d; Federal Ministry of Health, 2011e; Ministry of Human Resource Development and Labour, 2013). Unpublished relevant documents were also sought.

Key-informant interviews were conducted with experts in the field through purposive sampling. The key informants were selected according to their position, the body they represented and their expertise in the field. They included staff of the Directorate General of Primary Health Care at the Federal and Khartoum Ministry of State and labour market experts from the Chamber of Civil Services.
5. Health labour market analysis

5.1 Production

In the Sudanese culture, there is pride in having a doctor in the family. Students are therefore keen to pursue an education in the health care field. According to the Ministry of Higher Education, 42,756 students took science and sat for the Sudan Secondary School Certificate in 2011; of these, 22,013 chose to go on to a medical or health institute.

According to the mapping of health professional education in Sudan in 2011 (Federal Ministry of Health, 2011d), there were more graduates from medical schools than from nursing schools, which has an impact on the skill mix of the health workforce. The NHRHO conducted this survey in order to identify the production rate in the educational pipeline. The study also found a majority of women in the upcoming health workforce: 67% of the students were female.

To overcome the low production of health professionals and improve the skill mix balance, the Government in 1990 introduced a “Revolution of Higher Education”. Ten new universities were opened and intake was greatly expanded. Over the next few years, the number of medical schools rose from 4 to reach 28 in 2006, including five private schools; since 2012, Sudan has 34 medical schools. By 2000, the number of doctors graduating each year had jumped from 400 to 1400; later, this number increased to over 3000. The same trend can be seen in the numbers of health employees in the public sector (Federal Ministry of Health, 2011b). However, the increase in production outstripped the ability of the main employers (the Federal Ministry of Health and the states) to recruit, which has resulted in increasing rates of unemployment among recent graduates (e.g. junior doctors) (Federal Ministry of Health, 2011b).

The Sudan Declaration for Allied Health Professionals was approved by the Federal Ministry of Health, Ministry of Higher Education and the WHO in 2001. This called for scaling-up of the education of nurses, midwives and allied health professions. Subsequently, intake in the different universities increased and a bridging programme was adopted to raise the educational level of vocationally trained cadres. However, the universities alone could not expand the intake of nurses, midwives and allied health professions sufficiently to meet the needs, and the Academy of Health Sciences (AHS) was established.

The shortage and skill mix imbalance in the allied health professions was tackled through decentralized health professional education, organized through the AHS. The Human Resources Directorate of the Federal Ministry of Health set up the AHS in 2005. All the training schools and institutes that were previously affiliated to the Federal Ministry are now under the umbrella of the AHS, including all nursing schools, midwifery schools and paramedical training institutes. The AHS has a branch in almost every state, and the educational programmes are established according to the needs of the state. Scaling up the production addressed the critical shortage of nurses, midwives and allied health profession. In 2006, there were 5 doctors for every nurse; in 2011, this ratio had changed to 0.61 doctors per nurse. Local students from the states are recruited to increase the probability that they will stay in the state after graduation.
5.2 Number of health workers

In Sudan the demand for HRH is determined by the health care needs of the country, addressing mainly endemic diseases. According to the annual statistical report (Federal Ministry of Health, 2011c), there are 77,280 health workers in Sudan, or 2.36 per 1000 population.

5.3 Health workforce by category

Nurses and midwives constitute the largest group of health workers in Sudan (42.95%) (Table 2). Doctors (generalists and specialists) account for 15.19%; together with medical assistants, they total 25.6%. Table 2 shows the densities of the different categories of health workers: there are 0.6 doctors and medical assistants and 1.01 nurses and midwives per 1000 population.

