

5.5 Country case study: Sudan

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Summary

- In Sudan, many challenges are facing the development of an effective pharmaceutical workforce; despite the increase in the number of pharmacists and other pharmaceutical cadres. The development of employment in the pharmaceutical sector (service provision and industry) has not kept pace with the increase in the number of graduates, resulting in growing unemployment. Consequently, the density of pharmacist to population is still low, especially in remote and rural areas;
- Strategies to address these challenges have included expansion of education capacity, increasing employment opportunities and expansion of the private sector;
- More pharmacists are employed in the public sector to improve coverage in rural and remote areas due to the institution of compulsory national service and the provision of post-graduate study opportunities;
- Curriculum in most pharmacy faculties has been revised to encompass a broader pharmacy practice focus, especially clinical pharmacy and pharmaceutical care;
- There has been an increase in the number of pharmacist graduates, improvements in access to medicines and an expansion in the roles of the private sector in the provision of quality and more comprehensive pharmaceutical services.

5.5.1 Background

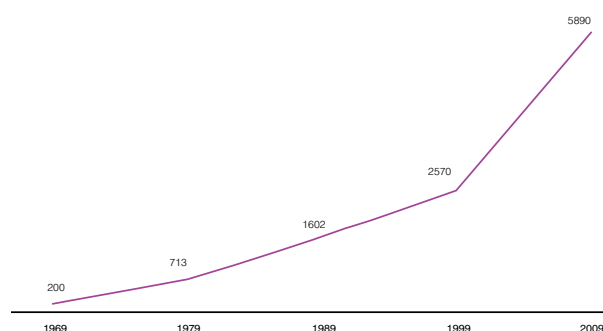
Sudan is the largest country in Africa with an area of 2.5 million square kilometres and a total population of 39.15 million.[1] The total GDP in 2008 for the country was around USD \$89 Billion, while the per capita income was USD \$2,335.[2] Sudan follows a federal system with 25 states, 15 in north and 10 in south.

Pharmacy education at the university level began in 1963 with the establishment of the faculty of pharmacy at the University

of Khartoum to train pharmacists (Bachelor of pharmacy degree). It started with 20 graduates in 1968. Now there are 13 faculties of pharmacy graduating around 900 pharmacists per year [3], leading to the rapid increase in the numbers of pharmacist graduates and postgraduates and subsequent oversupply of pharmacists relation to employment opportunities in the Sudanese labour market.

Pharmacists are regulated by the Sudan Medical Council (SMC) while pharmacy assistants are regulated by the Federal Ministry of Health (FMOH). The SMC is the national body that regulates the practice of pharmacists, doctors and dentists.[4] A total of 5,890 pharmacists were permanently registered with the SMC in 2009.[3] Figure 1 illustrates the growth in number of pharmacists from 1960.

Figure 1. Total number of pharmacists in Sudan 1969-2009



Pharmacy workforce distribution is skewed towards the urban areas in Sudan (Figure 3). The density of pharmacists varies significantly from 0.05 per 10,000 population in West Darfur to 5.5 in Khartoum.[5]

The training of pharmacy assistants started in 1974 and the total number of graduates in Sudan increased to 2,488 in 2007.[5] They work in hospitals and community pharmacies to dispense prescriptions under the supervision of pharmacists. They also work in health centres without the supervision of pharmacists but under the supervision of other health professionals.

A new school that graduates pharmacy technicians was established recently in Ribat University in Khartoum. A three year curriculum was approved by the University itself although this cadre has not yet been defined in any policy or

legislation. There is no clear vision for the role of this cadre in pharmacy practice and no clear demarcation with pharmacy assistants.

