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# Sudan's Health Workforce Matters

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HNP



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## ACRONYMS

AHS	Academy of Health Sciences
CBS	Central Bureau of Statistics
CMW	Community Midwife
COVID-19	Coronavirus Disease 2019
CPD	Continuous Professional Development
FMOH	Federal Ministry of Health
GDP	Gross Domestic Product
GHE	Government Health Expenditures
HIKS	Health Insurance Corporation of Khartoum State
HIV/AIDS	Human Immunodeficiency Virus/Acquired Immunodeficiency Syndrome
HR	Human Resource
HRH	Human Resources for Health
HRHIS	Human Resources for Health Information System
ICL	Income Contingent (Student) Loan
ICT	Information and Communications Technology
LMIC	Lower-Middle-Income Countries
MoH	Ministry of Health
NCD	Non-Communicable Disease
NHIF	National Health Insurance Fund
NHRHO	National HRH Observatory
NHWA	National Health Workforce Accounts
PEFA	Public Expenditure and Financial Accountability
PER	Public Expenditure Review
PHC	Primary Health Care
SSWA	Secretariat of Sudanese Working Abroad
TOFEN	Transfer of Knowledge through Expatriate Nationals
US\$	United States Dollars
WHO	World Health Organization

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## EXECUTIVE SUMMARY

Sudan's political and economic fragility and the impact of its long-running conflict on society have had a profoundly negative effect on the health workforce and the delivery of essential healthcare. Health workforce policy faces daunting challenges within a rapidly changing socioeconomic, demographic, and health context and a fragile political environment. This review of the literature has found that Sudan's human resources for health are inadequate, poorly distributed, underfunded, and weakly managed, all of which are serious concerns in a context of rapid population growth, urbanization, increasing poverty, high unemployment, a changing burden of disease, and humanitarian crisis. The analysis identifies key gaps in data and analysis that will need to be filled in the future when Sudan emerges from its ongoing crisis.

As opportunities arise to strengthen its inadequate human resources for health, Sudan will need to pay attention to eight key issues: (i) general education does not adequately prepare students for health studies; (ii) there is a mismatch between the skills taught and skills need in the health workforce; (iii) government spending on medical education is low; (iv) high vacancy rates coexist with unemployment, inefficient recruitment, and high emigration; (v) low levels of government health spending restricts the size of the health workforce; (vi) management, policymaking, and planning for health staffing is inadequate, and there are concerns about health workers' safety; (vii) more data and analysis are needed to inform policy and planning; and (viii) the country needs to seize the opportunity to work with the private sector and recruit international staff. These findings come from reviewing the literature.

Based on these findings, we make several policy recommendations. Rebuilding the health care system will be a top priority for the new government that should already start during the peace process. This includes the following priority recommendations:

- (i) **an assessment** of the damage and needs in health facilities, and a census of all health workers in Sudan (professionally active and inactive) to identify and make use of the existing human resource capacity working in public or private sector, NGOs and capacity that is currently unutilized (i.e., the graduates who are looking for work, and currently unemployed health workers);
- (ii) **reconstruction** of health infrastructure, emergency communication and transport, medical equipment, housing for health workers, and workplace safety for health workers;
- (iii) **emergency procurement** of medical supplies and medicines;
- (iv) **Sudan's medical and health students** could be offered to attend medical and health schools in neighboring countries during the conflict, and then return to work in Sudan once it is safe;
- (v) **efficient recruitment** of health professionals and salary payments which will require the collaboration of international partners including to provide training on the job in emergency medicine and disaster care;
- (vi) **reconstruction** and equipment of medical facilities, nursing schools and health science schools and ramp up the education of health professionals and community health workers;
- (vii) **data** collection, monitoring, analysis, and health policy with a priority on public health disease control, reproductive health care, and malnutrition.

Most of these activities will have to take place in parallel and over several years to rebuild Sudan's health system.

When the peace process resumes, Sudan will need to revisit its strategic planning in the health sector to focus on immediate humanitarian priorities, but gradually emerge from its humanitarian crisis to build a stronger health workforce and a more effective health system that serves the whole country.

Medium term priorities are: (i) investing in high-quality general and health education and medical research; (ii) reforming tertiary education financing to train more medical and health students; (iii) increasing government health financing to expand the health workforce while also reviewing their remuneration structure, pay scales, and performance; (iv) investing in health workforce management, particularly in facilities in under-served areas; (v) collecting data and conducting analysis to plan the health workforce based on future trends; and (vi) collaborating with the private sector and developing policies to manage international mobility. These recommendations are aligned with Sudan's National Health Sector Recovery and Reform Strategic Plan 2022-2024, which emphasizes improving the equitable distribution and increasing the retention of the health workforce while ensuring that they have an appropriate mix of skills and enjoy better working conditions.

As it was not possible to conduct interviews with key informants and government representatives in Sudan, this study has conducted a desk-based, systematic review of the literature on Sudan's health workforce. The humanitarian crisis has likely amplified the problems identified in this study, the extent of which cannot be assessed under the current circumstances; hence, some recommendations may require additional support to be implementable in a post-conflict and humanitarian setting.

Future World Bank engagement in Sudan's health sector will be determined as circumstances evolve. This note was prepared during a period of paused disbursement and preparation of new World Bank operations, which will persist as long as World Bank Operational Policy (OP) 7.30, Dealing with De Facto Governments, remains in effect. OP 7.30 was adopted on October 25, 2021, following the military takeover in Sudan, dissolution of key government structures, and suspension of the terms of the 2019 constitutional charter.

**Keywords:** Health workforce, human resources for health, Sudan, Sub-Saharan Africa

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## 1. Introduction

**Sudan's health sector is characterized by a shortage and substantial imbalance of health professionals across rural and urban areas.** In 2019, Sudan's health sector had only one skilled health worker per 1,000 population, including 0.2 physicians per 1,000 and 0.3 nurses per 1,000 population. This is far below the 4.5 health workers per 1,000 population as recommended by the World Health Organization (WHO). Most staff work in urban areas, which has resulted in a higher staff to population density in cities than in rural areas, thus negatively affecting service delivery in rural areas. To close this gap, more health professionals have been trained over the past years, but they have left the country in large numbers because of a lack of open positions and poor working and living conditions at home.

**Sudan does not reap adequate benefits from health professionals who have been educated at significant public expense.** This is problematic not only because it leads to inadequate provision of health services today but also because population growth, urbanization, and a changing disease burden all create a need for more health professionals with diverse skills. Unless the country's investments in health education are complemented by the creation of more and better job opportunities for health professionals, the lack of sufficient health workers will become an even greater problem in the country.

**Economic crises and government failure deepen the challenges that beset the health workforce.** Sudan's economy has contracted significantly over the past decade. After its separation from South Sudan in 2011 and the associated loss of about 80 percent of oil resources to the South, Sudan's per capita GDP in current prices fell from US\$1,680 in 2015 to US\$916 in 2022. Annual GDP growth was -0.3 percent in 2022.<sup>1</sup> Sudan is now a heavily indebted poor country with an estimated public debt amounting to 163 percent of GDP as of the end of 2020.<sup>2</sup> High annual inflation rates of 77 percent in 2022 have reduced the purchasing power of the population and contributed to an increase in poverty.

**Sudan has faced substantial internal conflicts, which continue as of May 2023 and led to a humanitarian crisis.** Long-lasting civil wars, conflicts in Darfur, South Kordofan, and Blue Nile, and mass demonstrations in 2018 led to the removal of then-President Omar al-Bashir in 2019. A transitional government was in place for two years, after which there was a military coup in 2021. Since the coup, Sudan's economy has tanked, prices have soared, the government has lost billions of dollars in foreign aid and debt forgiveness, and massive protests have erupted. In December 2022, a Political Framework Agreement was signed between the military and several political parties, in an attempt to resume the country's transition to civilian government. However, in mid-April 2023, fighting erupted between Sudan's rival forces, to the detriment of the peace process. By the end of May, these battles have killed hundreds and wounded thousands, displaced more than a million people, disrupted aid supplies, and sent refugees fleeing abroad, among them many health professionals.

**The political crisis, economic downturn, increased poverty, and recent fighting have been detrimental for Sudan's health sector.** In early 2023, widespread strikes were held by workers and trade unions in several sectors (health care, education, electricity, media, and the civil service) in protest against declining real wages and delays in the implementation of the promised 2022 salary increase. Recent measures to increase government revenue have not yielded enough to pay for a higher public sector wage bill, which

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<sup>1</sup> <https://www.imf.org/en/Countries/SDN>

<sup>2</sup> <https://datahelpdesk.worldbank.org/knowledgebase/articles/906519-world-bank-country-and-lending-groups>, and <https://www.imf.org/en/Countries/SDN>

has resulted in salary arrears in the public sector.<sup>3</sup> Combined with fiscal constraints, this has taken a toll on essential service provision. The recent fighting has injured hundreds of people who need medical care while hospitals run out of medical supplies and resources, including health staff who fled to safety in other countries. By the end of May, two-thirds of hospitals had closed, health infrastructure and personnel were attacked, and health facilities, pharmacies and warehouses were looted.

**Sudan's many years of crisis have increased staff attrition and outmigration.** Problems relating to adequate pay, effective distribution of the workforce, and policy and management are not exclusive to conflict settings, but the obstacles to addressing them, including a lack of fiscal space, political consensus, institutional capacity, and safety, are daunting in a fragile context.<sup>4</sup> When the peace process resumes, Sudan will gradually emerge from its humanitarian crisis to build a stronger health workforce and a more effective health system that serves the whole country. Special efforts will be needed to recruit among diaspora health workers to rebuild Sudan's health system.

**This is the first study of broad health workforce issues and their implications for Sudan.** As it was not possible to conduct interviews with key informants in Sudan, the study has conducted a desk-based, systematic review of the literature on Sudan's health workforce (Box 1). Most previous analysis of Sudan's health workforce has focused on education quality, curriculum reforms, and continuous education for health staff. This study reviews this literature and adds an analysis of issues related to entry into the health workforce, management of the workforce, and collaboration with the private sector and the international labor market. The findings of the study will help to inform the future policy dialogue and government decision-making on how to introduce effective health workforce reforms in Sudan.

#### **Box 1: Methodology**

This study is based on a review of the available literature on the health workforce in Sudan. The review has been confined to English language publications given the dearth of recent literature on this topic in Arabic and the fact that most researchers prefer to publish in English. Political and other shocks as well as a lack of resources may have affected the publication of university-published Arabic language journals. Given these constraints, the main limitations of this study are: (i) the lack of recent data on the current situation regarding human resources for health in Sudan, with even recent papers having to use data from several years ago, and (ii) a lack of access to ministry officials as a result of the pausing of World Bank disbursements and preparation of new operations in Sudan in October 2021. Therefore, the recommendations made here are subject to the caveat that some reforms may already have been implemented during the current moratorium, and may need further refining based on the current situation. At the same time, the humanitarian crisis has likely amplified the problems identified in this study, the extent of which cannot be assessed under the current circumstances; hence, some recommendations may require additional support to be implementable in a post-conflict and humanitarian setting.