Table 2. Skill mix of the health workforce

<table>
<thead>
<tr>
<th>Category</th>
<th>No.</th>
<th>% of health workforce</th>
<th>Density per 1000 population</th>
</tr>
</thead>
<tbody>
<tr>
<td>Doctors</td>
<td>11,735</td>
<td>15.19</td>
<td>0.36</td>
</tr>
<tr>
<td>Dentists</td>
<td>718</td>
<td>0.93</td>
<td>0.022</td>
</tr>
<tr>
<td>Pharmacists</td>
<td>1,108</td>
<td>1.43</td>
<td>0.034</td>
</tr>
<tr>
<td>Medical assistants</td>
<td>8,043</td>
<td>10.41</td>
<td>0.25</td>
</tr>
<tr>
<td>Midwives</td>
<td>13,885</td>
<td>17.97</td>
<td>0.42</td>
</tr>
<tr>
<td>Nurses</td>
<td>19,308</td>
<td>24.98</td>
<td>0.59</td>
</tr>
<tr>
<td>Health visitors</td>
<td>1,190</td>
<td>1.54</td>
<td>0.036</td>
</tr>
<tr>
<td>Nutritionists</td>
<td>1,917</td>
<td>2.48</td>
<td>0.059</td>
</tr>
<tr>
<td>Technicians</td>
<td>12,245</td>
<td>15.84</td>
<td>0.37</td>
</tr>
<tr>
<td>Environmental health workers</td>
<td>7,131</td>
<td>9.23</td>
<td>0.22</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>77,280</strong></td>
<td><strong>100.00</strong></td>
<td><strong>2.36</strong></td>
</tr>
</tbody>
</table>


The health workers who commonly form part of the informal economy are community health workers and village midwives. However, no further data are available on these groups.
5.4 Health workforce by age

The HRH survey in 2011 found that the health workforce was relatively young, with 76% of workers under 50 years of age, and 20% aged 50 – 60 years (Figure 1). The percentage of health workers aged between 20 and 30 years is low compared with the other age groups, which might imply that there is insufficient absorption of newly graduated health workers in the national health labour market.

Figure 1. Age distribution of the health workforce

5.5 Health workforce by sex

Some 52% of health workers are female. This dominance is striking in comparison with the overall participation of women in the workforce of 25.5% (Minister of Human Resource Development and Labour, 2013).

Figure 2. Sex distribution of the health workforce
5.6 Geographical distribution of health workers

There is a geographical maldistribution of health workers (Table 3); for example, South Darfur has only 4.61% of health workers but 13.25% of the population. Rural and poor areas – particularly in southern Sudan, which is affected by conflict, drought and famine – are more likely to have inadequate numbers of health workers than better-off areas. Northern state has 4.8 times more health workers per 1000 population than South Darfur. Northern state, River Nile and Khartoum State attract the majority of doctors, dentists and specialists, while South Darfur has the lowest density of all categories of health workers.

Health workers prefer to work in the cities, where health services are well established. The level of satisfaction of health workers regarding their job and workplace in all states, ranging from 30% to 60%.

Table 3. Densities of health workers per state

<table>
<thead>
<tr>
<th>State</th>
<th>No. of health workers</th>
<th>Population</th>
<th>Health workers per 1000 population</th>
</tr>
</thead>
<tbody>
<tr>
<td>FMoH</td>
<td>16 155</td>
<td>32 725 742</td>
<td>0.4936</td>
</tr>
<tr>
<td>Northern</td>
<td>2345</td>
<td>740 513</td>
<td>3.1667</td>
</tr>
<tr>
<td>River Nile</td>
<td>3062</td>
<td>1 186 873</td>
<td>2.5799</td>
</tr>
<tr>
<td>Red Sea</td>
<td>2212</td>
<td>1 478 887</td>
<td>1.4957</td>
</tr>
<tr>
<td>Gadarief</td>
<td>3933</td>
<td>1 428 325</td>
<td>2.7536</td>
</tr>
<tr>
<td>Kassala</td>
<td>3159</td>
<td>1 895 926</td>
<td>1.6662</td>
</tr>
<tr>
<td>Khartoum</td>
<td>13 589</td>
<td>5 587 042</td>
<td>2.4322</td>
</tr>
<tr>
<td>Gazeria</td>
<td>7884</td>
<td>3 787 263</td>
<td>2.0817</td>
</tr>
<tr>
<td>Sinnar</td>
<td>3001</td>
<td>1 361 251</td>
<td>2.2046</td>
</tr>
<tr>
<td>White Nile</td>
<td>4292</td>
<td>1 833 197</td>
<td>2.3413</td>
</tr>
<tr>
<td>Blue Nile</td>
<td>1993</td>
<td>881 449</td>
<td>2.2610</td>
</tr>
<tr>
<td>North Kordofan</td>
<td>4993</td>
<td>3 094 181</td>
<td>1.6137</td>
</tr>
<tr>
<td>South Kordofan</td>
<td>2771</td>
<td>1 489 791</td>
<td>1.8600</td>
</tr>
<tr>
<td>North Darfur</td>
<td>2903</td>
<td>2 238 945</td>
<td>1.2966</td>
</tr>
<tr>
<td>West Darfur</td>
<td>2172</td>
<td>1 385 791</td>
<td>1.5673</td>
</tr>
<tr>
<td>South Darfur</td>
<td>2816</td>
<td>4 336 308</td>
<td>0.6494</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>77 280</strong></td>
<td><strong>32 725 742</strong></td>
<td><strong>2.3614</strong></td>
</tr>
</tbody>
</table>

*Health workers who are employed by the Federal Ministry of Health and not attributed to a specific state.

