A Prescription for Improvement: A Short Survey to Identify Reasons behind Public Sector Pharmacists' Migration

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Abstract
In Sudan, there is a mismatch between the numbers of pharmacists and where they worked, and the demand for pharmacy services. The public sector, where the majority of the population is served, suffered heavily from the pharmacists' migration to the private sector. In order to stem the "brain drain" of pharmacists, it is, however, necessary to have accurate and evidence-based information regarding the reasons that make the pharmacists emigrate to the private sector.

Introduction

Sudan is geopolitically well located, bridging the Arab world to Africa. Its large size and extension from south to north provides for several agro-ecological zones with a variety of climatic conditions, rainfall, soils and vegetation (Appendix 1). Sudan is one of the most diverse countries in Africa, home to deserts, mountain ranges, swamps and rain forests. The present policy of the national healthcare system in Sudan is based on ensuring the welfare of the Sudanese inhabitants through increasing national production and upgrading the productivity of individuals. A health-development strategy has been formulated in a way that realizes the relevancy of health objectives to the main goals of the national development plans. The strategy of Sudan at the national level aims at developing the Primary Health Care (PHC) services in the rural areas as well as urban areas (GOS 2002). Methods of preventing and controlling health problems follow:

- Promotion of food supply and proper nutrition
- An adequate supply of safe water and basic sanitation
- Maternal and child healthcare
- Immunization against major infectious diseases
- Prevention and control of locally endemic diseases
- Provision of essential drugs

This will be achieved through a health system consisting of three levels (central, state and localities), including the referral system to secondary and tertiary levels.

Poverty and the accompanying ignorance (lacking knowledge, generally without options other than exploiting their local environment) of natural resource degradation present major obstacles to sustainable development. In Sudan, about 75% of the population lives in poor conditions (scarcity of food, water, clothes, health services, education, etc.), while 20% lives in abject poverty. Small holders and pastoral groups have intensified exploitation of the land, contributing to widespread soil erosion (Omer 1994). The economic dividend of a full peace settlement could be great. Sudan has large areas of arable land, as well as gold and cotton. Its oil reserves are ripe for further exploitation.

The health system in Sudan is characterized by heavy reliance on charging users at the point of access (private expenditure on health is 79.1% (WHO 2004)), with less use of prepayment systems such as health insurance. The way the health system is funded, organized, managed and regulated affects health workers' supply, retention and performance. The contested policies of public health sector reform can be construed as attempts to craft the incentive environment to produce improved performance (Hongoro and McPake 2004). The migration of doctors to Gulf states and more recently to the UK leaves easily noticeable gaps in the healthcare system in Sudan. The loss of pharmacists from the public sector mainly to the private sector could be equally detrimental.

The 25-year pharmacy strategy aims to help people maintain their health, manage common ailments, make the best use of prescribed medicines and manage long-term medication needs by providing a service that is easily accessible to all, tailored to individual needs, efficient, co-coordinated with other professionals and of a quality that satisfies customers (MOH 2003). The ability of the pharmacy profession to provide patients with more support in using medicines and to make them more confident in advice they are given depend entirely on the quality and quantity of Pharmacy Human Resources (PHRs) available to do the job. PHRs in the public sector are a critical component in the National Drug Policy (NDP) and the 25-year pharmacy strategy. Implementing the pharmacy strategy and achieving its objectives depend upon people. It requires high-qualified and experienced professionals, including policy-makers, pharmacists, doctors, pharmacy technicians and paramedical staff, economists and researchers. The goals of the 25-year pharmacy strategy will not be achieved without increasing the number and quality of pharmacists working in the public sector. The brain drain will affect the pharmacists' key role in the implementation of NDP and the 25-year pharmacy strategy (MOH 1997). Pharmacists will implement the strategy only if they understand its rationale and objectives, when they are trained to do their jobs well, paid adequate wages and motivated to maintain high standards. Lack of appropriate expertise has been a decisive factor in the failure of some countries to achieve the objectives of national drug policy. In the last decades the number of government hospitals increased from 240 in 1989 to 334 in 2003. Most of these hospitals are without pharmacists. Of 170 hospitals' pharmacists, 80 pharmacists are employed by only 10 hospitals in Khartoum State. The remaining 90 pharmacists are supposed to cover the remaining 324 hospitals. This situation suggests maldistribution of the available pharmacists between different public hospitals and a high need for recruitment of pharmacists to fill the gap.

Although substantial new resources such as oil production, the peace agreement and increased Revolving Drug Funds (RDFs) coverage are promised to the health system, many of the constraints cannot be easily resolved by money alone (Appendix 2). Worldwide there are different systems for providing pharmacy services. However, viewed across a variety of characteristics, the pharmacists' profession is clearly in transition. Where this evolution is leading is not clear. Increased numbers

of drug therapies, an aging but more knowledgeable and demanding population, and deficiencies in other areas of the healthcare system seem to be driving increased demand for the clinical counselling skills of the pharmacists. Given the growing evidence of drug-related complications, however, and the well-documented ability of pharmacists to anticipate and forestall many of these problems, a more likely scenario is that pharmacists will be increasingly valued and demanded for their knowledge, skills and cost-effective contribution to the healthcare system (CPA 2001). The shortage of pharmacists at points of drug dispensing deprives the population of vital expertise in the management of medicine-related problems in both community and hospital settings (Matowe et al. 2004).

The drug distribution network in Sudan consists of open market, drug vendors (known as home drug store), community (private) pharmacies, people's pharmacies, private and public hospitals, doctors' private clinics, NGO clinics, private medicine importers (wholesalers), public wholesalers (i.e., Central Medical Supplies and Khartoum State Revolving Drug Fund) and local pharmaceutical manufacturers. The states' departments of pharmacy statutorily license community and Peoples' pharmacies. A superintending pharmacist, who is permanently registered with Sudan Medical Council and licensed, oversees the pharmacy any time it is opened for business (The Act 2001). With such pharmacies there should not be any serious issues of the sale of fake drugs. Unfortunately, however, there are many pharmacies working without qualified pharmacists (MOH 2003). The prevalence of counterfeit medicines is thought to represent 10% of the global medicines trade (WHO 2006). Seventy percent of the reported cases were from developing countries. Hence, they required well-equipped departments of pharmacy to enforce the legislations and to increase the frequency of pharmacy inspections in order to combat the problem of counterfeit medicines. In Sudan, there are 26 departments of pharmacy at state level. These departments are legally responsible for licensing of pharmacy premises (i.e., pharmacies, wholesalers and manufacturers), and their inspection to safeguard against marketing of low quality medicines. According to the Act, 2001, these tasks should be done by well-trained governmental pharmacists. Currently only 50 pharmacists are working in these departments in only 10 out of 26 states.