Practice Regulations

The SMC is responsible for issuing temporary practice licenses to pharmacist interns and permanent practice licenses for pharmacists working across all pharmacy sectors including the pharmaceutical industry.[4] Those working at universities are not obligated to register to this council. The temporary practice license mandates 15 months of employment in a public health institution upon graduation – one as an internship and the other as compulsory national service. At present, there is no system for revalidation of professional licensure. To maintain licensure, all personnel should adhere to legal and professional rules of conduct.[6]

Distribution of the workforce

In 2007, 26% of the pharmacy workforce worked in the public sector while 74% worked at the private sector.[3] Only 3.4% of pharmacists worked in higher education institutions as academic staff. The same reports showed that 45% of those working in the public sector, worked in hospitals and 25% work in medical supplies (Figure 2). Seventy-five percent of the private pharmacist workforce worked in community pharmacies and 19% in the private pharmaceutical wholesalers (importation and/or distribution of medical supplies).

Figure 2. Distribution of the pharmacist workforce in the public sector

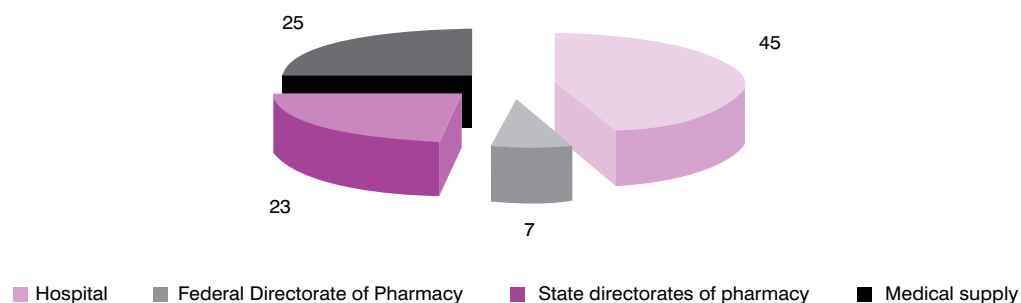
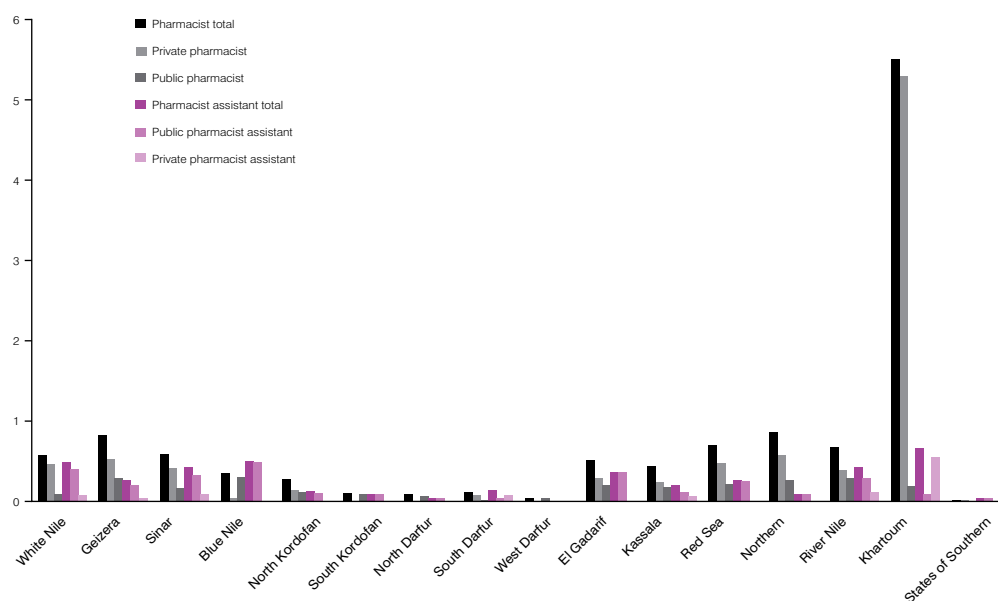


Figure 3 compares the density of pharmacists and pharmacy assistants in each state.[3] It illustrates the concentration of the private sector workforce in urban areas. Sixty percent of the total pharmacy workforce is employed in the private sector in Khartoum state alone, representing 80% of the private sector pharmacist workforce. Public sector pharmacists are more equitably distributed than those in the private sector and several states have few or no pharmacists, such as the States of Southern Sudan. The pharmacy assistant workforce is more equitably distributed.