**The paper is organized as follows.** Section 2 presents information on the socio-demographic and health situation in Sudan and how this affects the health workforce. Section 3 summarizes the current challenges facing Sudan's health workforce and the government's efforts to address them, and Section 4 discusses the eight key issues in the health labor market as identified in the literature review from medical education to entry into the workforce to management, financing, planning, and policymaking. Based on these findings, Section 5 presents policy recommendations to address the issues identified in the analysis.

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<sup>3</sup> World Bank (2023).

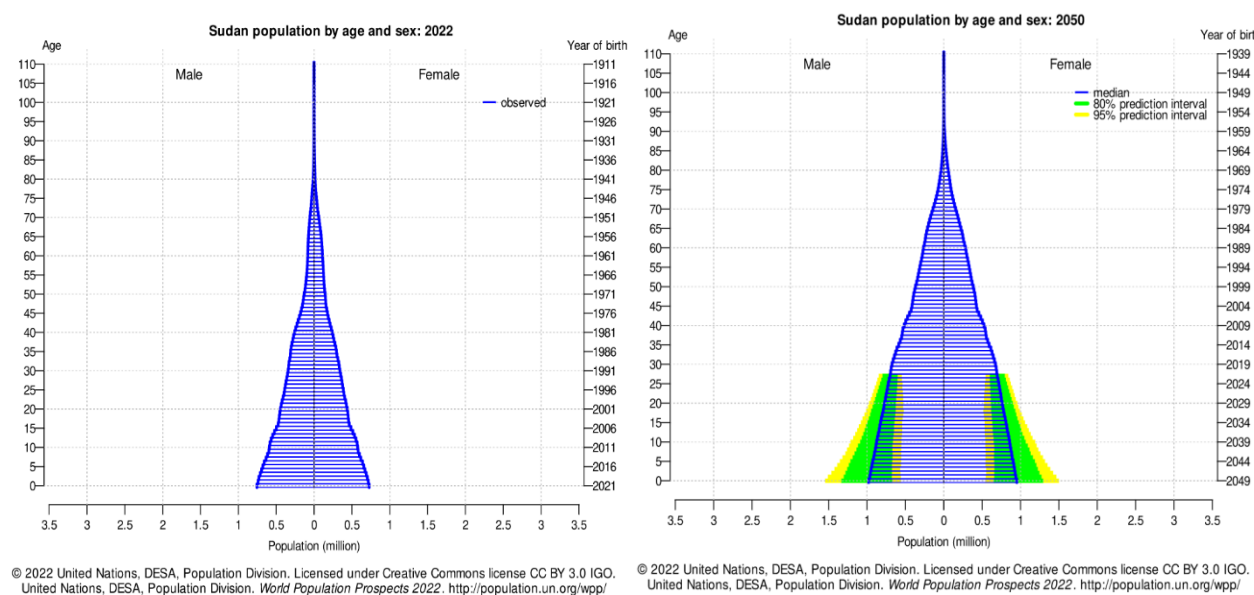
<sup>4</sup> Witter et al (2016).

## 2. A growing population with a changing disease burden will require a strong health sector.

**Due to the economic and political crisis, poverty has increased in recent years.** The share of Sudan's population living in poverty increased from 34 percent in 2009 to 38 percent in 2014<sup>5</sup> and may have reached 54 percent by 2021. The poverty rate is much higher in rural areas than in urban areas where more middle-class households live. Once the fighting ends and a peaceful government has been established, substantial inclusive growth and massive increases in the productivity of the economy will be needed to raise the incomes of all households, reduce poverty, build a middle class, and finance the provision of government services.

**Sudan's population is expected to increase by 40 million within 30 years.** Sudan's population is projected to grow from 44 million in 2020 to about 84 million in 2050. The population is young with a median age of about 18.5 years in 2022, which is expected to increase to 23.8 years by 2050. Fertility is high at 4.3 births per woman but is expected to drop to 2.9 births per woman by 2050. Life expectancy, which was 66 years in 2022, is projected to increase to 69.2 years by 2050.<sup>6</sup> As a result, the working-age population will increase (Figure 1), an age group more likely to suffer from chronic diseases. To treat a growing and aging population, Sudan will need to expand its health workforce and invest in new clinical competencies.

**Figure 1: Sudan's Population Pyramid, 2022 and 2050**



**Sudan has a low labor force participation rate but high unemployment, especially among women and youth.** In 2014, only about 53.5 percent of the working-age population were in the labor force, less than the average of 60 percent for lower-middle-income countries (LMIC). For women, the participation rate was lower at 31 percent in 2019, which is unsurprising as there are significant legal restrictions on the extent to which women can join the labor force. Despite this low participation rate, about 19 percent of the total labor force was unemployed in 2021, with the unemployment rate for women and young people

<sup>5</sup> World Bank (2019).

<sup>6</sup> UN DESA (2022).

being much higher at 32 percent and 40 percent, respectively.<sup>7</sup> Unemployment is also high among university graduates as they cannot find jobs.<sup>8</sup> Households with an unemployed head face a higher risk of poverty. Productive employment opportunities are needed for Sudan's growing population, including in the health sector, and to prevent unemployment and poverty from rising.

**Sudan's human capital index score of 38 percent is lower than the 40 percent score for Sub-Saharan Africa as a whole.** A child born in Sudan today will only be 38 percent as productive as a child who benefited from comprehensive health and education services. Sudan's weak human capital outlook is driven by low levels of learning – children go to school for over 7 years on average but receive only 4.4 learning-adjusted years of schooling – and by a 38 percent stunting rate, which puts young children at risk of lifelong physical and cognitive limitations.<sup>9</sup> Low labor force participation coupled with low human capital outcomes are undermining productivity growth in Sudan.

**Communicable diseases are still among the main causes of death in Sudan.** Diarrhea and neonatal disorders and other preventable conditions are widespread particularly in rural areas and among the poor (Figure 2) and contribute to poor child and maternal health outcomes. Sudan has high infant and child mortality rates of 41 and 58.4 per 1,000 live births as well as high maternal mortality of 295 per 100,000 live births. Infectious diseases are common and preventable. In September 2020, the Federal Ministry of Health (FMOH) reported a polio outbreak and more than 900,000 cases of malaria, and in 2023 there was an outbreak of dengue fever. Sudan has been hard hit by COVID-19 with more than 63,000 cases and an estimated 5,000 deaths as of mid-December 2022.<sup>10</sup> The number of wounded is growing because of the war; many of them need surgery and rehabilitation care to help them live their lives.

**Figure 2: Top Twenty-One Causes of Age-Standardized Deaths in 2020 and 2040**



Source: Institute of Health Metrics and Evaluation. <https://www.healthdata.org/sudan>

<sup>7</sup> World Bank (2022a).

<sup>8</sup> Republic of Sudan (2020).

<sup>9</sup> World Bank (2022b).

<sup>10</sup> WHO (2022a).

**Sudan's growing population will need more healthcare to treat age-related non-communicable diseases (NCD).** Changing demographics and a growing urban population are leading to more NCD cases, including cardiovascular diseases, cancer, and diabetes (Figure 2). Risk factors such as high rates of malnutrition, high blood pressure, and obesity and overweight (28 percent of the population<sup>11</sup>) are expected to accelerate this change in Sudan's disease burden. NCDs are increasingly affecting the poor, often due to unhealthy lifestyles and diets, including alcohol and tobacco consumption. The number of traffic accidents will increase with urban growth. Addressing these challenges will require health facilities to provide preventive, basic, and specialized care, and a skilled health workforce at all levels of care and across the entire country. To prevent deaths due to self-harm, mental health care will need to become less stigmatized and be widely available, especially to women.

**Urbanization will affect population health.** Currently, about 36 percent of the population lives in urban areas, and this share is expected to increase to over 50 percent by 2050.<sup>12</sup> It is mainly young people who move to urban areas in search of better jobs and services, and they will help to grow the urban middle class. Young urban consumers already use modern technology to stay informed about health, which is likely to raise their expectations and demand for medical care, including in the private sector. However, urbanization can also harm health, particularly for the urban poor who live in overcrowded areas characterized by environmental risks, congestion, inadequate access to clean water, housing, and food, and a higher risk of violence and traffic accidents. Health professionals need to be trained to provide care to both of these groups.

**The rural poor will continue to face similar health needs as today.** The urbanization process is likely to result in rural areas being largely inhabited by aging populations with a higher proportion of women than men, given that they have a longer life expectancy than men. However, many rural areas lack the capacity and services needed to support an aging population. In a large country like Sudan, there are limited ways for rural dwellers to travel long distances to urban areas to receive health care. Therefore, what will be needed is a strong rural health network that incorporates community care and chronic disease management. Investments aimed at improving transportation between regions will also be needed to enable rural residents to travel to urban areas to access healthcare.

**The demand for health professionals will increase with the growing population, demographic change, and a changing disease burden.** Once the peace process resumes, Sudan will have to immediately rebuild its healthcare system. A strong nationwide primary care network will be vital to help those who were wounded in the war, for reducing the high burden of communicable diseases and malnutrition, and to build up the effective provision of prevention and follow-up care for NCDs across Sudan. Complex NCD cases will require specialized care in hospitals in urban areas. The poor in rural areas will need a strong rural health network that incorporates primary and community health care and chronic disease management with a focus on female and adult healthcare. These population trends will require the government to carefully plan its investments to ensure that the country has a well-trained and motivated health workforce to meet these needs. This report aims to provide a solid basis for discussion with the government and development partners on future engagement to strengthen the health workforce.

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<sup>11</sup> WHO (2022b).

<sup>12</sup> UN DESA (2018).

### 3. Sudan is investing in the health workforce, but the challenges are daunting.

**Sudan's health sector is fragmented.** It consists of the Federal Ministry of Health (FMOH), 18 state health ministries, the National Health Insurance Fund (NHIF), the Health Insurance Corporation of Khartoum State (HIKS), and the Military Insurance Fund and Police Insurance Fund. While the military, police, and intelligence medical services operate their own facilities at both the national and sub-national levels and directly recruit staff to ensure continuity of health service provision, the NHIF and HIKS have no facilities of their own but operate through public health facilities. Vaguely defined roles and responsibilities, insufficient budget allocations, and differences in capacity have resulted in a greater concentration of lower-skilled workers in rural areas while higher-skilled cadres tend to be found in cities.<sup>13</sup>

**The decentralization of Sudan's health system has progressed slowly due to a lack of resources at lower levels.** Sudan's FMOH has oversight of the entire health sector and is in charge of health policy and planning and of the provision of financial and technical support to the states. The state health ministries oversee state-level policies and planning and the implementation of central plans, while the districts are responsible for service delivery.<sup>14</sup> However, there are inadequate policies, capacity, and financial resources within the system to manage the health workforce effectively. The decentralization of functions and responsibilities to lower levels has not been accompanied by the transfer of enough resources from the central to the local level.<sup>15</sup> As a result, human resource capacity at the local level remain weak.<sup>16</sup>

**In 2006, Sudan created the National HRH Observatory to support policymaking and planning by providing better information on the health workforce.**<sup>17</sup> It also set up a stakeholder forum on human resources for health (HRH). This platform and related HRH studies have yielded evidence of the main issues in HRH, which include staff shortages, an imbalance of expertise, the absence of any continuous professional development for health workers, geographical misallocation of staff, and the emigration of a large number of health workers.