Source: FMoH (2011c).

Sudan has no overarching policy regarding retention of health workers. However, there have been some limited nationwide efforts, such as the policy on deployment of medical specialists, adopted in 2002. Under this policy, doctors were contracted to work in underserved areas with specific conditions:
Doctors signed a contract with the Federal Ministry of Health, which provided specialist training in exchange for doctors agreeing to be assigned according to the health needs of the states. However, some doctors did not respect the contract, and some recipient states were unable to provide competent training services.

Every medical or health graduate is obliged to work for one year as national service. This is handled by the Ministry of Defence, which distributes the graduates throughout the country, addressing the geographical maldistribution. However, the graduates are young and inexperienced.

States have made sporadic efforts to retain doctors by:

- granting scholarships for specialist training to doctors who practise in hardship areas for 3–5 years;
- providing incentive packages to doctors, e.g. offering 3–5 times the basic salary, and/or a car and accommodation.
Table 4. Geographical distribution of the health workforce, by category

<table>
<thead>
<tr>
<th>State</th>
<th>Doctors</th>
<th>Dentists</th>
<th>Pharmacists</th>
<th>Medical assistants</th>
<th>Midwives</th>
<th>Nurses</th>
<th>Health visitors</th>
<th>Nutritionists</th>
<th>Technicians</th>
<th>Environmental health workers</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>FMoH</td>
<td>7181</td>
<td>443</td>
<td>0.01</td>
<td>656</td>
<td>0.02</td>
<td>1128</td>
<td>0.03</td>
<td>3793</td>
<td>0.12</td>
<td>34</td>
<td>0</td>
</tr>
<tr>
<td>Northern</td>
<td>194</td>
<td>8</td>
<td>0.01</td>
<td>24</td>
<td>0.03</td>
<td>329</td>
<td>0.44</td>
<td>354</td>
<td>0.48</td>
<td>804</td>
<td>1.09</td>
</tr>
<tr>
<td>River Nile</td>
<td>246</td>
<td>18</td>
<td>0.02</td>
<td>41</td>
<td>0.03</td>
<td>419</td>
<td>0.35</td>
<td>574</td>
<td>0.48</td>
<td>906</td>
<td>0.76</td>
</tr>
<tr>
<td>Red Sea</td>
<td>130</td>
<td>1</td>
<td>0</td>
<td>20</td>
<td>0.01</td>
<td>230</td>
<td>0.16</td>
<td>516</td>
<td>0.35</td>
<td>424</td>
<td>0.29</td>
</tr>
<tr>
<td>Gadaref</td>
<td>262</td>
<td>0</td>
<td>0</td>
<td>2</td>
<td>0</td>
<td>308</td>
<td>0.22</td>
<td>792</td>
<td>0.55</td>
<td>1537</td>
<td>1.08</td>
</tr>
<tr>
<td>Kassala</td>
<td>187</td>
<td>5</td>
<td>0</td>
<td>19</td>
<td>0.01</td>
<td>477</td>
<td>0.25</td>
<td>542</td>
<td>0.29</td>
<td>749</td>
<td>0.4</td>
</tr>
<tr>
<td>Khartoum</td>
<td>1423</td>
<td>162</td>
<td>0.03</td>
<td>156</td>
<td>0.03</td>
<td>1277</td>
<td>0.23</td>
<td>1903</td>
<td>0.34</td>
<td>2739</td>
<td>0.49</td>
</tr>
<tr>
<td>Gezaria</td>
<td>882</td>
<td>37</td>
<td>0.01</td>
<td>0</td>
<td>0</td>
<td>971</td>
<td>0.26</td>
<td>1695</td>
<td>0.45</td>
<td>2011</td>
<td>0.53</td>
</tr>
<tr>
<td>Sinnar</td>
<td>217</td>
<td>4</td>
<td>0</td>
<td>20</td>
<td>0.01</td>
<td>369</td>
<td>0.27</td>
<td>640</td>
<td>0.47</td>
<td>957</td>
<td>0.7</td>
</tr>
<tr>
<td>White Nile</td>
<td>209</td>
<td>8</td>
<td>0</td>
<td>43</td>
<td>0.02</td>
<td>747</td>
<td>0.41</td>
<td>1145</td>
<td>0.62</td>
<td>722</td>
<td>0.39</td>
</tr>
<tr>
<td>Blue Nile</td>
<td>102</td>
<td>4</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>204</td>
<td>0.23</td>
<td>724</td>
<td>0.82</td>
<td>407</td>
<td>0.46</td>
</tr>
<tr>
<td>N. Kordofan</td>
<td>261</td>
<td>9</td>
<td>0</td>
<td>40</td>
<td>0.01</td>
<td>370</td>
<td>0.12</td>
<td>1505</td>
<td>0.49</td>
<td>1784</td>
<td>0.58</td>
</tr>
<tr>
<td>S. Kordofan</td>
<td>97</td>
<td>7</td>
<td>0.01</td>
<td>12</td>
<td>0.01</td>
<td>294</td>
<td>0.2</td>
<td>787</td>
<td>0.53</td>
<td>922</td>
<td>0.62</td>
</tr>
<tr>
<td>North Darfur</td>
<td>164</td>
<td>6</td>
<td>0</td>
<td>13</td>
<td>0.01</td>
<td>462</td>
<td>0.21</td>
<td>892</td>
<td>0.4</td>
<td>589</td>
<td>0.26</td>
</tr>
<tr>
<td>West Darfur</td>
<td>45</td>
<td>3</td>
<td>0</td>
<td>1</td>
<td>0</td>
<td>137</td>
<td>0.1</td>
<td>913</td>
<td>0.66</td>
<td>505</td>
<td>0.36</td>
</tr>
<tr>
<td>South Darfur</td>
<td>135</td>
<td>11</td>
<td>0.01</td>
<td>62</td>
<td>0.01</td>
<td>321</td>
<td>0.07</td>
<td>793</td>
<td>0.18</td>
<td>459</td>
<td>0.11</td>
</tr>
<tr>
<td>Total</td>
<td>11 735</td>
<td>718</td>
<td>0.02</td>
<td>1108</td>
<td>0.03</td>
<td>8043</td>
<td>0.25</td>
<td>13 885</td>
<td>0.42</td>
<td>19 308</td>
<td>0.59</td>
</tr>
</tbody>
</table>