Figure 3. Density of pharmacists and pharmacy assistants per 10,000 population in Sudan (2009)



Source: State Directorates of Pharmacy, 2009

5.5.2 Key issues

Inadequate workforce planning

Higher education policy makers do not set policies that balance the output of graduates and the actual quantitative workforce needs. Although the number of faculties of pharmacy and pharmacists are both increasing, employment in the different pharmaceutical sectors have not developed proportionally to accommodate the increase in the number of graduates, despite the needs for skilled workforce. The supply system in the south is still under development and depends largely on services provided by Non Governmental Organizations that hardly ever employ pharmacists. The pharmaceutical industry in Sudan is small and offers few employment opportunities to pharmacists.

Additionally, the number of jobs in the public sector is limited and is difficult to increase due to fiscal constraints and resistance by physicians who hold decision-making power in the health system. Most of the available jobs are concentrated in urban areas, however the percentage of deficit in number of public sector pharmacists was estimated by FMOH in 2005 to be around 60 % in rural areas.[7]

It is clear from the recent experience that the number of the unemployed pharmacists is increasing and salaries are decreasing. For example, over the last three years, salaries have decreased by 28% in some private pharmaceutical wholesalers and by more than 30% in many private pharmacies (personal communication with private companies and pharmacies). Salaries in the public sector are not attractive for pharmacists as many prefer to work in the private sector. Human resource information systems are still not well established especially at the state level, which makes workforce monitoring and planning difficult.

Inequitable workforce distribution

The pharmacy workforce is inequitably distributed with a significant concentration of health care and other services (particularly in the private sector), in the major cities in Sudan. This results in a limited

number of pharmacists who are willing to work in rural areas. Most pharmacist graduates are female (55%) and originate from the major urban centres of Sudan.[3] There are some social and cultural barriers which hinder female pharmacists from working in rural areas and difficult places due to family traditions and lack of suitable living conditions.

Education

There is significant variation in the pharmacist degree curriculum from one university to another; while some are following recent models that focus on patient care, others are sticking to the classic pharmaceutical science oriented models. This leads to differences in the knowledge and competencies of graduates that are not appropriately recognized in the recruitment system. Additionally, the lack of regulation that obliges pharmacists to participate in Continuing Professional Development (CPD) programmes limits the maintenance of professional competency. Continuous education programmes are still very limited and no nationwide programme is available.

Lack of development in pharmacist roles

There is inefficient utilization of pharmacists with specialist competencies; for example, many pharmacists are specialized in clinical pharmacy but only two hospitals have started to implement clinical pharmacy services (partly due to resistance from physicians). However, there are two types of higher education: academic and professional. The first type is organized by universities which award masters and PhD degrees, while the other is organized by the Sudan Medical Specialization Board (SMSB) that awards membership and fellowships in pharmacy practice. The SMSB is planning to offer more pharmacy specialization opportunities in areas such as quality control and clinical pharmacy. These subjects are lacking in the undergraduate curriculum of many universities. In addition, the fact that there is no clear governmental vision to recruit specialist pharmacists resulted in state of lack of incentives for pharmacists to obtain post-graduate degrees. Only 160 specialist pharmacists were registered with the Sudan Medical Council by 2008 (excluding academic staff).

Human resource management and motivation

Promotion through the ranks of the public sector is time dependent and there is a lack of practice standards and performance management. Pharmacists are not obliged to

develop themselves professionally. The concept of quality management systems is new to the health system and few institutions have adopted such an approach. In the private sector, newly qualified and experienced pharmacists occupy the same posts and may receive similar salaries which may be a source of demotivation and attrition.

5.5.3 Strategies

In the last 20 years Sudan adopted two public sector reform strategies to improve standards in different fields, particularly health. It was started by the ten year strategy from 1992-2002 and then the 25 year strategy for 2005-29.[8] The following key strategic objectives were set for FMOH general health human resources development:

- Developing effective policy for human resources based on situation analysis and taking into account the surrounding changes and health policies. This should be compiled in plans that ensure balance between need and supply.
- Developing of community-based training, with structured continuing education programmes.
- Redistributing the health workforce to counter imbalances and development of retention policies to combat rural-urban and international migration.
- Setting of appropriate regulations and rules for employment and ethics.
- Reform of curricula to provide graduates with contemporary skills, improve critical thinking and their ability to seek new information.