During the last decade, the pharmacy workforces have witnessed a significant increase in the number of pharmacies, drug-importing companies and pharmaceutical manufacturers as shown in Table 1. In the public sector, adoption of a cost-sharing policy as a mechanism of financing essential medicines at full price cost requires far more expertise than simply distributing free medicines. This policy increases the demand for pharmacists in hospitals. The new concept of pharmaceutical care and recognition of pharmacists as healthcare team members will boost the demand for the skilled PHRs. The problem is exacerbated by the pharmacists' migration to the private sector. Despite – as in many parts of Africa – the public health sectors spending huge resources training their manpower, inadequate attention is paid to the motivation and retention of these workforces. The net impact of this is a high attrition rate in many countries including emigration and drop-out to private sector (Knippenberg et al. 1997). Thus, the Federal Ministry of Health (MOH) faces two major challenges with the PHRs: first, the current shortage of pharmacists in the public sector and second, the future role of pharmacists within the healthcare system.

As well as involving several of Sudan's neighbours, the civil war has proved costly, with the result many Sudanese have seen a fall in living standards. The political upheaval and economic meltdown in the public sector play an important role in driving pharmacists out. This renders the public sector unattractive compared with elsewhere, and the private sector will continue to suck in qualified pharmacists in increasing numbers, and the public sector will continue to finance it.

There are considerable published works about the brain drain of health professionals (mainly doctors and nurses) from developing countries to the developed ones (e.g., Lerberghe et al. 2002; Hongoro and McPake 2004). But, there are not many empirical studies that examine the same questions about the brain drain of pharmacists from government institutions to the private sector. This is the first study about Pharmacy Human Resources in Sudan in general, and public to private migration, in particular. This research was motivated by the interest of the Federal Ministry of

Health to draw a new action plan to stem pharmacists' brain drain and to attract more pharmacists to the public sector to reduce currently severe shortage of pharmacists in public organisations. The findings of this article will demonstrate factors and explain the reasons behind the brain drain of pharmacists. The data are meant to provide health officials with evidence-based information about the causes of the pharmacists' attrition. Such information is necessary for formulating appropriate policies for the retention of pharmacists in the Sudanese public sector. The study can benefit other developing countries with similar situations especially in sub-Saharan Africa. It will also encourage human resources (planners and policy-makers) to be open to the application of business instruments when dealing with pharmacy manpower within the public sector.

Table 1. Pharmacist labour market

Institutions	1989	2003	Increase in (%)
Faculties of pharmacy	1	7	600%
Registered pharmacists	1,505	2,992	99%
Public sector pharmacists	162	300	85%
Hospital pharmacies	205	334	48%
Community pharmacies	551	779	41%
Drug importing companies	77	175	127%
Drug manufacturers	5	14	180%

Source: MOH 2003

Aims and Objectives

The main purpose of this research is to explore and analyze the reasons for the pharmacist brain drain from public to private sectors in Sudan and to set a recommendation to remedy this situation.

The specific objectives are to answer the following questions:

- Why do pharmacists leave the public sector, and what are the most important reasons that encourage them to join the private sector?
- What are the main reasons that cause public sector pharmacists to quit civil service?
- What factors would encourage pharmacists to remain in the public sector?

Method

The logical target was a small sample that can describe a population group; however, the survey did not attempt to characterize all pharmacists working in Sudan. Thus, the objective of this study is not to generate statistically significant findings, but to explore the reasons for the brain drain of pharmacists from the public to the private sectors; the study was also sized to be feasible in the time and resources available. The information necessary to explore the reasons for the brain drain of pharmacists from the public to private sectors was collected from 54 pharmacists working for in the private sector (32 community pharmacies and 22 from drug importing companies) and 26 working with in the public sector. All the above pharmacies were registered with Sudan Medical Council. These samples were obtained from registered pharmacists. The samples are, nevertheless, thought to be sufficient to validate the conclusion drawn from this research.

Data were collected through the use of two self-completing questionnaires: one addressed to pharmacists working with government institutions (Appendix 3) and the other from those who work with the private sector (Appendix 4). The questionnaires using close-ended questions were phrased

in such a way that a limited range of response was obtained and to get reliable and consistent information. The questionnaires were then pre-coded. The questionnaires were translated back into clear Arabic language, since ambiguously worded questions would lead to responses that do not accurately capture respondents' views or not to respond at all (Boynton et al. 2004).

Each questionnaire was tested in the field to make sure that all relevant issues were covered and that the pre-codes were correct. Four pharmacists working with the private sector (two from community pharmacies and the other two from drug importing companies) were asked to complete the questionnaire and provide feedback to the authors (e.g., "How long did it take them to answer the questions and were there unclear question(s)?). The same scenario was repeated with two public sector pharmacists to test the questionnaire designed to address those working with the government institutions. The pilot survey participants were not in the selected study samples. The responses were positive, though minor changes were made to both questionnaires (mainly in formatting). A category "Others (please specify)" was added after certain questions to accommodate any response were not listed. The questionnaires took the respondents from six to eight minutes to be answered carefully.

The participants from drug importing companies were selected by using systematic sampling methods. The authors agreed to select the first name appearing in the list of the medicine-importing companies' responsible pharmacists after sorting them in ascending order. Thereafter, every eighth pharmacist (the total number of drug companies is 175) on the list was used to complete the sample size of 22. The respondents from community pharmacies were selected from the list of the licensed community pharmacies' responsible pharmacists using the same procedure as in the case of drug importing companies. After the selection of the first name, every twenty-fifth pharmacist (the total number is 779 pharmacies) on the list was selected to complete the sample of 32 participants. The electronic lists were obtained from the General Directorate of Pharmacy, Federal Ministry of Health – Khartoum.