* Health categories include the following subcategories: doctors: housemen, generalists, registrars, specialists; medical assistants: general, eye, dental, psychiatry, surgery, laboratory, physiotherapy, pharmacy, nursing instructor; midwives: certified, trained, nurse-midwife; nurses: sister, ophthalmic technician, supervisory nurse, assistant supervisory nurse, head nurse, assistant head nurse, certified nurse, nursing trainee; health visitor: assistant, senior; nutritionist: instructor, officer; technicians: psychiatry, laboratory, X-ray, computer, dental; environmental health workers: central, suboficer.

b Per 1000 population.
5.7  Health workforce by sector

The public sector is the main employer of HRH, accounting for 62% of all health workers; the private sector employs 34%, and has been growing since the 2006 HRH survey (Federal Ministry of Health, 2006) (see Figure 3). The military, university and police corps and the voluntary sector account for 1% each. Although 90% of health workers have a dual practice (Federal Ministry of Health, 2010b), there are no policies to regulate it.

Figure 3. Distribution of the health workforce by sector

Source: Federal Ministry of Health, 2011d.

5.8  Migration

Sudan is currently witnessing a huge wave of emigration of health workers, which poses a substantial threat to the health system. In the past, migration of health cadres was mainly confined to doctors and nurses, but now many health cadres migrate (Abuagla, 2013).

In general, the emigration of health professionals has tremendous implications for the health system. Obviously, the provision of health services is affected because the number of health care workers is reduced. In Sudan, it is not only the new graduates who are leaving to seek better training opportunities and living conditions; unfortunately, even the best qualified and most experienced workers are leaving, which affects not only health service provision but also the quality of training for medical students (Abuagla, 2013).