**The government's first National Human Resources for Health Strategic Plan for 2012-2016 included five strategic objectives.** These were: (i) adequate HRH planning to support health service needs; (ii) more equitable distribution of health workers; (iii) better performance management systems; (iv) the reorientation of education to meet health service needs; and (v) strengthening of HRH functions at the decentralized level.<sup>18</sup> The latest National Health Sector Recovery and Reform Strategic Plan 2022-2024 emphasizes improving the equitable distribution and the retention of the health workforce while ensuring that they have an appropriate mix of skills and enjoy better working conditions.<sup>19</sup>

**Most recently, Sudan's FMOH with support from the WHO developed the Human Resources for Health Strategic Plan 2030.**<sup>20</sup> The plan, covering the period 2020-2030, provides an updated situation analysis and a framework for the improvement and monitoring of HRH and proposes a time-bound

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<sup>13</sup> Hassanain et al (2022)

<sup>14</sup> Ebrahim et al (2017)

<sup>15</sup> FMOH (2022b).

<sup>16</sup> Ebrahim et al (2017)

<sup>17</sup> WHO (2020a).

<sup>18</sup> FMOH (2011).

<sup>19</sup> Hassanain et al (2022).

<sup>20</sup> FMOH (2020).

implementation roadmap. It has three main pillars – HR governance, HR education and training, and HR management. The strategic objectives of this plan are to: (i) establish the governance and institutional capacity needed for effective HRH leadership and stewardship; (ii) improve production of the health workforce, ensuring their quantity and quality is aligned with the needs of the population and the health system; (iii) strengthen mechanisms for selecting, recruiting, deploying, and transferring health workers and for managing their performance; and (iv) develop institutional mechanisms and requirements to ensure the effective implementation of the HRH agenda in Sudan. The implementation of these objectives remains a daunting challenge in a time of continuing crisis in Sudan.

#### 4. Several key issues affect the health workforce.

**There are eight key issues that affect the performance of the health workforce.** These are: (i) the general education system does not adequately prepare students for medical studies; (ii) there is a mismatch between the skills taught and skills needed in the health workforce; (iii) government spending on tertiary education is low; (iv) high vacancy rates in the health sector coexist with unemployment, inefficient recruitment, and high emigration; (v) the low level of government health spending restricts the size of the workforce; (vi) there is inadequate management, policymaking, and planning of the health workforce, and there are concerns about health workers' safety; (vii) there is not enough data and analysis to inform policymaking and planning; and (viii) there is a need to take advantage of opportunities to work with the private sector and to recruit internationally. These issues are based on findings from the literature.

**These key issues will be amplified in a collapsing health sector and during a humanitarian crisis.** Since the fighting erupted in April 2023, there have been regular attacks on health infrastructure, medical equipment, and health personnel. About two-thirds of hospitals have closed as of the end of May, and health facilities, pharmacies and warehouses have been looted. The fighting has killed hundreds and wounded thousands, displaced more than a million people, and sent refugees fleeing abroad, among them many health professionals. These severe challenges have amplified the problems identified in this study, the extent of which cannot be assessed under the current circumstances.

##### *i. General education does not provide students with the skills needed for medical studies.*

**The general education system in Sudan is underfunded.** In 2021, the government spent 12.5 percent on general education, less than the Sub-Saharan average of 14.4 percent.<sup>21</sup> South Kordofan and West Kordofan states spent four to five times less on education than Blue Nile state, but their Grade 6 students achieved higher scores in reading and mathematics.<sup>22</sup> Hence, per capita public education spending correlates only weakly with average scores on the 2017 national learning assessment, and learning outcomes also depend on how funds are spent.

**Sudan's weak basic education system contributes to poor learning outcomes and limits the number of graduates who qualify to study in the healthcare fields.** In 2016, primary school enrollment rate reached 70 percent, but about 20 percent of primary students drop out. Children of educated parents are most likely to finish school. Dropout rates are higher for girls than for boys, as girls are expected to work, get married, or become responsible for childcare if a parent dies. Child marriage is common, particularly in

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<sup>21</sup> World Bank (2022c).

<sup>22</sup> World Bank (2021a).

the Red Sea States, and is another reason why girls leave school.<sup>23</sup> Only 14 percent of students graduate from secondary or post-secondary education.<sup>24</sup>

**Learning quality is also an issue.** On average, children receive only 4.4 learning-adjusted years of schooling despite attending 7.3 years of school, and about 45 percent of the population is illiterate. Although the total number of tertiary students almost doubled between 2003 and 2014 from 320,000 to 604,500, the extremely low graduation rate for secondary education is not enough to grow the number of students in health fields. Tertiary enrollment rates are slightly higher for women (16 percent of women) than for men (14.2 percent).

**The poor performance of basic education leads to unequal access to medical and healthcare studies.** For students to enter medical school in Sudan, they must either achieve high marks in the secondary school examination or be able to pay the high fees charged by private medical schools, which have no minimum criteria for acceptance. Applicants from underprivileged areas tend to have studied at lower quality secondary schools and have neither the high scores needed to study at public medical schools nor the resources to attend private medical schools.<sup>25</sup> This means that aspiring students from those communities most in need of physicians and other health workers have few opportunities to study medicine or allied disciplines. Hence, increasing equitable access to quality secondary education could have a far-reaching impact on the diversity and quality of future cohorts of medical students in Sudan.

**There is not enough ICT infrastructure to support education in Sudan.** The main constraints are the lack of a comprehensive government vision for ICT in education, a lack of infrastructure, which discourages technology-based interventions, electricity shortages, and a ratio of only one computer for every 28 students in high schools.<sup>26</sup> In 2020, only about 28 percent of the population used the internet. A survey of Sudanese public and private universities found that ICT played a significant role in producing and sharing knowledge. However, exams in schools and universities are still paper-based. Teaching staff and students all reported concern about inadequate funding for university libraries that limits access to scientific and technical information, and pay for licenses (e.g., software) or journal subscriptions.<sup>27</sup>

*ii. There is a mismatch between the skills taught in health education and the skills needed in the health workforce.*

**Medical education has expanded significantly in recent decades.** In 2001, the country had 25 medical schools.<sup>28</sup> By 2021, this number had increased to 73 health and medical schools under the health workforce transformation initiative, including 40 public and 33 private schools and 15 nursing and midwifery schools.<sup>29</sup> Half of these schools are in Khartoum State. As a result of the decentralization of medical education, there is at least one public medical school in every state, which has helped to retain health professionals in the location where they trained.<sup>30</sup> The Sudan Medical Specialization Board is

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<sup>23</sup> Fincham (2018).

<sup>24</sup> World Bank (2016).

<sup>25</sup> Ahmed (2012)

<sup>26</sup> Elamin et al (2022).

<sup>27</sup> Nour (2014).

<sup>28</sup> Abu-Agla and Badr (2023).

<sup>29</sup> Sudan Health Observatory (2021).

<sup>30</sup> AbuAgla and Badr (2023).

responsible for postgraduate studies, but, because no clinical research programs have yet been established in Sudan, many Sudanese postgraduate students choose to study abroad.<sup>31</sup>

**The Sudan Medical Council is responsible for the accreditation of schools.** The Council is the only accreditation agency in Sub-Saharan Africa that has received recognition status from the World Federation for Medical Education.<sup>32</sup> It aims to ensure that medical graduates from accredited schools are ready to begin practice or to further their training. However, the medical degrees offered by Sudanese universities are not widely recognized, which limits the professional opportunities for graduates who move to work in other countries.

**Measures have been taken to train more health professionals.** The government created an Academy of Health Sciences (AHS) under the FMOH in 2005 to train more nurses, midwives, and allied health professionals to keep pace with the rapid increase in the production of medical doctors. The goal was to bridge the gap between numbers of physicians and other health workers revealed by an HRH survey in 2005. The AHS has branches in all states. Students do not pay any tuition. It has produced about 25,000 graduates, but few have been recruited by the states. In November 2022, the Ministry of Higher Education upgraded the AHS to a University of Health Sciences. This includes a College of Nursing Sciences, a College of Medical Laboratory Sciences, a College of Midwifery, a College of Applied Sciences (including diploma programs), an Institute of Public Health, and a Center for Continuous Development. Every year about 5,000 students enroll<sup>33</sup> in medical and healthcare fields. Women constitute 72 percent of students in these healthcare disciplines.<sup>34</sup> It is not clear how many Sudanese medical students study abroad as no data have been collected. Furthermore, between 2014 and 2019, over 13,000 community midwives were trained under the Primary Health Care Expansion Project.<sup>35</sup> Despite this expansion, many skilled health workers cannot find employment in Sudan, and their skills mix does not match the health needs of Sudan's population.<sup>36</sup>

**The question arises whether the health education system in Sudan is fit for purpose and aligned with the needs of communities.**<sup>37</sup> Sudan has no national strategy for health education and no strategic approach to health workforce planning. With the proliferation of medical colleges in Sudan and the suggestion that quality may have suffered as a result, there have been calls to close or merge some of the newer institutions.<sup>38</sup> Due to a shortage of teaching staff, some medical schools employ lower-qualified teachers who are not trained in either instruction or assessment methodologies. In addition, the curriculum itself is outdated and fails to emphasize local health problems.<sup>39</sup> One study found that a lack of qualified permanent academic staff was jeopardizing the quality of medical education and that there had been some early warning signs about the poor quality of students and health professionals.<sup>40</sup> For

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<sup>31</sup> Husain et al (2022).

<sup>32</sup> World Federation for Medical Education (2023).

<sup>33</sup> Elshazali et al (2021).

<sup>34</sup> World Bank (2016).

<sup>35</sup> WHO (2020a).

<sup>36</sup> FMOH (2022b).

<sup>37</sup> Hassanain et al (2022).

<sup>38</sup> Abdalla and Taha (2020).

<sup>39</sup> Ahmed (2012).