Member of supportive staff within the Directorate of Pharmacy distributed the questionnaire to the pharmacies and drug companies at Khartoum State. After one week, all questionnaires were collected with 100% response rate. Those who work with the Federal and Khartoum State Department of Pharmacies were asked to fill in a questionnaire specially designed for those who work with the government. The questionnaire was distributed to pharmacists using internal mail system (i.e., cirque). Twenty-six responses representing 87% of the study population were received. This study was carried out between September 10–15, 2004. The questionnaire was translated back into English in order to ensure no loss or change in meanings. Data gathered by the questionnaires were electronically analysed using Statistical Package for Social Sciences (SPSS) version 12.0 for Windows.

Results

In this section, the reasons that affect the pharmacists' decisions about where to work will be presented. Appendix 5 gives definitions for some reasons.

Public Sector Pharmacists

The total number of respondents from the public sector was 26 pharmacists, 53.8% of whom were males. The majority (73%) of respondents graduated in or after 1991. Most (69%) of them had studied in Sudan. Surprisingly, 57% of the pharmacists (male) were employed in the private sector at some time in the past before joining the public sector. This is due to the fact some of the current pharmacy managers in Federal and Khartoum State Departments of Pharmacy had private sector experience. The top three reasons that demotivated pharmacists who had experience with the private sector were a feeling of lack of ownership (21.4%), a sense of working for a specific person (21.4%) and job dissatisfaction (14.3%). Most (80.8%) of the respondents who joined the public sector indicated job satisfaction and feelings of ownership (65.4%) as illustrated in Table 2. In answering the question: "Do you have intention to leave the public sector at some time in the future?" 61.5%

of respondents answered "Yes." The vast majority (87.5%) left for better benefits in the private sector compared with the public sector as given in Table 3. Table 4 shows that 69.2% of respondents mentioned monetary issues as one of the reasons they were discouraged from continuing with the public sector.

Table 2. Reasons for choosing public sector (N = 26)

Reasons	Percent
Job satisfaction	80.8
Sense of ownership	65.4
Training program	46.2
Feeling of doing a public job	38.5
Pensions and other benefits	7.7

Table 3. "Why are you intending to leave the public sector?" (N= 16)

Reasons	Percent
High wages and incentives in the private sector	87.5
Private sector offers vehicles	56.3
Private sector gives full treatment when feeling ill	50.0
Job satisfaction in the private sector	6.3

Table 4. Reasons discouraging you from continuing with public sector (N = 26)

Reasons	Percent
Monetary issues	69.2
Lack of recognition of what I have done	57.7
Dim vision	53.8
Sense of instability	53.8
Those who work and those who don't are equal	53.8
Policy-makers don't care about pharmacy	53.8
Lack of job satisfaction	34.6
Political issues	15.4

The respondents recommended continuing pharmacy professionals' development to assure the role of the pharmacist in healthcare, creation of new jobs, increase the salaries of public sector pharmacists and activation of a federal pharmacy and poisons board.

Private Sector Pharmacists

The number of respondents from the private sector was 54; 80% of them were male. The majority (74%) graduated during or after 1991, and 77.8% had studied in Sudan. Thirty-two (59.3%) of the respondents worked with community pharmacies, whereas 22 (40.7%) were drug companies employees. Salaries in the private sector ranged from 500,000 to 2,500,000 Sudanese pounds (LS) or more (1 US$ = LS 2500). Thirty-five (65%) pharmacists had previous public sector experience. In answering the question "Why did you leave the public sector?" 51.4% of respondents had left the public sector because policy-makers did not care about pharmacy (Table 5). The main reasons for choosing the private sector mentioned by respondents are the salaries (61.8%), job satisfaction (52.9%) and the vehicle (26.5%), as shown in Table 6.

A substantial percentage (78.4%) of the respondents answered "yes" to the question "Thinking about your own job, could you leave the private and join the public sector at some time in the future?" Table 7 shows the reasons that would encourage pharmacists who were in the private sector (at the time of the study) to consider joining the public sector. Percentages reported in Tables 2 to 8 showed reasons as ranked by respondents. The percentages, therefore, reflect the importance of specific reasons from the respondents' perspectives. Since this is an exploratory study only, we did not test for statistical significances between differences in responses.

Table 5. "Why did you leave the public sector?" (N = 35)

Reasons	Percent
Policy-makers don't care about pharmacy	51.4
Those who work and those who don't are equal	42.9
Low salaries and incentives	42.9
Lack of recognition of what I had done	31.4
Feeling of instability	28.6
Lack of job satisfaction	28.6
Dim vision	25.7
Political issues	17.1
Others*	28.6

*No training; hospitals are without medicines; and domination of doctors.

Table 6. Reasons for choosing the private sector (N = 34)

No.	Reasons	Percent
1	Salaries are better than public sector	61.8
2	Job satisfaction	52.9
3	Private sector offers vehicles	26.5
4	Full treatment when feeling ill	14.7
5	Others*	23.5

*No jobs available in the public sector and mismanagement; it is easy to find a job to increase the income and flexible working conditions in private sector.

Table 7. "What encourages you to join the public sector?" (N = 43)

Reasons	Percent
Job satisfaction	69.8
No feeling of working for specific person	62.8
Overseas training	62.8
Local training	55.8
Feeling of ownership	48.8
Better salaries	27.9
Others*	18.6

*Public sector reserves rights when ill; job satisfaction; stability and fair competition.

The most significant reasons pharmacists who were in the private sector during the study period feel discouraged from joining the public sector are presented in Table 8.

Table 8. "Why some private-sector pharmacists didn't like to join the public sector?" (N = 31)

Reasons	Percent
Monetary issues	64.5
Dim vision	51.6
Instability feeling	38.7
Lack of job satisfaction	19.4
Political issues	12.9
Others*	1.5

*Government neglects pharmacists; the domination of doctors.

Discussion

Public Sector Pharmacy Workforces

The public health sector reform seems to have undermined pharmacy human resources in the health sector as often as it has made a positive contribution. Without motivated, competent and well-funded pharmacy workforces, there is a danger that the infusion of money for establishing drugs revolving funds in different states to address the national problem of access to essential medicines will be either misused or wasted, or both.

Challenges with respect to pharmacy human resources vary greatly between and within states and are associated with the political commitment of the states' government and their ministers of health. The public sectors' pharmacists in many states are adversely affected by severe under-investment from the states and national funds, as well as external sources. For example, the pharmacy budget from the World Health Organization (WHO) was reduced from US$200,000 in 2003 to only US$93,000 in 2004 (FGDP 2004). Driven by financial limitations, pharmacy workforce planning at federal and states' ministries of health has been unable to match requirements of pharmacists, the needs of the community and the health system as a whole.