A number of strategies were set and implemented by different governmental pharmaceutical institutions to improve pharmacy education, pharmaceutical regulation and services. [9.10]

Strengthening public sector pharmaceutical systems

Creation of the decentralized federal system in the country in 1994 led to the delegation of powers to the states and consequently the authorities became nearer to the people. This opened up more administrative and service provision jobs that improved the service at health facilities. Pharmacy directorates were strengthened with the addition of more staff and extra functions were added to their mandate.

The adoption of user fees (cost recovery) in health system occurred in 1991 due to political and economic constraints. The budget collected is used to purchase medical stocks,

improve physical infrastructure of premises and improve health workforce levels. These changes, due to additional resources obtained through user fees, also attracted pharmacists to work in the Central Medical Supplies Public Corporation (CMS) and other health institutions. It made jobs more available for pharmacists and pharmacy assistants.

The number of pharmacist posts at CMS increased from 11 in 1990 to 86 in 2008. In addition, creation of the CMS revolving drug funds (RDF) in the 15 northern states and three southern states resulted in the employment of 172 pharmacists, 436 pharmacy assistants and 98 storekeepers by 2008.[11] In addition, these developments promoted the concept of drug supply management and provided local and international training opportunities for staff in pharmacy practice. It also significantly improved the availability of medicines in the states and optimized the drug supply chain.

Creation of the Federal Board of Pharmacy and Poisons to act as a regulatory authority was a key milestone in pharmacy in Sudan. It employs many pharmacists and engages many pharmacists in decision making. [12]

The introduction of the National Health Insurance System (NHIS) in 1994 contributed to improvements in the availability of medicines in hospitals and health centres. It covers about 30% of the target population.[5] This made public sector employment more desirable to pharmacists. The NHIS has its own supply system which is managed by a number of pharmacists; 122 pharmacists are working in the NHIS (personal communication with NHIS). Additionally, it has a special focus on training for the rational use of medicines and pharmaco-economics.

Private sector growth

The registration of generic medicines was permitted from 1990 due to a change in leadership of the registration committee to pharmacists. Prior to that, registration committees were headed by physicians who restricted registration to branded medicines despite the existence of a generic registration policy. This change stimulated an increase in the number of private companies and many young pharmacists found a way to establish their own businesses. The number of registered pharmaceutical products increased and prices dropped significantly, even from multinational sources. In Khartoum state, the number of private companies increased from 50 in 2002 to 406 in 2008.

Public sector recruitment and retention

The implementation of a public service policy which necessitated recent pharmacist graduates to spend one year in government health institutions led to an increase in the number of pharmacists in the public sector, particularly in rural areas, and consequently improved the number of pharmacists entering the public sector.

Governmental institutions are increasingly open to employing pharmacists although the salaries offered in the public sector are less than the private sector. However the public sector has instituted retention systems to create incentives such as opportunities for post-graduate studies to minimize attrition and disparities between public and private sector employment conditions.

Success factors

Factors that enabled the success of these strategies included:

- The political will to enforce strategies;
- Economic development that sustained an average of 8% growth in GDP over the last 5 years;
- The increase in the role of the private sector in education: seven of the 13 pharmacy faculties training pharmacists are private;
- The increase in the numbers of pharmacists enabled better distribution of the workforce across the public health system. All senior pharmacist posts are now filled in the public sector. Expertise in pharmaceutical departments has improved which has enhanced the management and effectiveness of institutions such as the Central Medical Supplies that is now under the leadership of pharmacists;
- The cost recovery system (user fees) provides more resources to replenish and build medicines stocks, and develop and retain human resources;
- The budget allocated for providing medicines free of charge to patients in casualty departments, undergoing operations and with some chronic diseases was increased from about 8 million (US\$) in 2001 to 75 million (US\$) in 2008. It covers most of emergency medicines, in addition to medicines for treating cancer, haemophilia, end stage renal disease, transplant patients and blood bank services and has enabled greater access to medicines to the public.