<sup>40</sup> Bayoumi (2019).

example, a study of malaria management in hospitals in Gezira state showed that physicians had far less knowledge of the management of severe malaria than expected.<sup>41</sup>

**Education quality affects medical students' motivation and mental health.** A recent study found that students at the University of Khartoum most commonly chose to study medicine because they were interested in the topic, achieved good scores in high school, or were experiencing parental pressure, but more than half of them already regretted having chosen medicine or had lost interest in medicine as a career. The most common reasons that they cited were academic difficulties, frequent suspensions of classes, and the poor quality of education. Over the last few years, classes have been suspended for multiple reasons, including a lack of faculty and equipment. As a result, over a third of students reported symptoms of depression, which were also highly correlated with students' decision to drop out.<sup>42</sup>

*iii. Government spending on medical education is low.*

**Sudan's rapidly expanding tertiary education sector is underfunded, which affects capacity.** Inadequate funding for tertiary education constitutes a major challenge and has negatively affected infrastructure, equipment, and faculty composition.<sup>43</sup> In 2014, the government spent only 0.2 percent of GDP on higher education, as a result of which, Sudanese universities lost approximately 26 percent of their teaching staff. For example, about 40 percent of the faculty staff of the University of Khartoum, the prime higher education institution in the country, emigrated.<sup>44</sup>

**Medical education is one of the most expensive fields of study for governments to fund.** Governments in the Africa region usually fund the full cost of medical education, and students pay only a small tuition fee. Given the absence of any cost analysis, it is unknown how much it costs to train a medical doctor in Sudan, but evidence shows that training a medical doctor in South Africa costs about US\$63,600. Given Sudan's fiscal constraints and its already underfunded tertiary education system, it will be vital to find some innovative financing mechanisms to educate more medical students in Sudan. However, after conducting a cost analysis of the options available, it might be less expensive to fund students to study abroad. Furthermore, the government might consider increasing tuition fees for medical students and providing them with income contingent student loans (ICL) that do not have to be repaid until the student graduates and earns an income.

*iv. High vacancy rates coincide with unemployment, inefficient recruitment, and massive emigration of health workers.*

**Vacancy rates in health facilities have historically been high.** In 2011, health facilities in six states in Sudan (Blue Nile, Kassala, Khartoum, Northern Kordofan, Red Sea, and Southern Kordofan) reported having a 25 percent vacancy rate with higher rates among physicians (36 percent) than nurses (21 percent).<sup>45</sup> Vacancy rates at the primary care level are far higher (62 percent) than in hospitals (29 percent). Several factors explain the high vacancy rates, including a lack of funding for approved health positions. In addition, some health professionals prefer to wait for months for vacancies to open in Khartoum State, where they can

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<sup>41</sup> Elnour et al (2019).

<sup>42</sup> Bashir et al (2023).

<sup>43</sup> World Bank (2016).

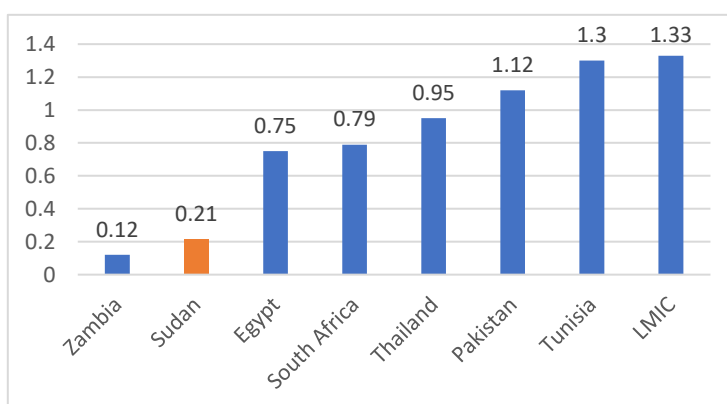
<sup>44</sup> AbuAglā and Badr (2016).

<sup>45</sup> Sousa et al (2014).

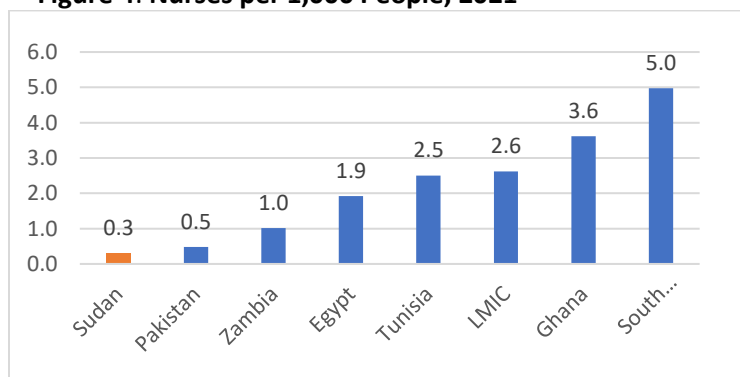
also work in the private sector and in specialized care, instead of applying for jobs in other states and remote areas.<sup>46</sup> As a result, many facilities are understaffed relative to WHO recommendations, which negatively affects staff performance and patients' access to care.

**Sudan has fewer health professionals for its population than comparator countries.** The public health sector employs about 102,000 staff, about half of whom are women. Sudan has only 0.2 physicians for every 1,000 people compared to an average of 1.3 in lower- and middle-income countries (LMIC) and only 0.3 nurses compared to an average of 2.6 nurses per 1,000 people in LMICs (Figures 3 and 4). This means that Sudan has only 1.5 nurses per physician compared to 6 in South Africa, for example. There are substantial variations between states, with Northern State having 0.87 nurses per 1,000 people but South Darfur having zero nurses despite having a population of 4 million people.<sup>47</sup> About 62 percent of nurses are female. No data exist on the age distribution of the health workforce, so it is not known whether it is an “aging health workforce” or whether enough graduates are being trained to replace health professionals who will retire.

**Figure 3: Physicians per 1,000 People, 2021**



**Figure 4: Nurses per 1,000 People, 2021**



Source: WDI 2021 and Government of Sudan: Annual Health Statistic Report 2021.

**Health professionals and graduates do not receive much help when they are trying to enter the Sudanese health workforce.** There is no counseling or formal career advice for staff, students, and new

<sup>46</sup> FMOH (2011]

<sup>47</sup> Sudan Health Observatory (2021).

graduates in the medical and healthcare fields to help them to find a job in the sector.<sup>48</sup> Graduates receive no support in their job search, and there are no internship or residency programs, and no community service. Staff recruitment is impeded by the absence of any easily accessible information on health professionals or job vacancies as the process is still paper-based. Health professionals apply for open positions by email or postal mail. In the absence of a database, the FMOH has no clear overview of vacancies, of health professionals looking for a job, or of new applicants trying to join the health workforce.

**Women face several challenges to practicing medicine in Sudan.** While legal restrictions limit women from working, including during night hours, there are exemptions for women working in the health professions.<sup>49</sup> Nevertheless, women may choose not to specialize in some areas such as anesthesiology, surgery, and emergency medicine, which would require them to work during hours that would be difficult for them given their family responsibilities and the prevailing social norms.<sup>50</sup> When women leave the profession, this can lead to workforce planning challenges as it is difficult to replace staff with specialized skills.<sup>51</sup> Furthermore, female health professionals may prefer to work in Khartoum or other cities rather than in rural and remote areas for personal safety reasons.

**Sudan introduced community midwives (CMW) as part of the government's Primary Health Care Expansion Program (2013-2016).** CMWs replaced Sudan's village midwives, introduced in the 1960s, and village midwife technicians, introduced in some states in 2009.<sup>52</sup> CMWs must have a secondary school certificate and must have acquired some nursing skills. By 2016, about 72 percent of villages were covered by CMWs.<sup>53</sup> Providing midwifery training at locations close to the beneficiary communities made it easier for young female students to volunteer for training as they did not have to travel alone to cities.<sup>54</sup> Given shortages of nurses and midwives in rural areas, it has been recommended that the capacity of CMWs should be expanded.<sup>55</sup> However, the current cadre of CMWs is not adequately funded. Challenges remain in terms of the quality of CMW training, the scarcity of trainers, a shortage of resources, a lack of remuneration for the CMWs, cultural constraints, poor working conditions, and insufficient supervision and management.<sup>56</sup>

**Difficulties in recruiting and retaining skilled health workers to work in under-served areas is a problem that is not unique to Sudan.** The Sudanese government has in the past prioritized a more equal geographic distribution of health workers with appropriate skills for each area and retention by improving working conditions.<sup>57</sup> However, retaining doctors in rural areas remains a challenge. In 1998, South Africa introduced mandatory community service of 12 months for newly graduating physicians to increase the presence of health professionals in areas with the greatest need. Between 2000 and 2014, about 89

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<sup>48</sup> Husain et al (2022).

<sup>49</sup> Tønnessen (2019).

<sup>50</sup> Ahmed (2012).

<sup>51</sup> Bayoumi (2019).

<sup>52</sup> Miyake et al (2017).

<sup>53</sup> AbuAglā (2021).

<sup>54</sup> World Bank (2013).

<sup>55</sup> Nakano et al (2018).

<sup>56</sup> AbuAglā (2021).

<sup>57</sup> FMOH (2022b).

percent of physicians worked in community service after their internships ended.<sup>58</sup> Sudan could also introduce such measures, including prioritizing the selection of students from rural backgrounds to enter medical school as they are more likely than others to return to work in their areas after graduation.

**Between 2004 and 2014, unemployment rose among medical graduates as there were not enough positions to enable them to enter the health workforce.**<sup>59</sup> Unemployment is also problem for other graduates in the social and health sciences.<sup>60</sup> The growing number of medical and health graduates has historically outstripped the ability of the health sector to recruit them, resulting in high unemployment rates.<sup>61</sup> In 2011, there was a low share of health workers aged between 20 and 30 years in the workforce compared with the other age groups, which seemed to imply that newly graduated health workers were not being hired into the Sudanese health labor market.<sup>62</sup> The main factors contributing to the unemployment of skilled health workers are fiscal constraints, the limited number of jobs available in the public health sector, the reluctance of new graduates to work in rural and remote areas, low pay, poor working conditions, and the difficulties involved in recruiting and retaining health staff, especially in rural areas.<sup>63</sup> Unfortunately, no comprehensive database exists of the number of unemployed by health profession and the duration of their unemployment.

**To find work, about one-third of Sudan's medical graduates have migrated abroad.** Even over a decade ago, about 30 percent of the 3,000 medical graduates produced in Sudan every year left the country to work abroad.<sup>64</sup> In 2015, a survey of medical students at the University of Khartoum found that nearly 85 percent intended to migrate after graduation, with Saudi Arabia and the United Arab Emirates being the most preferred destinations.<sup>65</sup> The WHO estimates that about 60 percent of physicians and 25 percent of pharmacists from Sudan practice abroad. In 2015, over 15,000 Sudanese physicians were working in Saudi Arabia and over 3,000 in the United Kingdom.<sup>66</sup>

*v. Low levels of government health spending negatively affect the health workforce.*

**Sudan's government spent only US\$8 per capita on health in 2020, which is well below the recommended US\$86 needed to achieve universal coverage.** In 2020, the government spent 8.5 percent of its general expenditures on health or 1.5 percent of GDP (Figure 5). In its 2021 budget, the government allocated 9 percent of government general expenditures on health, which was equivalent to 1.7 percent of GDP.<sup>67</sup>

**Low government spending on health restricts the number of positions available in health facilities and represses the already low health wage bill.** Government spending on wages for HRH had averaged 29 percent of government health expenditures (GHE) between 2012 and 2019 and reached 38 percent in

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<sup>58</sup> Reid et al (2018).

<sup>59</sup> Sousa et al (2014).

<sup>60</sup> World Bank (2016).