It has been quite evident the civil service management system is detrimental to the retention of skilled pharmacists. Like other disciplines, the service affair authority determines the number of pharmacists' jobs in the public sector. It also sets salary scale and other incentive schemes in coordination with the Federal Ministry of Finance and Economic Planning. Although health professionals in hospitals tend to work in shifts and have to face different working conditions, the incentive system is not flexible enough to cope with differences between health professionals and other civil servants. Notably, the gap in the pharmacy workforces don't generally relate to pharmacists, but to pharmacy assistants who constitute the bulk of the workforces. The difficulties caused by low pharmacy staff numbers are compounded by morale problems, skill balances and geographical mal-distribution, most of which are related to poor human resources management (Narasimhan et al. 2004). How can the ministry of health grapple successfully with the demands of pharmaceutical care crises and the requirements of transformed pharmacy profession, if it lacks the very foundation of pharmacy care – motivated, trained and supported pharmacists?

Maldistribution

Around 3,000 pharmacists are registered in Sudan. Only 300 (10%) works with the public sector. Twenty-five, twenty-five and twenty pharmacists were employed in Khartoum, Khartoum North and Omdurman hospitals respectively. Some states (e.g., southern states, which have only two pharmacists) were not included in Table 9. This anomaly seems to imply the number of pharmacists in the public sector has not only been insufficient in absolute terms, but also been inefficient in its distribution. This number will be depleted and the situation may be getting worse. One reason is migration to the private sector.

Working Conditions

In Sudan, like in many developing countries, the essential working conditions are not met. Social or personal development opportunities are limited. Pharmacists have no idea of the future plans of the government. Their involvement in policy-making does not exist. They are feeling very marginalized. Therefore, it is difficult for health professionals in general and pharmacists in particular to remain satisfied. The poor working conditions, remuneration and other factors pushed pharmacists out of the public sector.

Incentives and Remuneration

The question "Why are public sector pharmacists intending to leave?" showed that the issues of salary and remuneration dominated. Of the pharmacists surveyed in the Khartoum area, 87.5% stated high wages and incentives in the private sector; 56.3% of respondents stated vehicle as the reason for intending to leave the public sector. The study revealed that the salaries of the majority (78%) of private sector pharmacists are more than three times the salaries of the public sector pharmacists. On average, the private pharmacists earn LS 2 million compared with around LS 600,000 for the public sector pharmacists. It is not uncommon for public pharmacists to engage in dual practice (such as nightshifts or working full time with a drug company at the same time) or to solicit informal payments (such as registration of a pharmacy or a drug company without even visiting it) to supplement their income. Hence, this causes various further difficulties in accountability and equity of access.

There is some reported evidence for using incentives and enablers to improve performance under specific circumstances. For example, Eichler and colleagues (2001) showed that indicators of achievement used to establish bonus payments improved when a bonus system was introduced in Haiti. The use of financial incentives was also reported positively to change health workers' behaviour in terms of heightened productivity in Cambodia (Van Damme et al. 2001). The findings consolidate strategies implemented by Abdullah Seedahmed at Khartoum State (Federal Ministry of Health; Minister of Health, Khartoum State during 1993–2001) and Elsadig Gasmalla at Red Sea, Northern, Algadarif and Al Gezira States (Minister of Health, Gezira State; Minister of Health

during 1996–2000) in attracting pharmacists to work in the public sector, especially at the Ministry of Health during their time. These strategies comprised, in addition to financial incentives, the full delegation of power to the pharmacy managers, political support and motivation.

Table 9. Pharmacist distribution at state levels

State	Number of pharmacists
Department of Pharmacy (DOP) Khartoum State*	8
DOP-North Darfur	7
DOP-Sennar	2
DOP-North Kordofan	5
DOP-South Kordofan	7
DOP-White Nile	2
DOP-Kassala	7
DOP-River Nile	3
DOP-Northern State	3
DOP-Al Gezira*	6
Total**	50

*The pharmacists who work with Revolving Drug Funds are not included.
**Information about other States is not available (Ten Southern states, two Darfur states, two Eastern states, one Blue Nile state, and one West Kordofan state).

Job Satisfaction

Without professional or personal job satisfaction and the ability to carry out a job as well as possible, the staff can become disillusioned and leave, creating a vacancy (Hughes 2004). In pharmacy, where practice only remotely resembles what students are taught, this makes students frustrated and disgruntled on qualification (Matowe et al. 2004). Thus, it is not surprising that young pharmacists (74%) of the private-sector pharmacists in the study and who graduated during or after 1991 seek better career opportunities in the private sector, where they are offered at least better remuneration. The study revealed 69.8% of the respondents might be encouraged to join the public service, due to job satisfaction, if other obstacles are solved.

Job satisfaction in our research instruments led to confusions; however, whatever interpretation by respondents, the study's results ultimately gives hints about the reasons that could cause movement between public and private sectors. The confusion of job satisfaction emerges from the fact that, in Sudan, pharmacists' roles are not clearly identified. For example, they play roles of storekeepers in medicines supply agencies in both public and private sectors. They also dispense medicines, which assistant pharmacists do. In hospitals, most of the time, pharmacists' tasks are carried out by assistant pharmacists. There is a feeling among users that there are no differences between a graduated pharmacist and other pharmacy staff.

In private companies, the pharmacists work as salesmen or do promotion for certain medicines. The lack of clear job definition renders those who are currently in the public sector intending to join the private sector and vice versa. The private sector pharmacists are reluctant to join the public sector because they are worried about the issues listed in Table 8. The government, in its plans for

attracting more pharmacists to the public sector, needs to address the monetary issues, instability feelings, job satisfactions and political issues.

Training Strategies

A lack of professional development can result in low staff morale (Shepherd 1995). Training strategies that fail to emphasize continued pharmacy professional development, in addition to poor job satisfaction, working conditions and remuneration, affect not only the numbers of pharmacists in the public sector, as shown in Table 8, but also their quality and performance. These dimensions are not captured in the data to enable international comparison, but are widely understood to be at least as important as more quantifiable factors in explaining the performance of the healthcare (Hongoro and McPake 2004).

Although there is an imperative to retain staff, and there is a link between increased retention, personal development plan and appraisal (Gould 2004), the strategy of bonding pharmacists to government after pre-registration training has largely failed because pharmacists easily find ways to quit from the public sector (one-year houseman-ship strategy was adopted in early 1990s). This failure is partly explained in the absence of punitive action and capacity to enforce penalties (if any) and availability of buy-out options (such as attractive drug companies).