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1 See the Annex for more information on migration.
According to Bader (2005), about 60% of Sudanese doctors have emigrated. Migration among other categories of health worker tends to be less, but is likely to increase when the training of nurses and paramedical personnel is upgraded to university level. Sudanese health professionals are mainly attracted to Gulf countries, in particular Saudi Arabia, where there are estimated to be over 8000 Sudanese physicians (Bader, 2005). The United Kingdom has traditionally been a popular destination for Sudanese health workers, but has recently adopted some restrictions; Ireland is becoming increasingly popular. The recent advent of recruitment agencies has accelerated the rate of migration among Sudanese doctors, especially to Saudi Arabia. The Ministry of Health estimates that over 3500 medical doctors migrated to Saudi Arabia in 2011. The Libyan Arab Jamahiriya, a new destination, has recently contracted over 600 Sudanese health professionals and the number is likely to increase given the acute needs in that country (Federal Ministry of Health, 2011e).

According to projects undertaken in the framework of the World Bank International Migration and Development Program, in the past two decades Sudan experienced a remarkable increase in brain drain (IOM, 2011). It is estimated that as many as 13% of physicians emigrated, with an average of around 9% over the period 1991 to 2004; there are high concentrations of Sudanese physicians in Ireland, the United Kingdom and the United States of America (IOM, 2011).

Sudan still does not have a migration policy, even though migration is a major problem and challenge. Traditional push and pull factors are contributing to this brain drain, with financial and educational factors ranking high among the reasons for migration. With the advent of peace, there were some expectations that migration might start to decrease; however, proxy indicators, such as the number of health workers requesting work references, show that emigration is still considerable (Federal Ministry of Health, 2012c).

### 5.9 Wages

According to the 2010-2011 national HRH survey (Federal Ministry of Health, 2011d), the majority of health staff received around 500 Sudanese pounds as monthly income throughout the country, except Khartoum state.

As shown in Table 5, the minimum salaries of the different categories of health worker are very similar. Medical doctors have the highest maximum salaries, followed by nurses and technicians. The lowest ceilings are reported for medical assistants, midwives, community health workers and staff of the Expanded Programme of Immunization (EPI). Health workers in the public sector earn less than those in the private and other health sectors. The private sector employs health workers on contract, with the wage depending on qualifications and working hours. Most of the health workers in the public sector do not depend on their basic salary, since they have some level of dual practice. The private sector attracts most health workers, especially in big cities, because of the higher wages and the availability of modern technology.
Table 5. Salary structure of the health workforce in Sudan

<table>
<thead>
<tr>
<th>Category</th>
<th>Starting grade</th>
<th>Maximum grade</th>
<th>Monthly wage range</th>
<th>Sudanese pounds</th>
<th>US$</th>
</tr>
</thead>
<tbody>
<tr>
<td>Doctor</td>
<td>9</td>
<td>1</td>
<td>384.8–1024.04</td>
<td>77.4–206</td>
<td></td>
</tr>
<tr>
<td>Dentist</td>
<td>9</td>
<td>1</td>
<td>384.8–1024.04</td>
<td>77.4–206</td>
<td></td>
</tr>
<tr>
<td>Pharmacist</td>
<td>9</td>
<td>1</td>
<td>384.8–1024.04</td>
<td>77.4–206</td>
<td></td>
</tr>
<tr>
<td>BSc Nurse sister</td>
<td>9</td>
<td>4</td>
<td>384.8–723.1</td>
<td>77.4–154.5</td>
<td></td>
</tr>
<tr>
<td>BSc Public health officer</td>
<td>9</td>
<td>4</td>
<td>384.8–723.1</td>
<td>77.4–154.5</td>
<td></td>
</tr>
<tr>
<td>BSc Nutrition staff</td>
<td>9</td>
<td>4</td>
<td>384.8–723.1</td>
<td>77.4–154.5</td>
<td></td>
</tr>
<tr>
<td>BSc Laboratory technician</td>
<td>9</td>
<td>4</td>
<td>384.8–723.1</td>
<td>77.4–154.5</td>
<td></td>
</tr>
<tr>
<td>BSc X-ray technician</td>
<td>9</td>
<td>4</td>
<td>384.8–723.1</td>
<td>77.4–154.5</td>
<td></td>
</tr>
<tr>
<td>Medical assistant</td>
<td>10</td>
<td>5</td>
<td>372.3–634.1</td>
<td>74.8–127.5</td>
<td></td>
</tr>
<tr>
<td>High diploma in nursing</td>
<td>14</td>
<td>5</td>
<td>288–634.1</td>
<td>58–74.8</td>
<td></td>
</tr>
<tr>
<td>Midwife</td>
<td>15</td>
<td>5</td>
<td>372.3–634.1</td>
<td>74.8–127.5</td>
<td></td>
</tr>
<tr>
<td>Community health worker</td>
<td>15</td>
<td>5</td>
<td>372.3–634.1</td>
<td>74.8–127.5</td>
<td></td>
</tr>
<tr>
<td>EPI staff</td>
<td>15</td>
<td>5</td>
<td>372.3–634.1</td>
<td>74.8–127.5</td>
<td></td>
</tr>
</tbody>
</table>