<sup>61</sup> AbuAgla et al (2013).

<sup>62</sup> AbuAgla et al (2013).

<sup>63</sup> Hassanain et al (2022).

<sup>64</sup> Badr (2013).

<sup>65</sup> Mohamed et al (2015).

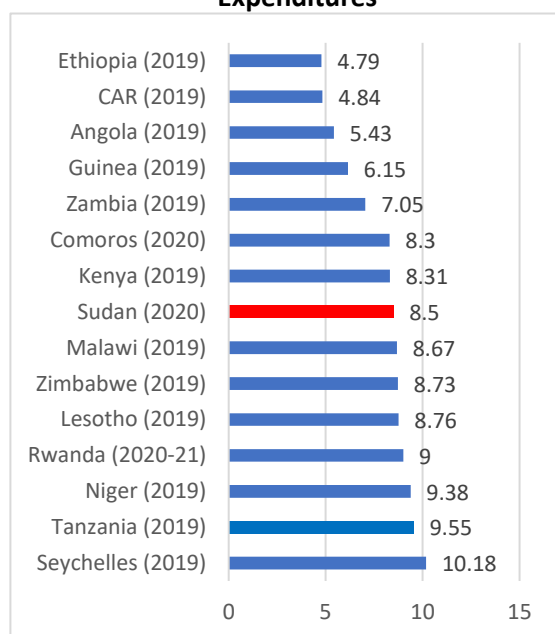
<sup>66</sup> WHO (2020a).

<sup>67</sup> Republic of Sudan (2020).

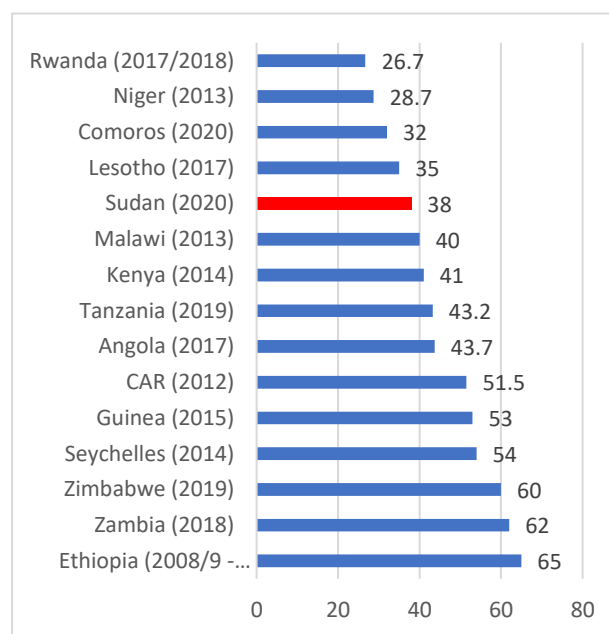
2020. This was still below the percentage spent by most other countries in the region (Figure 6).<sup>68</sup> In addition, high inflation rates led to a loss in purchasing power, which led workers to bargain for higher wages. In 2020, the government increased salaries by an average of 569 percent to compensate for inflation.

**Some doctors have not been paid for several months.** After the COVID-19 pandemic had already put substantial pressure on the health sector, in September 2022, junior doctors at several hospitals went on strike. They protested that they had not received their salaries for a year and that security and working conditions continued to worsen for them after the dissolution of the civilian government.<sup>69</sup> By early 2023, it was clear that it would be hard for the government to pay higher wages for health professionals, despite the government's attempts to mobilize additional revenues.

**Figure 5: Government Health Expenditures as Percentage of General Government Expenditures**



**Figure 6: Health Wages as Percentage of Government Health Expenditures**



Source: World Bank Public Expenditure Reviews Health<sup>70</sup>

**The 2021 Public Expenditure and Financial Accountability (PEFA) report on Sudan found that the health payroll was adequately financed through the budget and that health wages had been paid regularly.** Also, the World Bank's 2021 Health Public Expenditure Review (PER) for Sudan noted that execution rates for the wage budget from the FMOH had been close to 100 percent since 2012, although in 2020 this rate surged to almost 300 percent of the wage budget. Overall, the execution rates of the health budget at the state level averaged only 62 percent between 2012 and 2018 but surpassed 100 percent in 2020.

**There are concerns about the integrity of the health payroll.** However, no reconciliation is done between the federal and state health payroll data and the Civil Service Agency's establishment list of public sector

<sup>68</sup> World Bank (2021(a)).

<sup>69</sup> MSN (2022).

<sup>70</sup> World Bank (2021a).

employees, and there are questions about the adequacy of payroll controls. This has raised concerns that salary payments are being made to individuals who are not providing health services, which, if so, would reduce the effectiveness of already low health spending. A strong financial management system is needed to ensure that health staff are paid on time and fully.

- vi. *There is inadequate management, policymaking, and planning, and there are serious concerns about the safety of health workers.*

**Health professionals are hired under civil service rules.** A public sector selection committee headed by the Ministry of Human Resources Development and Labor interviews and hires candidates for health sector jobs, while the FMOH oversees the deployment, placement, and promotion of medical doctors, dentists, and pharmacists and the state MOHs recruit and deploy nurses, midwives, and staff working in primary health care.<sup>71</sup> This process can be lengthy and administratively cumbersome and has negatively affected staff satisfaction.

**There is no medium-term health workforce management and development strategy.** The World Bank's 2021 Health PER for Sudan found that there was only limited coordination between providers of medical training and the FMOH regarding the public payroll's ability to fund jobs for newly trained health graduates. There is no comprehensive information system to manage the health workforce throughout the country and all the various levels of care. Data on vacancy rates for different professional cadres are not systemically collected and analyzed, even though this information is critical for future workforce planning and costing efforts. Health staff are unequally deployed across the country, but there does not appear to be any centrally led effort to address this issue.

**There are major gaps in the regulation of health professionals, which are hampering the delivery of care.** This includes physicians working in dual practice in the public and private sector, which is not regulated. While there may be some benefits to allowing dual practice in the context of low public sector wages and high emigration, there are serious concerns if it is unregulated. In Sudan, dual practice has led to widespread absenteeism in public facilities and high out-of-pocket expenses for patients who must pay for private care because of the limited availability of care in the public sector.<sup>72</sup> Regulations are needed to ensure that enough public sector care is available for all who need it.<sup>73</sup>

**A lack of essential infrastructure and equipment within health facilities constrains the work of health professionals.** There is not enough basic infrastructure in health facilities such as delivery rooms, toilets, electricity, water, and medical supplies, which impedes the provision of care.<sup>74</sup> There is also an inadequate supply of medical devices. Over half of all health facilities have less than the minimally required equipment and maintenance systems.<sup>75</sup> In a discrete choice experiment in 2012, junior doctors were willing to work for lower wages if it meant that they could serve in facilities with adequate equipment (including medicines, water, and electricity as well as diagnostic, laboratory and other medical equipment).<sup>76</sup>

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<sup>71</sup> FMOH (2022a).

<sup>72</sup> WHO (2019).

<sup>73</sup> AbuAgla and Badr (2023).

<sup>74</sup> Hassanain et al (2022).

<sup>75</sup> Osman et al (2018).

<sup>76</sup> Nurelhuda et al (2018).

**Similarly, the availability of pharmaceuticals has been severely disrupted by the political crisis.** In 2017, the FMOH reported that only 73 percent and 90 percent of essential medicines were available at public and private health facilities respectively.<sup>77</sup> By 2019, this had dropped to 43 percent in facilities under the National Medical Supply Fund, 49 percent for the National Health Insurance Fund, and 59 percent in the private sector.<sup>78</sup> By 2022, a survey showed that the situation had worsened further, with only 30 percent of essential medicines being available in the private sector and 31 percent in the public sector.<sup>79</sup>

**Workplace safety for health workers, especially medical doctors, is a serious concern.** A survey of hospital staff in Khartoum state in 2020 revealed that 65 percent had experienced workplace violence in the previous 12 months, with most attacks carried out by individuals in the 19 to 35 age group who were not under the influence of drugs. Female and male health professionals were equally exposed to violence. Emergency rooms were a particularly violent environment and the most frequent location for attacks.<sup>80</sup> Some of the violence may have been politically motivated. In 2019, Sudanese doctors had appealed for international support as security forces targeted hospitals and detained staff while trying to end demonstrations against the Omar al-Bashir regime. Physicians participated in the insurgency at the time.<sup>81</sup>

**High levels of burnout, anxiety, and depression among health professionals raise concerns.** According to a pre-pandemic study published in 2020, over 19 percent of health professionals suffered from nonpsychotic psychiatric disorders, while over 75 percent reported experiencing moderate or elevated levels of emotional exhaustion, and over 61 percent mentioned experiencing moderate or high levels of depersonalization. Also, only about 55 percent of Sudanese health professionals reported feeling moderate to high levels of personal accomplishment.<sup>82</sup> In another study conducted during the COVID pandemic, half of health workers in Khartoum state reported experiencing moderate to severe depression.<sup>83</sup> These findings of mental health and burnout issues among staff warrant further and deeper investigation and remediation.

**Continuous professional development (CPD) has been expanded but is weakly managed.** According to a 2006 survey, 75 percent of the national health workforce had not received any form of training in the previous five years.<sup>84</sup> After a national center for CPD was established and state branches and other means of provision followed, the coverage of CPD reportedly increased from 24 percent of the health workforce in 2005 to 67 percent in 2012.<sup>85</sup> However, the National Human Resources for Health Strategic Plan for Sudan for 2012-2016 points out that these activities were not well integrated into budgets for service provision and health, and there was no time set aside for it during an individual's career.<sup>86</sup>

**Sudan has active health professional associations.** Sudan has a number of health-related professional associations. Having played a prominent role in civil society resistance to the regime of Omar al-Bashir, the Sudan Doctors Union has been increasingly visible politically as well as increasingly targeted for its

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<sup>77</sup> Osman et al (2018).

<sup>78</sup> UNOCHA (2020).

<sup>79</sup> FMOH (2022c). The survey was conducted across Sudan, covering 291 public and 186 private health facilities.

<sup>80</sup> Elamin et al (2021).

<sup>81</sup> Hawkes (2019).

<sup>82</sup> Hamid and Abdullah (2020).

<sup>83</sup> Elamin et al (2020).

<sup>84</sup> FMOH (2011).

<sup>85</sup> AbuAgla and Badr (2023) and Badr et al (2013).

<sup>86</sup> [https://www.hrhresourcecenter.org/hosted\\_docs/cpd\\_policy.pdf](https://www.hrhresourcecenter.org/hosted_docs/cpd_policy.pdf)

pro-democracy position in recent years. During the ongoing war, it has called for doctors to treat the injured on both sides, but doctors who do so are reportedly the targets of smear campaigns.<sup>87</sup> The Sudan Nurses Association is also calling for an end to the war as the situation deteriorates and supplies dwindle.<sup>88</sup>

*vii. There is not enough data and analysis on the health workforce to inform policymaking and planning.*

**Several government agencies are involved in data collection.** The 18 state MOHs register and license their health facilities and are responsible for collecting data from these providers and for transferring aggregated state-level data to the FMOH. The National HRH Observatory was established in 2006 to build the foundations of a strong HR information system and collect data on the health workforce from all facilities in both the public and private sectors. Since 2003, the Central Bureau of Statistics (CBS) has been responsible for producing national statistics and coordinating statistical work across government agencies. The CBS is a semiautonomous institution under the Ministry of Finance and National Economy with branch offices in all 18 states in Sudan. It is responsible for collecting major nationwide statistics, including censuses and household surveys, as well as sector-specific surveys such as the labor survey and health surveys in collaboration with the relevant ministries.