Pharmaceuticals Financing Reforms

In developing countries, pharmaceuticals generally account for a more significant share of overall health expenditures than in developed countries (15%). In several African countries, it is believed to exceed 50%. In developing countries 50–90% of the overall pharmaceuticals expenditures are privately financed, which is considerably higher than in developed countries (median is 34%) (Velasquez et al. 1998).

Financing of pharmaceuticals is a crucial issue for several reasons. First, because drugs can save lives and improve health, it is important that drug financing ensures access to essential drugs for all segments of the population. Second, drugs are costly. For most ministries of health, drugs represent the largest expenditure after staff salaries. In some countries, up to 80% of a household's health-related spending is on drugs. In developing countries, drugs commonly represent from 25–50% of total public and private health expenditures (Quick et al. 1997). Third, inadequate funding for drugs means expenditures for staff salaries and other care costs may be used inefficiently or simply wasted. Fourth, the availability and effectiveness of drugs are key factors in generating and maintaining public interest and participation in health-related activities (Show and Griffin 1995).

To be successful, user fee mechanisms must generally be accompanied by perceived quality improvements in services. The World Bank suggests the improvement in the quality of services would compensate the negative impact of prices. This implies that improved supply mechanisms for drugs are both prerequisites and outputs of successful programs. The properly designed cost-recovery programs can encourage higher demand for modern healthcare and, as a result, higher level of utilization (Hotchkiss 1998). If all are true, it is unsurprising the utilization of Sudan health services in the public sector was low during the 1980s and personnel, especially in peripheral health facilities, were idle most of the time. In 1992, Sudan introduced cost-recovery measures as a part of its program of economic reforms, following a course taken by many developing countries. During the 1990s, Sudan initiated a number of initiatives to establish medicine financing mechanisms as part of its health reform process and decentralized decision-making at state level. In 1992, the government abolished the constitutional right of free healthcare. There is interest by the states to introduce a medicine financing mechanism based on the Revolving Drug Fund (RDF) experience of Khartoum State (KS).

Given the fact that less than 50% of the population has regular access to essential medicines (Quick et al. 1997) and the highest availability of essential medicines at affordable prices in Khartoum state, the government decided to replicate the RDF to other states. Since 2001 the Central Medical

Supplies Public Corporation (CMSPC) is involved in the development of RDF in 17 states. The RDF has the highest level of political support as the president of Sudan himself inaugurated it.

Recommendations

The public sector has bureaucratic personnel management and rigid procedures, low incentives, poor job satisfaction and unsupportive work environment compared to the private sector. Such a situation demoralizes pharmacists and encourages them to join the private sector. Many (65%) of surveyed private-sector pharmacists claimed they were public-sector pharmacists who had migrated to the private sector. Although information on migration is sparse, anecdotal evidence persuasively underscores the problem. An internal flow of pharmacists plagues all states, since pharmacists move from poorer states to wealthier ones and from the public sector to the private. Strategies to meet current and future challenges in pharmacy human resources are urgently needed. Approaches that focus on the training of individuals that do not take into account job satisfaction (i.e., the nature of the work itself) and pharmacists' mobility can enjoy only limited success. Increased production alone cannot compensate for weak motivation, high attrition and increasing mobility. To reverse decades of neglect, policy-makers at both state and federal level should begin now, first by recognizing the problem and secondly by fixing it through the immediate implementation of potentially effective strategies. Although we do not advocate the creation of new barriers to the movement of pharmacists between private and public sectors, steps should be taken to redress the unbalanced situation. Ten immediate steps are recommended:

1. Large-scale advocacy is needed to achieve heightened political awareness within states and at the federal level. One potential outcome of large-scale movement would be to introduce the pharmacy care concept, which would reshape pharmacy services around the patients in hospitals and community pharmacies. This concept would benefit healthcare system users and motivate pharmacists to do a good job for their clients and employers. The employers would need to foster an organizational culture that recognizes and values staff contribution. Central to the delivery of effective recognition are employees' immediate bosses, where a participative and considerate management style is shown as a major predictive factor of retention.
2. The Federal Ministry of Health (FMOH) needs to learn from the past experience of Khartoum, Red Sea, Northern and Algadarif States and current Gezira State, then identify success stories. Pharmacists, their organizations and Ministries of Health have not remained passive in confronting the crisis in pharmacy workforces. The goodwill and commitment of public sector pharmacists to provide quality care despite low wages (30% of the average private salary) and supply shortages of medicines in times of appalling conditions should not be overlooked.
3. Pharmacist job satisfaction: Job satisfaction is how people feel about their jobs. Experiencing job dissatisfaction leads to withdrawal and employee turnover. Job dissatisfaction can be caused in many ways, including high centralization, routinization, low integration, low communication and policy knowledge. Pharmacy education has a key role to prepare pharmacy student for practice and must anticipate the changing professional role. New strategies need to be developed with the participation of pharmacy professionals' associations, unions, universities and ministries of health and higher education representatives to meet both the short-term and long-term needs of pharmacists as pharmacy care providers. Technology will, no doubt, give opportunity to join postgraduate studies (e.g., P.G. diploma or master's degree courses) from overseas via e-learning or continuing pharmacy professional development programs.
4. Salaries and incentives structure: This includes the process of creating new jobs, addressing low wages, as well as developing an incentives structure that supports pharmacists over the course of their working lives. In order to stem the flow of pharmacists to the private sector and increase their performance, the Ministry of Health needs to pay incentives to its pharmacy staff on a semi-private basis. Introduction of the employment contract and the application of the incentive budget line opposite performance proved to be effective in the Khartoum State

experience (Mohamed 2000). The obligations of each part (employer and employee) should be written in non-ambiguous language and a transparent reward system should be in place. When transparency of reward system is poor, its credibility will be questioned and pharmacists might not respond to the explicit incentive system at all. IDS (2000) pointed to the lack of training and potential career development as particularly important contributors to voluntary resignations. Uncompetitive pay is often debated as a reason for employee turnover (IDS 2000). The perception of receiving a fair salary is a determinant of retention. The perception that employees are receiving a fair salary seems to be important both at the recruitment stage and subsequently as a determinant of retention rates. It is important to note this doesn't necessarily equate to a large salary, since people often compare themselves with peers in the same occupations or with friends and family rather than with better paid or higher skilled workers. Also, when promises are broken and expectations are perceived to have been unmet, employees take actions to withdraw from the organization, which may include actually quitting jobs.