5.5.4 Outcomes

- There has been a substantial increase in the number of pharmacists graduating from Sudanese universities. By 2008, graduates from Sudanese universities comprised 80% of the total number of graduated pharmacists;
- Due to implementation of internship and national service, pharmacists gain a better understanding of the public health system and are thus more likely to apply for permanent jobs in the public sector;
- Pharmacists in the public sector are becoming more engaged in policy making, planning and monitoring of pharmaceutical services, leading to improved planning and service delivery (personal communication with the Sudan Medical Council);
- The number of pharmacists working in the regulatory sector increased. Directorates of pharmacy were established in each state;
- The pharmaceutical services in different fields were also expanded and many states with no pharmacists at all are now provided with reasonable numbers.[12.13]
- The private sector expanded as a result of the increase in the number of graduates. This also led to the improvement of the delivery of pharmaceutical services. Table 1 shows the significant increase in number of private pharmaceutical wholesalers and private pharmacies over the last six years (personal communication with directorates of pharmacy at state levels and Pharmaceutical Union).

Table 1. Private pharmaceutical sector expansion 2003 – 2008

| Type of facility | 2003 | 2005 | 2008 |
|------------------------------------|------|------|------|
| Private pharmaceutical wholesalers | 129 | 287 | 406 |
| Community pharmacies | 1274 | 1422 | 2306 |
| Pharmaceutical industries | 12 | 22 | 22 |

- Accessibility to essential medicines in different public health institutions throughout the country improved significantly. Both the 2008 RDF report at CMS and directorate of pharmacy/FMOH report showed that more than 90% of hospitals at states were covered by the RDF services.[13.14] The same FMOH report indicated that availability of essential medicines was 92 % in these health facilities. [13]

5.5.5 Recommendations

The 2005 – 2029 (25 year) strategy for pharmaceutical services development has planned the following actions: [9]

- Curriculum review in all faculties of pharmacy to cope with the new trends in pharmacy practice.
- Development of a Continuing Professional Development programme;
- Establishment of an accreditation system to assess faculties of pharmacy against standards and improve quality assurance;
- Development of coordination between Ministry of Higher Education and Ministry of Health to determine appropriate workforce supply levels that respond to labour market needs;
- Improvement of remuneration of pharmacists and pharmacy assistants in public and private sectors.

Other recommended strategies resulting from discussion with policy makers are:

- Developing a strategic plan to build the pharmaceutical system and improve access to medicines in south Sudan;
- Addressing workforce distribution imbalances to ensure more equitable distribution across states and sectors;
- Establishing re-validation systems for pharmacists to maintain and develop professional competency;
- Investing financial resources to increase the number of pharmacists with postgraduate qualifications in different fields for pharmacy practice especially in administrative and regulatory issues as well as in patient care;
- Increasing the number of qualified staff in universities;
- Developing a code for good pharmacy practice;
- Reaching the adequate number of pharmacists in relation to population at all states as stated in the FMOH strategy (one pharmacist/ 10,000 population);
- Encourage the local pharmaceutical industry to employ pharmacists by giving more concessions for industry such as lowering taxes and fees.

5.5.6 Conclusion

The number of pharmacists has increased by 130% over the last 20 years as result of government policies in expanding higher education capacity. The public sector employs 23% of the workforce.

However, pharmaceutical services are more concentrated in urban areas leading to inequity in the geographical distribution of the pharmacy workforce. Secondly, the public sector posts were not increased concurrently to accommodate the increase in the number of graduates, despite prevailing needs.

Recommendations include the need for the higher education sector to review policies to manage the oversupply of pharmacy graduates as well as curriculum. The FMOH should develop a national CPD programme for the pharmacy profession. Furthermore, the government needs to review the distribution of the workforce to address imbalances.

The information system and statistics are not well established, though this report constitutes a baseline. Therefore considerable effort is needed to improve human resource information systems throughout Sudan.

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