**A lack of data on the health workforce in Sudan is hampering analysis on the subject.** The Human Resources for Health Strategy emphasizes the need for data and analysis to inform policymaking and planning. Annual statistical reports have provided some information on the health workforce by cadre, but the quality and availability of the currently available data are a concern. The most recent data on current stocks of registered personnel are incomplete and are not disaggregated by level of care or by public versus private sector. No detailed data are available on the health workforce in the private sector, nor do the available data distinguish those professionals who have left the country, are retired, or work outside their profession. Therefore, better and more timely information is needed on all human resources in health, including data disaggregated by age, gender, and public/private sectors.<sup>89</sup> Unless substantial investments are made in data collection and analysis, health workforce planning will be severely constrained in Sudan.

*viii. There is a need to take advantage of opportunities to work with the private sector and to recruit internationally.*

**Sudan has a growing private health sector in its cities.** In 2021, there were 177 private hospitals and health centers, 558 specialist clinics, 377 general practitioners and 787 private laboratories in the sector.<sup>90</sup> The private sector is not regulated, and dual practice is very common, having been estimated at 90 percent among health workers across Sudan.<sup>91</sup> Private hospitals and employers continue to attract public health staff, which creates high turnover rates in public hospitals to be high. The private sector plays a greater role in providing specialized tertiary care than in primary health care. However, the River Nile State asked

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<sup>87</sup> Al Jazeera (2023).

<sup>88</sup> International Council of Nurses (2023).

<sup>89</sup> WHO (2020b).

<sup>90</sup> Sudan Health Observatory (2021).

<sup>91</sup> Sousa et al (2014).

the private sector mining and cement industries in the state to help to expand primary healthcare services as part of its social responsibility to the community in which they are located.<sup>92</sup>

**Many Sudanese health professionals have left the country to work abroad.** In March 2010, about 794,000 Sudanese worked abroad, most of them in Saudi Arabia, the United Arab Emirates, Libya, Iraq, and the Gulf countries. Among them were 12,312 health professionals including 6,545 general practitioners, 876 professors, and 1,300 lecturers in health fields.<sup>93</sup> Between 2009 and 2012, Sudan lost about 6,000 doctors to Saudi Arabia, and by 2015, about 60 percent of Sudanese medical doctors and 25 percent of pharmacists practiced abroad, mostly in the Gulf States, the United Kingdom, and Ireland. About half of the health professionals working abroad are women.<sup>94</sup> In 2019, the United States' health providers reported employing 644 Sudanese physicians.<sup>95</sup>

**The main reasons why Sudanese health workers choose to leave the country to find jobs abroad are low salaries, poor work environments, and a lack of adequate professional development.** Because most of the workers who leave are well-trained health professionals, the provision of specialized care within Sudan is being negatively affected. A Secretariat of Sudanese Working Abroad (SSWA) has been established under the Ministry of Cabinet Affairs and is responsible for validating work contracts and providing permits for Sudanese working abroad.

**Few of these migrating health professionals return to work in Sudan.** While some health workers working abroad are inclined to return to Sudan for family and other reasons, several barriers affect this decision. These include the poor work environment in Sudan's health facilities, the difficulty of reintegrating into the health system at the appropriate level given the returning workers' increased experience and qualifications, insufficient remuneration, and the education of their children.<sup>96</sup> Many health professionals face difficulties with Sudan's professional licensing process, which is still paper-based. Therefore, it can take a long time for the system to verify a returning worker's international credentials and for the licensing agency to issue a license to practice in Sudan.

**These high emigration rates represent a loss of return on the government's investments in medical education that cannot be recovered.** Policymakers will need to create and fund more health positions, increase the attractiveness of the public health system as an employer, ramp up hiring, including from among the diaspora, create positions so that new medical graduates can work where the need is the greatest, and introduce innovative ways of financing medical education based on successful experiences in other countries. Special efforts will be needed to recruit among diaspora health workers to rebuild Sudan's health system with a stronger health workforce after the peace process resumes and Sudan emerges from its humanitarian crisis.

## 5. Conclusion and Policy Recommendations for the Government of Sudan

**This study has examined the key issues and contextual factors affecting the development of the health workforce in Sudan.** It has found that Sudan's human resources for health are inadequate, poorly

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<sup>92</sup> Osman et al (2018).

<sup>93</sup> WHO (2013).

<sup>94</sup> AbuAgla and Badr (2016).

<sup>95</sup> Boulet et al (2020).

<sup>96</sup> Abdalla et al (2016).

distributed, unevenly funded, and weakly managed, all of which are serious concerns in a context of rapid population growth, urbanization, increasing poverty, and a changing burden of disease. The analysis identified key gaps in data and analysis that will need to be filled.

**Sudan's health sector, including its health workforce, is under severe stress.** Sudan's economic and political fragility and the impact of its long-running conflict on society have had a profoundly negative effect on the health workforce and on the delivery of essential healthcare. Nevertheless, the country has tried to invest in the health workforce and its management amid many challenges and in an inconducive environment. When the current crisis is resolved, it will be critical for a civilian-led government to not only meet the increasing humanitarian needs in the country, but also focus on making strategic investments and reforms that can deliver medium-term gains and potentially attract future domestic and external financing into the health sector, including for the health workforce.

**The ongoing humanitarian crisis has likely amplified the problems identified in this study, the extent of which cannot be assessed under the current circumstances.** The study methodology itself has been significantly constrained by the pausing of World Bank operations and of the preparation of new operations in Sudan since October 2021. The current surveys and research, where these have been done, have tended to be small-scale. Future analysis can inform health planning and policymaking and help identify the priorities for domestic investment and donor support once conditions improve in the country. Going forward, more and better data will be needed to underpin more comprehensive analysis.

**Rebuilding the health care system will be a top-priority for the new government that should already start during the peace process.** This includes the following priority recommendations:

- (viii) **an assessment** of the damage and needs in health facilities, and a census of all health workers in Sudan (professionally active and inactive) to identify and make use of the existing human resource capacity working in public or private sector, NGOs and capacity that is currently unutilized (i.e. the graduates who are looking for work, and currently unemployed health workers);
- (ix) **reconstruction** of health infrastructure, emergency communication and transport, medical equipment, housing for health workers, and workplace safety for health workers;
- (x) **emergency procurement** of medical supplies and medicines;
- (xi) **Sudan's medical and health students** could be offered to attend medical and health schools in neighboring countries during the conflict, and then return to work in Sudan once it is safe;
- (xii) **efficient recruitment** of health professionals and salary payments which will require the collaboration of international partners including to provide training on the job in emergency medicine and disaster care;
- (xiii) **reconstruction** and equipment of medical facilities, nursing schools and health science schools and ramp up the education of health professionals and community health workers;
- (xiv) **data** collection, monitoring, analysis and health policy with a priority on public health disease control, reproductive health care, and malnutrition.

Most of these activities will have to take place in parallel and over several years to rebuild Sudan's health system.

**In addition, based on the findings of this literature review, we offer medium-term and longer-term recommendations in these key reform areas,** including medical and health education and financing,

health workforce planning and management, data collection and analysis, and collaboration with the private sector and other countries. These recommendations will take some time and require substantial resources to implement, which will likely be a challenge with the ongoing conflict in the country.

**These recommendations go much beyond addressing the current crisis and are aligned with government strategies.** The National Health Sector Recovery and Reform Strategic Plan 2022-2024 emphasizes improving the equitable distribution and increasing the retention of the health workforce while ensuring that they have an appropriate mix of skills and enjoy better working conditions. The recommendations also complement and substantiate many of the strategic priorities laid out in the FMOH's HRH Strategic Plan 2020-2030, which are to: (i) establish the governance and institutional capacity for effective HRH leadership and stewardship; (ii) improve production of the health workforce, ensuring their quantity and quality is aligned with the needs of the population and the health system; (iii) strengthen mechanisms for selecting, recruiting, deploying, and transferring health workers and for managing their performance; and (iv) develop institutional mechanisms and requirements to ensure the effective implementation of the HRH agenda in Sudan.

**In addition, the recommendations take into account Sudan's socio-demographic and health trends and their impact on the health workforce as Sudan emerges from consecutive crises.** They propose a series of practical reforms that should be feasible for the Sudanese government and its partners to implement. While national policies and strategies will have to be revisited in terms of prioritization and sequencing of activities in response to the immediate emergency needs in the country, they remain broadly apt and relevant in the medium term and as Sudan transitions from humanitarian response to health sector development which was much-needed even before the war.

*i. Invest in high-quality general and health education and medical research.*

**Invest in the quality of general education.** The key goal should be to provide equitable access to quality secondary education in all states to prepare future cohorts of medical and health students in Sudan. This will require that teacher training and learning materials are available in all schools.<sup>97</sup> Improving the quality of secondary education, particularly in mathematics, biology, physics, and chemistry, will help to prepare a pipeline of students to go on to study medicine and other health fields. Investing in digital skills is also important. As access to quality education increases, students from less privileged areas will be more likely to enter publicly funded medical schools and return after graduation to serve their rural areas.

**Invest in girls' education.** The first step must be to increase girls' retention in schools. This will entail providing ways for girls who have dropped out to re-enter.<sup>98</sup> A good quality education, including digital education, will be vital to produce girls with the skills to eventually join the future health workforce. Information events for girls and their parents can help to inform them about the different career paths for women in the health sector.

**Substantially increase Sudan's capacity to produce more medical and health graduates.** Strategies are needed to increase the number of students and graduates in the medical and health fields in line with the health sector's needs. Medical and health schools from the region could set up satellite campuses in Sudan, with some teaching done virtually (depending on internet availability) and with visiting professors

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<sup>97</sup> World Bank (2021b).

<sup>98</sup> Fincham (2018).

from neighboring countries to spend time in Sudan teaching the requisite practical skills to students. The aim should be to produce more and better medicine, nursing, and other health graduates.

**Update curricula.** The curriculum should include training in emergency medicine, emerging diseases, and medical technology based on international best practice. Health students should learn about (i) the types of medical assistance needed for different disasters; (ii) causation and effect between pandemics and chronic conditions and the impact on clinical management; (iii) command, coordination, and communication mechanisms; (iv) triage management of mass casualties; and (v) professional ethics. The psychological health of staff is crucial, so courses on adaptive coping strategies should be offered, including on ways to develop emotional resilience. Community health workers should also be trained to play a supporting role during crises and pandemics.