5. Pharmacy staff motivation: In addition to financial incentives, Ministry of Health should continue to invest in improving the working conditions to ensure that suitable qualified and skilled pharmacists are retained for longer periods. Recruitment of qualified pharmacists (which may include looking outside the public services), a clear definition of job assignments (staff at hospitals' level enter into written contracts to perform according to MOH guidelines) and regular supervision will assist MOH to achieve a good staff performance. MOH should provide transport to pharmacists (senior and specialized pharmacists could be offered private vehicles) from their residence to the place of work to increase their motivation. Company-paid private medical insurance and a company car for senior staff, child daycare facilities, pension and retirement plans are the most desired and lead to employee retention.
6. Redistribution of pharmacy workforces: To address the problems of the pharmacy profession in Sudan, an increase in access to essential medicines, although positive, is insufficient. Far more important is the need to strengthen the pharmacy workforce in localities, states and federal health institutions to address the challenges and to use the resources and interventions for provision of effective pharmaceutical services.
7. Small staff and efficient teamwork: The advantages of small staff can be easily managed, trained and financed, and teamwork could be developed. This also improves the performance and productivity of the public sector pharmacists and thereby reduces the number of PHRs needed to provide satisfactory pharmaceutical services in the public sector institutions. The best indicators of staff retention are the fostering of friendships at work, and managers in healthcare should take time to get to know people and foster opportunities for friendship and socializing.

   The pharmacy workforces are divided into two levels: (1) Department of Pharmacies at Ministry of Health and (2) hospitals. The Department of Pharmacy at state level should consist of six pharmacists at maximum and 25 at the federal Department of Pharmacy including drug analysis laboratory. The hospitals' department of pharmacies should be classified as follows:

   (i) Group A includes big hospitals (e.g., Khartoum and Omdurman hospitals). Group A hospitals have 13 pharmacists in addition to pharmacy assistants and other supportive staff to cover all shifts: one manager, three pharmacists work in the Drug Information Centre, three for internal hospital pharmacy, two in outpatient pharmacy, three in people pharmacy and one clinical pharmacist.
   (ii) Group B includes medium hospitals and capital cities hospitals (e.g., Ibrahim Malik and Medani Hospitals). The Hospital Pharmacy Department (HPD) in this group could be managed by four to six pharmacists.
   (iii) Group C includes small and rural hospitals. Two pharmacists could run the HPD in these hospitals. Paying attention to create more a flexible and efficient system for PHRs management in the government institutions might help improve the condition of shortages of pharmacists in the public sector.

8. National leadership at the highest level is essential and will only come with heightened awareness of the fundamental importance of pharmacists in healthcare in general and in the pharmaceutical care in particular, and in the development of new methods and strategies for provision of pharmaceutical services in public sector as well as in the private sector.
9. Continuing pharmacy professional development: The most important element of National Drug Policy (NDP) and the 25-year pharmacy strategy – the people that make them work – has yet to be tackled. MOH should fully recognize its 25-year pharmacy strategy goals could be achieved through people's (especially pharmacists) expertise. Appropriate training and development is the key to reaching those goals and making strategy visions become a reality. A wide variety of external (e.g., distance or e-learning in the developed world) and internal training and development programs for pharmacists should be introduced. A pharmacist's career or pathway should be developed. A policy for active selection of training fields should be formulated according to the priorities of healthcare needs. Career development relies on individual training and development to enable employees to move into more challenging roles and can provide enhanced rewards for those who are promoted.
10. Pharmacy staff discipline and accountability system: Disciplinary procedures, which provide a range of possible responses (from warnings through dismissal, depending on the severity and frequency of the offence) should be clearly stated in the new work contracts. Pharmacy managers and team leaders in different settings (administration or care providing, at both state and federal levels) should be trained to invoke disciplinary procedures and to bring criminal charges when necessary.

Further Research

The current analysis does not support the above-mentioned substantive recommendations, which are also drawn from the authors' own experience and situations in other developing neighbour countries. However, further research is needed to find out if such recommendations might be effective. Research is also needed to provide in-depth understanding of main factors that lead to migration of pharmacists to the private sector. The key elements of pharmacists' motivation should be further studied to test if there is any statistically significant difference between impacts of different elements of motivation on pharmacists (i.e., public and private pharmacists). Such analysis will help in prioritizing resources by addressing the main issues, which lead to pharmacists' demotivation. The future research will stratify pharmacists in both public and private sectors into different groups according to their previous experiences. It will, therefore, include those who are currently in the public sector but have no previous private sector experience, and those who are currently in the public sector but have worked in the private sector some time in the past. The same scenarios will be applied to the private pharmacists. Finally, research should be carried out to understand the scope, magnitude, directions of the migratory flows, within and outside the country, as well as the characteristics and skills of the emigrated pharmacists.

Conclusions

Improving effectiveness of the public pharmaceutical services could be achieved by switching resources towards areas of need, reducing inequalities and promoting better health. Unless there are clear incentives for pharmacists, they will move away from public sector. Finding innovative approaches to stop brain drain of the pharmacists from the public sector and to increase their productivity and performance might be more appropriate strategies to solve the problem in Sudan. These strategies comprise, for instance, monitoring incentives, continuing professional development and improving working condition and job satisfaction of civil service PHRs. The study may help the Ministry of Health to better look at the real issues of PHRs in the public sector and to formulate more relevant and useful policies and plans to retain qualified and skilled pharmacists in the public sector on a solid evidence base. The study revealed low salaries, job dissatisfaction in relation to the pharmacy practice and bureaucracy, working conditions, lack of recognition for contribution at

work and lack of professional development training programs as the main factors influencing the brain drain of the PHRs. These factors affect PHRs' immigration and retention concurrently rather than in isolation. Given the time constraints required to get the new contracting arrangements in place, there is a risk that good practice developments in options for change for change field sites may not be used effectively (continue to evaluate and disseminate the lessons that emerge from these sites).

Ethical Clearance and Data Protection Consent

The ethical clearance has been obtained from the Federal Ministry of Health Research Ethics Committee. The respondents were informed that all the data would be used for academic research purposes only and that data processing would not be used to support decision-making about them and would not cause any damage or distress to the participants.