Sources: National Salary Structure For 2004; Medical and health workforce civil services.

6. Conclusions

Policies are needed to address the health labour market in Sudan, in particular to ensure that production of health workers meets the needs and that graduates can be absorbed into the labour market.

Sudan is currently facing a shortage and maldistribution of health workers, and a skill mix imbalance. The HRH survey of 2006 showed a doctor to nurse ratio of 5:1, as a result of which the Academy of Health Sciences was established to train allied health professions. Nowadays, the ratio is 0.61 doctors per nurse (Federal Ministry of Health, 2011e). Nevertheless, some issues persist. The health labour market is not absorbing the required number of health workers, because of factors on both the supply and demand side. The shortage of health staff is aggravated by low production, migration and brain drain, which have a negative effect on the quality of service provided.

The lack of jobs in both the public and private sector, together with the difficulty of retaining health workers in the country, and particularly in certain states and rural areas, means that many facilities function with a deficient and unbalanced health team. Low salaries and unfavourable working conditions also play a role. Patients tend to go to the facilities that have a fairly well balanced health staff, that have enough staff to open throughout the day and that offer free drugs.
A multidimensional approach is needed to address these problems. Retention, migration and geographical imbalance could be addressed by providing financial and non-financial incentive packages for health workers, and by improving training opportunities and bonding (providing training in exchange for agreement to serve in underserved areas). Migration management strategies should cover both bilateral agreements with recipient countries, and management, regulation and governance of the emigration process. If remuneration packages are not improved, there is likely to be a catastrophic migration of health workers, given the fact that in 2011 the highest possible salary for a health worker is around US$ 300 per month. It will also be important to fill the available vacancies, especially in states, through incentives and promotion policies and to increase the number of jobs, especially for nurses and allied health professions. Workers from the informal sector, such as midwives and community health workers, should be integrated into the system through the creation of jobs.

The coordination between the ministries of health, higher education, labour and finance should be strengthened, so that health workforce production can be matched to the country’s needs and graduates can be absorbed into the labour market. Regulation of the private sector should be improved, to manage dual practice, improve quality of training and enhance service delivery. These policies are crucial to ensure equitable access to quality health services for the entire population. The Government also plans to grant incentives to the private educational health sector, to encourage investment in education of nurses, midwives and allied health professions.
References


23. 


Annex

Supplementary information on migration

Migration flows greatly affect the number of qualified health care professionals in a country. Trading and pilgrimage routes made Sudan a destination country for people from neighbouring countries and from West Africa. Egyptians and Indians arrived under the British administration in the first half of the twentieth century. After independence in 1956, asylum-seekers started to arrive in Sudan. In 1965, the first official refugees arrived from Zaire (the current Democratic Republic of Congo), to be followed by refugees from Uganda, Chad, Ethiopia and Eritrea in the 1980s and 1990s.

In compliance with the principles of international law, the National Law on Asylum was introduced in 1974. It encourages voluntary repatriations of refugees in Sudan if conditions in their country of origin do not allow them to return. As a result, the number of refugees decreased by half in the past 20 years to around 685 000. In 2010, it was estimated that 750 000 inhabitants in Sudan were foreign-born. The immigrant population comprises mainly men, although women and children are also present, especially among the refugees. They tend to be concentrated in Eastern Sudan, Darfur and Khartoum State.

An informal labour market has developed among the refugees and irregular migrants. Most irregular immigrants are living in the main cities and are often looking for a way to leave for other countries. They enter the labour market as low-skilled labourers, waitresses and cleaners.

The labour market in Sudan is in need of qualified personnel from abroad. Therefore, a number of economic migrants currently work in national and international positions; they come mainly from neighbouring countries as well as from countries such as China, India, the Philippines and Turkey (IOM, 2011).