**Strengthen teaching and the use of technology in healthcare education.** Increasing the teaching staff in these institutions and attracting visiting faculty from international health schools will help to improve the quality of education in healthcare-related fields. The government should recruit Sudanese researchers working in other countries to help advance medical and health research at local universities and hospitals. It will be essential to ensure that the curriculum is updated promptly and to provide career counseling to students and graduates to facilitate their entry into the health workforce.

**Regularly assess the performance of health training institutions.** The FMOH and the Sudan Medical Council could, with the right support and resources, identify the quality-related issues in schools and propose remedial actions on a case-by-case basis.<sup>99</sup> This might involve setting stricter criteria for enrollment and graduation, and developing an accreditation program for nursing schools and medical faculties. Schools with inadequate performance should be repurposed to prevent them from producing unqualified health graduates.

***In the longer term:***

**Set up a clinical research program and allocate government funds to advance clinical research.** Post-graduate courses could be set up at local universities with the support of the Sudan Medical Specialization Board, and Sudanese researchers working in other countries could be invited to advance health research in Sudan. This could be done in partnership with renowned international medical and health faculties and with the support of international initiatives.

***ii. Reform tertiary education financing to train more medical and health students.***

**Revise the financing for medical and healthcare education.** The government should find ways to measure the performance of medical universities and nursing schools in terms of their academic output and numbers of graduates and make its funding allocations in accordance with the results. Tuition fees for medical students should be increased based on a cost analysis, and income contingent student loans (ICLs) should be offered to students to help them to cover the cost.

**The government might also consider subsidizing students' medical education in return for them working in underserved locations for three to five years.** Similar to what happens in South Africa, the professional

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<sup>99</sup> Abdalla and Taha (2020).

licensing of health care workers could be conditional upon them completing a period of service in a remote health facility after graduation.

**Explore the creation of a formal medical education program with major destination countries.** Given the high number of Sudanese medical staff migrating to Saudi Arabia or other countries, it might be interesting for the government to explore the creation of a formal program where the main destination countries provide financing for a certain number of medical students each year. Some of them could migrate to work abroad while others remain and work in Sudan. In addition, a rotation program could be set up for specialists to return to working in Sudan after some years of work abroad and others to go for upgrading of skills perhaps.

***In the longer term:***

**Consider introducing income contingent loans for students.** These loans should be based on the experience of other countries such as the Netherlands, Ireland, the United Kingdom, and Hungary where they have already been used successfully to enable students to pay their tuition fees. Students usually only start repaying their ICL once they are earning an income above a certain threshold although this varies between countries. Hungary has no income threshold and a 6 percent repayment rate on gross earnings. In the United Kingdom, graduates earning over £25,000 per year contribute 9 percent of their gross earnings towards the repayment of their loan. New Zealand has a lower threshold than the United Kingdom and a higher repayment rate of 12 percent of earnings. The United States requires graduates to repay 10 percent of their income above a threshold set at 150 percent of the poverty guideline, or US\$24,360 for a two-person household in 2017.<sup>100</sup>

**Design an efficient and enforceable repayment system.** The usual way in which these ICLs are repaid is by the graduates' employers withholding the repayments from their wages as is done with social insurance taxes. Ideally, medical graduates should be under a legal obligation to make monthly direct repayments or to pay an annual minimum amount of their loan to the government. Debtors who fail to comply should be barred from using government services such as passport renewals or from receiving the documents needed for their professional certification. If graduates migrate to another country after completing their education, then their ICL repayments would have to be collected from their monthly wages by the government of the host country, which would then transfer the revenue back to the Sudanese government. Governments in destination countries could also potentially match this repayment amount (as is done with social insurance contributions) and include that matching amount in the revenue amount transferred to the Sudanese Ministry of Finance, which would then use this revenue to finance the costly tertiary education of future medical students.

***iii. Invest in health workforce management to strengthen healthcare provision.***

**Strengthen the capacity of community midwives in remote areas.** In areas with severe shortages of health workers, it might make sense to expand the capacity of community midwives. This would enable them to provide a wider range of medical services to their communities until more health professionals can be recruited. Training CMWs to meet quality of care standards could be a cost-effective way to reduce high maternal and infant mortality.<sup>101</sup> Carrying out an assessment of the CMW program, including its

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<sup>100</sup> Britton et al (2019).

<sup>101</sup> Hassanain et al (2022).

performance and impact on maternal and newborn health could be a good way to inform future policies and develop regulations for CMWs.

**Recruit more health professionals to work in public health facilities based on the results of the health workforce planning process.** This may require doubling the number of positions available for physicians and ramping up the hiring of nurses, midwives, and paramedics, starting in rural areas and states with high vacancy rates. To fill these positions, staff could be recruited from a variety of places, including from among unemployed health workers, new graduates, Sudanese working abroad, and unemployed health professionals from other neighboring countries. The state health ministries may also need greater federal support to enable them to consistently recruit and deploy more health professionals and to ensure that these staff are well-trained and paid on time.

**Make working in underserved and remote areas more attractive.** This might involve establishing public health schools outside major cities, investing in housing for health professionals, prioritizing students from rural backgrounds, requiring students and interns to do clinical rotations in health facilities in rural areas, and providing continuous professional development for rural health workers. In addition, preferential access to professional training could be given to medical personnel who work in more challenging locations. The WHO has issued guidelines on the development, recruitment, and retention of health workers in remote areas that can be applied to the Sudanese context.<sup>102</sup>

**Mental health services should be widely available for health staff,** including through virtual telemedicine, which is a more discreet way to provide care. After the crisis, some health professionals may not be able to work in clinical practice anymore because of post-traumatic stress and may be looking for positions in public and community health work. Others may wish to acquire additional education, which the government and development partners could help to support. As health care organizations are digitally transforming their operations, these new educational paths for health employees might include working in informatics, data science, and related technology. Some health staff may prefer to take on administrative positions. The provision of comprehensive health screening for health workers, temporary alternative work arrangements or redeployment, comprehensive sick leave and benefits packages, and increased security in health facilities and emergency rooms would all help to allay staff fears about their workplace.

**Assess the current and future roles of health professional associations.** Given the severe difficulties they have faced during the resistance and in wartime, these associations can play an active and supported role in ensuring quality health services in Sudan, rather than having to campaign for the most basic rights of health workers and civilians. With support, they could play a strong role in helping to attract health workers back to their jobs after the war and advising on measures to ensure their safety and health, assessing priorities during the transition from humanitarian aid to post-conflict development, advancing CPD, advising on supply chain issues, liaising with the diaspora, and other activities related to their areas of scientific interest.

**To streamline recruitment, the FMOH, the state MOHs and health facilities should make use of online job portals.** Job portals exist to facilitate access to information on job vacancies and jobseekers in the health sector. In Rwanda, for example, a [new jobs portal](https://cms.hmis.moh.gov.rw/clinicaljob/) (<https://cms.hmis.moh.gov.rw/clinicaljob/>) was introduced in 2022 to increase transparency and efficiency in the recruitment of health professionals and

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<sup>102</sup> WHO (2021).

to replace the previous lengthy and bureaucratic paper-based process. All job vacancies are now uploaded into the portal, and all health professionals applying for jobs must register electronically with the portal and provide their professional license number. The portal includes a dashboard that monitors hiring by profession, gender, region, and the number of days that it takes to fill vacancies. The Sudanese government could consider launching a similar jobs portal to facilitate the recruitment process and generate much-needed data on vacancies, new recruitments, and staff movement between health facilities. This would involve converting the recruitment process of health personnel to an electronic system with available posts advertised online and potentially having interviews done online where possible for people who are outside of Khartoum.

***In the longer term:***

**Introduce modern personnel management practices in health facilities to improve staff morale.** This would involve: (i) developing effective employee promotion policies and a process for managers to follow; (ii) improving working conditions; (iii) offering continuing medical training to all staff as well as offering physicians opportunities to conduct medical research in collaboration with universities; (iv) providing health professionals with appropriate infrastructure and medical equipment so that they can fully use their expertise; and (v) providing strong leadership and clear communication (see Box 2).

**Box 2: Good Human Resource Management**

When health staff are efficiently managed, this helps to reduce burn-out and turnover rates, increases job satisfaction among staff as well as patient satisfaction, improves quality of care, and improves health outcomes. The key elements of good management of human resources in health are as follows:

- **Workforce redesign and task-sharing.** This consists of multi-disciplinary care teams led by primary care physicians who see only those patients with the most complex health issues. The care management of the remaining patients is devolved to nurses and clinical pharmacists. This task-sharing reduces patient volume for physicians and increases the average length of consultation time that they can give to each patient. Some of the tasks normally performed by nurses are shifted to medical assistants, whose role and responsibilities become more important.
- **Career development.** Continuous professional development should be an essential component of human resource management. Promotion should be based on fair and transparent procedures and criteria that are relevant to the person's performance in their position. Transparency requires that a job description be made available to all potential applicants.
- **Optimizing work-life balance.** This involves allowing flexible working hours for health professionals specific to the needs of each age group, including for staff with child-rearing responsibilities. Older staff may welcome the chance to remain in their jobs on a part-time basis.
- **Women as the backbone of the health workforce.** Flexible shift-patterns and shorter working days should be offered to accommodate women during pregnancy and child-rearing. Family-friendly policies should be adopted in hospitals, including the provision of 24-hour childcare facilities for the children of health professionals.
- **Compassionate HR leadership.** This involves HR engaging in meaningful internal communications and engagement with employees to monitor their concerns and aspirations. Conducting exit interviews with staff when they leave their positions will reveal their reasons for leaving and their destination in terms of their future employment and will yield useful information on how best to retain staff.

**Regularly assess job satisfaction among health workers and identify measures to support staff and improve workplace safety.** Ensuring health workers are safe in their workplace and are paid fully and on time will be a vital first step toward improved motivation, availability, and performance. Given the recent strikes by health workers, cases of violence against them, and their high emigration rates, it would be useful to conduct regular job satisfaction surveys to try to identify measures to help the staff to do their work. These might include offering to change how teams work as well as providing counselling and support services designed specifically for women and for staff working in remote areas.

**Revise the performance management system.** To address concerns about the lack of objectivity involved in the performance management system given that health professionals currently write their own evaluations,<sup>103</sup> it would be advisable to conduct an assessment of the performance management system, particularly as it influences promotions, and revise it in accordance with the results. The introduction of a “balanced scorecard” against which health facility managers could evaluate the performance of their health staff would make it possible for them to identify any issues or gaps that could be remedied by providing training and incentives.

**Consider developing a reserve corps of health professionals.** The government should have a database of health workers in Sudan, whether active or inactive, so that the health workforce can be increased during times of crisis such as the recent COVID-19 pandemic, and following humanitarian crisis. While those who have only recently retired or left health-related work could be redeployed as health workers, others could be hired to perform supporting tasks such as administration, information-sharing, contact tracing, initial patient screening, and even additional security at hospitals.