Research Limitations

This short survey of pharmacists working within both the public and private sectors in Sudan was meant to explore the factors that discourage or shorten pharmacists' stays in the public sector and their reasons for transferring to the private sector. The design of the research itself may be considered inadequate with regard to size and selection process. However, the researchers believe it provides enough information about why pharmacists leave the public sector.

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Appendix 1. Facts about Sudan

Full country name	Republic of the Sudan
Total area	One million square miles (2.5×10^6 square kilometres). Land 2.376×10^6 square kilometres
Population	34.3×10^6 inhabitants (UN 2004)
Capital city	Khartoum (population 5 million)
Language	Arabic (official), English, Nubian, Ta Bedawie, diverse dialects of Nilotic, Nilo – Hamitic, Sudanic languages
Religions	Sunni Muslim 70% (in north), indigenous beliefs 25%, Christian 5% (mostly in south and Khartoum)
GDP per head	US $460 (World Bank 2003)
Annual growth	4% (1997 est.)
Inflation	23% (1998 est.)
Monetary unit	1 Dinar = 10 Sudanese pounds (1 US $ = 250 Dinar)
Ethnic groups	Black 52%, Arab 39%, Beja 6%, Foreigners 2%, others 1%
Life expectancy	54 years (men), 57 years (women) (UN)
Main exports	Oil, cotton, sesame, livestock and hides, gum Arabic
Agricultures	Agriculture is the backbone of economic and social development. 62% of the populations are employed in agriculture. Agriculture contributes 33% of the gross national products (GNP) and 95% of all earnings.
Animal wealth	35×10^6 head of cattle 35×10^6 head of sheep 35×10^6 head of goats 3×10^6 head of camels 0.6×10^6 head of horses and donkeys Fish wealth 0.2×10^6 tonnes of food annually Wildlife, birds and reptiles
Population access to safe water (%) **Population access to adequate sanitation (%)** **Population access to health services (%)**	73% (UNICEF 1999) 51% (UNICEF 1999) 51% (UNICEF 1999)
Under five mortality rate	115 (per 1000 live births) (UNICEF 1999)
Environment	Inadequate supplies of potable water, wildlife populations threatened by excessive hunting, soil erosion, and desertification.
International agreements	Party to: biodiversity, climate change, desertification, endangered species, law of the sea, nuclear test ban, ozone layer protection.

Appendix 2. Summary of inherited problems for health services in Sudan

Health services	Personnel
• Absence of referral systems • Lack of means of patient transport and ambulances • Lack of work standards • Service is not based on the concept of client satisfaction • Weak infrastructure and distribution • Lack of clear vision, mission and plans • Many health facilities are not constructed according to the recommended standards for its location, buildings, etc. • Low quality of tertiary services leading to patients seeking treatment abroad	• Imbalance in training of different healthcare especially technical and nursing • Shortage in certain specializations such as surgery, pathology, general practitioners and family physician • High attrition rate • Lack of continuing education programmes • Poor distribution of health manpower • The standard of auxiliary workers does not meet the required level • Low personnel morale, satisfaction, ownership feelings, motivation, respect to work values and attitude towards patients and colleagues • Poor culture of evidence-based practice • Absence of clear guidelines for medical practice and service protocols

Appendix 3. Public sector pharmacists brain drain questionnaire

Public Sector Pharmacists' Questionnaire

Date _____ Department _____
Serial No _____

Please mark the best answer with an X

1. Are you: ☐ Male ☐ Female

2. When did you graduate?

During or before 1965		1
During 1966–1970		2
During 1971–1975		3
During 1976–1980		4
During 1981–1985		5
During 1986–1990		6
During 1991–1995		7
During 1996–2000		8
After 2000		9

3. Country of graduation _____

4. Did you experience any private job at some time in the past before joining the public sector?

☐ Yes (Go to question 5) ☐ No (Go to question 6)

5. Why did you decide to leave the private sector?
Please rate each of the following reasons BY CIRCLING ONE NUMBER ON EACH LINE.
1= most important, 5 = least important

Job dissatisfaction	1	2	3	4	5
Feeling of working for specific person	1	2	3	4	5
Low salaries and incentives	1	2	3	4	5
Lack of ownership	1	2	3	4	5

Others (Please specify) _____

_____

6. Why did you choose the public sector?
Please rate each of the following reasons BY CIRCLING ONE NUMBER ON EACH LINE.
1= most important, 5 = least important

Job satisfaction	1	2	3	4	5
Feeling of doing a public job	1	2	3	4	5
Salaries are better than the private	1	2	3	4	5
Feeling of ownership	1	2	3	4	5
Locally short and long training courses	1	2	3	4	5
Short and long training abroad	1	2	3	4	5

Others (Please specify) _____

_____

7. What are the reasons that encourage you to work with public sector?
Please rate each of the following reasons BY CIRCLING ONE NUMBER ON EACH LINE.
1= most important, 5 = least important

Job satisfaction	1	2	3	4	5
Feeling of doing a public job	1	2	3	4	5
Salaries are better than the private	1	2	3	4	5
Feeling of ownership	1	2	3	4	5
Pensions and other benefits	1	2	3	4	5
Short and long training abroad	1	2	3	4	5

Others (Please specify) _____

_____

8. Do you have intention to leave the public sector at some time in the future?

☐ Yes (Go to questions 9, 10, 11) ☐ No (Go to question 11)

9. Why are you intending to leave the public sector?
Please rate each of the following reasons BY CIRCLING ONE NUMBER ON EACH LINE.
1= most important, 5 = least important

Job satisfaction in the private sector	1	2	3	4	5
Private salaries are better than the public	1	2	3	4	5
Private sector offers me vehicle	1	2	3	4	5
The private gives me full treatment when feeling ill	1	2	3	4	5

Others (Please specify) _____

_____

10. What are the reasons that discourage you to continue with public sector?
Please rate each of the following reasons BY CIRCLING ONE NUMBER ON EACH LINE.
1= most important, 5 = least important

Lack of recognition of what I have done	1	2	3	4	5
Monetary issues	1	2	3	4	5
Dim vision	1	2	3	4	5
Sense of instability	1	2	3	4	5
Lack of job satisfaction	1	2	3	4	5
Those who work and those who don't are equal	1	2	3	4	5
Policy-makers don't care about pharmacy	1	2	3	4	5
Political issues	1	2	3	4	5

Others (Please specify) _____

_____

11. If you have any other comments concerning the retention of public sector pharmacy human resources, please do not hesitate to report them.

_____

_____

_____

We would like to thank you very much for your participation in our research. If you do not mind, we might need your telephone number to contact you for further clarification.

Telephone Number: _____

Appendix 4. Public Sector Pharmacists Brain Drain Questionnaire

Private Sector Pharmacists' Questionnaire
Date _____ Serial No _____

Please mark the best answer with an X
1. Are you: ☐ Male ☐ Female

2. When did you graduate?

During or before 1965		1
During 1966–1970		2
During 1971–1975		3
During 1976–1980		4
During 1981–1985		5
During 1986–1990		6
During 1991–1995		7
During 1996–2000		8
After 2000		9

3. Country of graduation _____

4. What is your current employer within the private sector?

Medical representative in a drug company		1
Drug information pharmacist in a drug company		2
Community pharmacy pharmacists		3
Non-Governmental organization		4

Others (please specify) _____

_____

5. What is your approximate monthly salary *(IN SUDANESE POUNDS)*?

Less than 500,000		1
500,000–999,999		2
1,000,000–1,499,999		3
1,500,000–1,999,999		4
2,000,000–2,499,999		5
2,500,000–2,999,999		6
3,000,000 or more		7

6. Did you work with public sector at some time in the past before joining the private sector?

☐ Yes (Go to questions 7) ☐ No (Go to question 8)

7. Why did you decide to leave the public sector?
Please rate each of the following reasons BY CIRCLING ONE NUMBER ON EACH LINE.
1= most important, 5 = least important

Lack of recognition of what I had done	1	2	3	4	5
Low salaries and incentives	1	2	3	4	5
Dim vision	1	2	3	4	5
Feeling of instability	1	2	3	4	5
Lack of job satisfaction	1	2	3	4	5
Those who work harder and those who don't are equal	1	2	3	4	5
Policy-makers don't care about pharmacy	1	2	3	4	5
Political issues	1	2	3	4	5

Others (Please specify) _____

_____

8. Why did you choose the private sector?
Please rate each of the following reasons BY CIRCLING ONE NUMBER ON EACH LINE.
1= most important, 5 = least important

Job satisfaction in the private sector	1	2	3	4	5
Private salaries are better than the public	1	2	3	4	5
Private sector offers me vehicle	1	2	3	4	5
The private gives me full treatment when feeling ill	1	2	3	4	5

Others (Please specify) _____

_____

9. Do you have any intention to leave the private sector at some time in the future?

☐ Yes (Go to questions 10) ☐ No (Go to question 11)

10. What are the reasons that encourage you to join the public sector?
Please rate each of the following reasons BY CIRCLING ONE NUMBER ON EACH LINE.
1= most important, 5 = least important

Job satisfaction in the public sector	1	2	3	4	5
No feeling of working for specific person	1	2	3	4	5
Better salaries	1	2	3	4	5
Feeling of ownership	1	2	3	4	5
Overseas training	1	2	3	4	5
Local training	1	2	3	4	5

Others (Please specify) _____

_____

11. What are the most important reasons that discourage you from joining the public sector at some time in the future?
Please rate each of the following reasons BY CIRCLING ONE NUMBER ON EACH LINE.
1= most important, 5 = least important

Monetary issues	1	2	3	4	5
Dim vision	1	2	3	4	5
Sense of instability	1	2	3	4	5
Lack of job satisfaction	1	2	3	4	5
Political issues	1	2	3	4	5

Others (Please specify) _____

_____

12. If you can move to the public sector, which of the following areas you are interested in?
Please rate each of the following reasons BY CIRCLING ONE NUMBER ON EACH LINE.
1= most important, 5 = least important

Hospitals	1	2	3	4	5
Inspection department	1	2	3	4	5
Drug supply department	1	2	3	4	5
Drug information centre	1	2	3	4	5

Others (Please specify) _____

_____

13. If you have any other comments concerning the retention of public sector pharmacy human resources, please do not hesitate to report them.

_____

_____

_____

We would like to thank you very much for your participation in our research. If you do not mind, we might need your telephone number to contact you for further clarification.

Telephone Number: _____

Appendix 5. Definition of some reasons mentioned in Tables 2 to 8

Job satisfaction can be influenced by a variety of factors, for instance, the quality of ones' relationship with one's supervisor, the quality of the physical environment in which they work, degree of fulfilment in their work, and so on. The instruments of this research asked respondents to choose what factors that dissatisfied them, to find out what are the most important factors that are causing pharmacists to move to the private sector. Below, we provide definitions for some of the reasons chosen by the respondents and presented in Tables 2 to 8 in this study including the term "job satisfaction" in this context.

Reason	Definition
Job satisfaction	Job satisfaction is in regard to pharmacists' feelings or state-of-mind regarding the nature and characteristics of tasks to be done (i.e. self-perception of quality of work). Role of pharmacists in Sudan, like in many developing countries, are of managerial and dispensatory nature. For example, in departments of pharmacy, the main roles of pharmacists include issuing of licences to and inspection of pharmacy premises.
Sense of ownership	Work experience where employees can gain valuable skill sets in a closer knit environment and feel a real sense of ownership in the company's success.
Dim vision	Visions and objectives in the place of work do not exist or are not so clear.
Sense of instability	Pharmacists feel unstable and lose motivation for a number of reasons, for instance, if they do not show commitment and loyalty to the ruling parties in developing countries.
Those who work and those who don't are equal	The motivated pharmacists who devoted considerable time to their work and those who make great contributions to their organizations are not rewarded and promoted for their performance (i.e., lack of pay for performance system in the public sector).
Policy-makers don't care about pharmacy	Pharmacy services is considered by many policy-makers in public sector as a supportive service and is not considered as a major profession in health-care system. As a result, the main focus is on medical doctors.
Political issues	Promotion depends not on the objective criteria, but on the personal choices of administrators who are most likely influenced by their political ideologies.
Lack of recognition of what I had done	Senior staff at public sector do not recognize motivated pharmacists who have done good jobs in their organizations, and do not promote their upward mobility. They also don't show a sense of commitment to what has been achieved.
Feeling of working for specific person	Unlike public sector, where employees have sense of doing a public work, in private pharmacy business (which is more or less owned by individuals and families) pharmacists suffer from the lack of obtaining full authority and responsibility.