**Introduce biometric time clock systems in all public health facilities.** A biometric time clock system would log the attendance of, and time worked by health staff. This would help to establish a standard requirement of days and hours and pay-related penalties. At the same time, the underlying issues that cause high absenteeism in public health facilities must be addressed by improving working conditions.

**Familiarize health professionals with modern diagnostic and treatment technologies.** Widespread familiarity with technology would make it possible to use mobile money systems to transfer funds to health facilities and salaries to staff; and technology such as smartphone applications for electrocardiograms and portable blood analyzers for remote blood tests. Also, specialists could use telehealth to train and provide support to primary care providers in remote areas. This could help to retain junior doctors in these areas by connecting them with mentors located elsewhere. Virtual interactions could also be used to communicate with patients, to provide mental health care, and to identify those who might need specialist care. Sudanese health professionals currently working in other countries may already have experience with these technologies and could be recruited to teach others how to use it. However, this is all dependent on extending internet penetration and increasing bandwidth throughout the country so that technology can be used everywhere, even in rural health facilities.

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<sup>103</sup> FMOH (2011).

- iv. *Increase government health spending to expand the health workforce, and review the current remuneration structure in the sector.*

**Undertake a payroll reconciliation and cleansing exercise to increase payroll integrity in the health sector.** The first step should be to review the existing health payroll to identify errors and remove workers who should not be on the payroll. There should be a full reconciliation between the FMOH's list of approved health workers and the Civil Service Agency's list of workers on the payroll. Salary arrears to health staff should be cleared. The second step should be to undertake a review of current payroll integrity controls and of the various options for strengthening these controls over the medium term.

**Increase government spending on the health workforce and undertake a budget forecasting exercise.** This exercise should model various options for increasing government health spending and expanding the wage bill over the medium term following the peace process. The FMOH should work with the Ministry of Finance to develop projections for the cost of the health wage bill under different scenarios of workforce growth and deployment. These scenarios should be based on the projections of changes in the health workforce over the medium term in the health workforce plan and on different assumptions about growth in staff numbers at different grades and growth in average remuneration. These projections should form the basis of medium-term budgeting for wages within the health budget.

**Expenditure on health workers will need to increase by over 1 percent of GDP if Sudan is to scale up its workforce.** The current workforce – which consists of just over one healthcare worker per 1,000 people – is far below the 4.5 per 1,000 recommended by the WHO. If Sudan is to reach even two-thirds of the WHO's recommendation on staffing levels, the government will need to increase spending on health wages alone by an additional 1.1 percent of GDP over the medium term. However, any increase in wage spending should be accompanied by a reconciliation of the health payroll with the Civil Service Agency's staff establishment list for the health sector.

**Assess the pay scales for health professionals.** This assessment should identify how the pay scales for each position are defined and whether they are in alignment with seniority, caseload, complexity, number of hours and days worked. A decompression of wages should eventually raise the salaries of medical specialists who are most likely to emigrate.

***In the longer term:***

**Carry out additional review of remuneration policy in the health sector.** This should focus on:

- a) **How remuneration affects overall patterns of workforce deployment across the country.** This should involve analyzing the productivity of staff, workforce allocations, and the ability of the government to attract staff to where they are needed most. The analysis should be conducted: (i) geographically state-by-state to compare incentives for working in underserved regions compared to others and (ii) by facility type to evaluate whether health workers can deliver quality care efficiently. The review should outline how the government can use its policy levers to affect state and facility-level remuneration to improve the quality of care and increase the productivity of health staff, for example by creative use of allowances, reductions in tuition fees, and/or guaranteed career progression for those serving in more challenging posts.

- b) **How remuneration in the public sector compares to remuneration in the private sector and the implications of this comparison for the health workforce.** The analysis should assess how and to what degree the public sector can provide sufficient remuneration to attract and retain qualified staff and calculate the costs and fiscal impact of doing this over the medium term. This should cover all aspects of public employee compensation, including wages, direct benefits (allowances, bonuses, and pensions) and indirect benefits (housing discounts, free transportation, health insurance, and scholarships for children) received by staff.
- c) **How remuneration in the health sector creates incentives for emigration.** This analysis should take into account how national policy on health workforce remuneration can be best structured to reduce the incentives for skilled staff to emigrate, bearing in mind that some of the labor market drivers for staying in or leaving Sudan may not be financial but instead may be related to the country's socioeconomic and political context, the management of the health sector, and the possibilities of career progression.

v. *Collect data and conduct analysis to plan the health workforce based on future trends.*

**Launch dynamic data platforms for human resources for health.** This could include developing the national Human Resources for Health Information System and creating a data warehouse and an HRH registry linked with the WHO's National Health Workforce Accounts (NHWA). It would be vital to ensure that HRH databases are compatible with payroll data. The HRH Observatory could be tasked with collecting the data, housing these data platforms, and conducting regular analyses to inform policymaking and planning for the health workforce and the health system. This would include establishing a system for the Ministry of Health to regularly obtain information from universities/medical/health training schools on the numbers and types of new graduates expected to complete training each year in the different states so that the MoH could in conjunction with the Civil Service department use information to plan where to deploy personnel.

**Invest in IT systems, data collection and analysis.** It will be essential to collect regular data on population dynamics, the changing disease burden, health service use and financing, and the health workforce. A centrally managed database will be needed to store detailed information on health sector performance and the health workforce by professional category (such as ancillary health care workers, laboratory technicians, pharmacists, and others), as well as data on the unemployed, the duration of their unemployment, and on medical and health graduates. Having more and better data available will facilitate regular monitoring and analysis of the sector to inform future policy decisions.

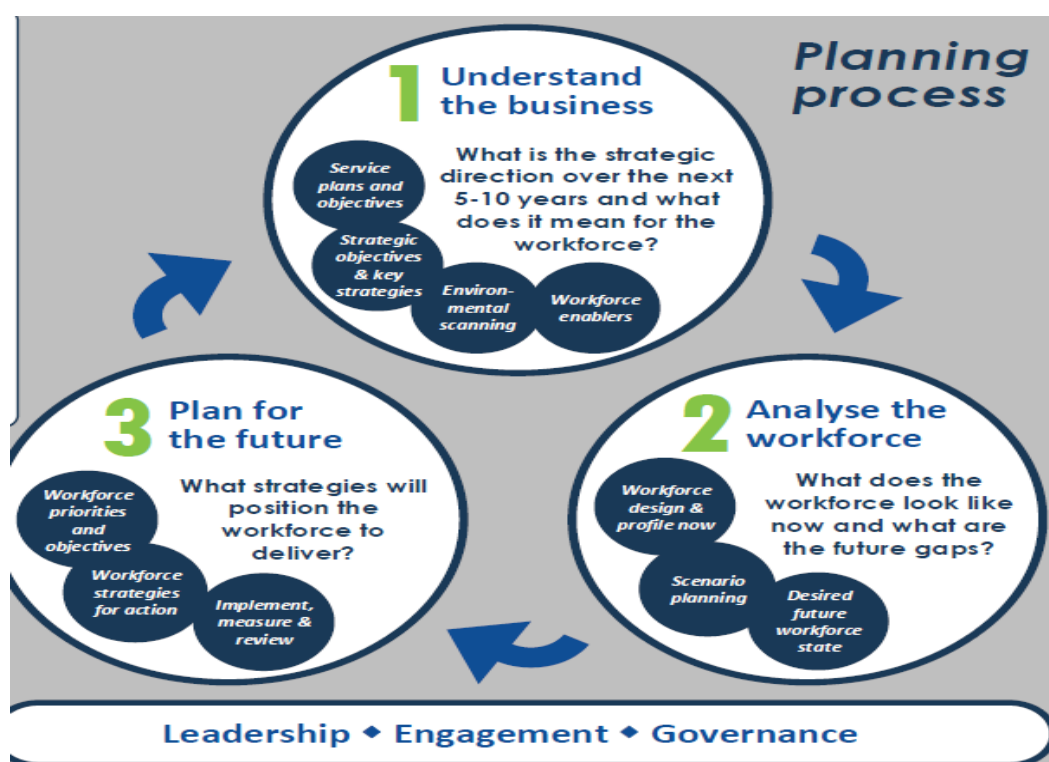
**Plan the future health workforce and use result in the budget process.** The workforce planning methods used in Australia can provide helpful insights (Figure 7). The Queensland government's health workforce planning process involves a five to ten-year planning cycle.<sup>104</sup> The main stages consist of: (i) defining specific planning objectives congruent with the national and provincial health strategies; (ii) carrying out a situational analysis of existing staffing in relation to the structure and capacity of the health services; (iii) projecting future staff requirements by specialty and staff group; (iv) assessing the supply of graduates from health training institutions; and (v) developing an implementation strategy and action plan to achieve the objectives specified in the plan. Horizon scanning methods can be used to visualize

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<sup>104</sup> Queensland Government (2020).

the future of the health sector and to define the objectives.<sup>105</sup> This planning process requires detailed data on future population trends, the number of health graduates and their employment status, the health workforce, the existing structure of health facilities, and the capacity and use of services by type of facility and medical condition. These data can be used to inform budgets for medical and health education.<sup>106</sup> The health workforce planning process should be the basis upon which medium-term budgets for wages are set within the health sector budget.

**Figure 7: The Health Workforce Planning Process in Australia**



Source: Queensland Government (2020).

***In the longer term:***

**Require the Central Bureau of Statistics to collect detailed health workforce data from health facilities and professional councils every quarter.** This could include administrative data and payroll data. The labor force survey could be expanded to collect detailed data on the health workforce. Business tax forms could also be used to capture data from private sector providers.

*vi. Collaborate with the private sector and develop policies to manage migration.*

**Regulate dual practice to ensure it does not result in poor-quality healthcare.** There is a need to analyze dual practice across states. The results of this analysis could then be used to design regulatory

<sup>105</sup> Horizon scanning is a technique for detecting early signs of potentially important developments through a systematic examination of potential threats and opportunities, with an emphasis on new technology and its effects on the issue in question.

<sup>106</sup> AbuAgla et al (2013).

interventions so that dual practice across the public and private sectors can be managed better.<sup>107</sup> Additional private sector regulation should be developed based on an assessment of the sector.

**Establish coordination mechanisms to facilitate circular migration.** The health sector would benefit from Sudanese health workers who have emigrated given the severe shortage of HRH in Sudan and the potential contribution of these well-educated medical migrants to improving care provision. Therefore, it would be useful for the government to set up a body to help them to work in Sudan.<sup>108</sup> The return of highly qualified health professionals to work in Sudan's health system and take up faculty or health research positions would help to improve the quality of care in the health sector.

**Creating a diaspora engagement program could contribute to better health in Sudan.** In Sudan, the Transfer of Knowledge through Expatriate Nationals (TOFKEN) short-term return migration project has helped to increase awareness of HIV/AIDS and has created an e-library at Ahfad University for Women.<sup>109</sup> Such programs could be expanded to harness the knowledge of the diaspora of Sudanese health workers.

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<sup>107</sup> Sousa et al (2014).

<sup>108</sup> Abdalla et al (2016).

<sup>109</sup> Dickerson and Ozden (2018).

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