Clinical pharmacy in the Sudan: Current state and future challenges
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Abstract
Background: Pharmacy is the health profession that has the responsibility for ensuring the safe, effective and rational use of medicines. In recent years there has been a significant advancement in the pharmacy profession, driven by the World Health Organization declarations regarding the new role of pharmacists and the pursuit of pharmacists themselves of the goals of medicine management and pharmaceutical care.

Objectives: To provide an overview of the current status of clinical pharmacy in the Sudan and explore future challenges regarding pharmaceutical care practice.

Methods: Four levels were identified and evaluated; undergraduate education, postgraduate training, the practice, future challenges and the role of leadership. Formal and informal discussions with concerned parties and a series of formal meetings were held regarding pharmacy education and practice. The current undergraduate curricula as well as postgraduate and in-service training were assessed. A number of documents that addressed pharmacy education and practice in selected countries were reviewed.

Results: In Sudan the admission to the college of pharmacy follows eleven years of school education compared to 12 – 13 years in other countries. Unlike many countries which shifted to either Mpharm or PharmD six years degrees, the 5 years bachelor of pharmacy degree remains the first pharmacy degree in all pharmacy schools in Sudan. The pharmacy curriculum is centred on compounding, dispensing and laboratory sessions which are the traditional roles of the pharmacists. No clinically centred teaching is included in the curricula. Over the past 2 decades, the pharmacy graduates number has increased approximately 305% with a dramatic increase from 3 schools of pharmacy in 1994 to 16 in 2012. Nevertheless, severe shortage in pharmacy workforce, especially qualified academics, is identified. The majority of pharmacy graduates enter the community sector, followed by hospitals, industry and academia. There is 1 pharmacist for every 7468 individuals and 1 community pharmacy for every 17551 inhabitants. The total number of hospitals in Sudan is 357 with mostly 1-2 pharmacies and 1-5 pharmacists in each hospital. At academic level, the staff: student ratio at the faculty of pharmacy, University of Khartoum (U of K) is 1: 50. This ratio reaches 1:150 in some schools of pharmacy in Sudan. Academia finds it difficult to attract suitably qualified applicant. Despite the difficulties that face academics and practitioners alike, there is strong desire to modernize the teaching and practice of pharmacy in Sudan. A master degree in clinical pharmacy was established as well as clinical training at Soba University Hospital. Overall the level of clinical pharmacy services provided is low, at both public and private sectors. Many obstacles and barriers were identified.

Conclusion: The move to and sustainability of patient-focused teaching and practice involves many dimensions and collaboration of different parties. Partnership links are important within the departments of the university and with other universities, in Sudan and abroad, as well as research centres, national and international organizations, to support and share experiences. A sound and supportive role of leadership is essential for this evolution.

Introduction
The move in the philosophy of pharmacy practice to pharmaceutical care practice (PCP) is paralleled by developments in pharmacy education and training. Therefore, the teaching, training and practice of pharmacy have changed globally to focus on the patient rather than the drug product.

Clinical Pharmacy is the use of the pharmacist’s skills
and knowledge of drugs and therapeutics to improve patient care (pharmaceutical care). It is often defined as “The responsible provision of drug therapy for the purposes of achieving definite outcomes that improve a patient’s quality of life.” Translated into everyday practice, pharmaceutical care is what an individual pharmacist does when he or she evaluates a patient drug-related needs, determines whether the patient has one or more actual or potential drug-related problems, and then works with the patient and other professionals to design, implement, and monitor a pharmacotherapeutic plan that will resolve the drug related problem.

Pharmaceutical care in many countries is stimulated by universities, research centres, and professional bodies of pharmacists, individual pharmacists or pharmaceutical companies. The challenge is to develop it in response to national health priorities and society’s needs.

Review of the current state of clinical pharmacy education and practice, assessment and analysis of the suitability of existing standards and competences regarding knowledge, skills and attitudes of clinical pharmacists and the capacity of the University of Khartoum (U of K) to foster such initiative are important so that what appositely serves this society can be defined and adopted. This article provides an overview of the current state of clinical pharmacy in Sudan and describes the experience of the Faculty of Pharmacy, U of K, in development of clinical pharmacy teaching and practice during the last eighteen years (1994 – 2012).

**Methods**

Formal and informal discussions with relevant parties were held to evaluate their awareness and acceptance of the idea of transition to clinical pharmacy and ensure that all their thoughts and concerns are identified and taken into account in the process of development of pharmacy education and practice. This involved communications with university executives, pharmacy educators and students, individual pharmacists, managing directors and experts at teaching hospitals, the General Directorate of Pharmacy (GDP), Ministries of Health (MOH), and Higher Education (MHE) and the World Health Organization (WHO).

A number of documents that addressed pharmacy education and practice in selected countries were reviewed. Other documents that focused on improvement and organization of clinical pharmacy standards at both educational and practice levels were also revised. These included documents on clinical pharmacists’ competencies by the American College of Clinical Pharmacy (ACCP), accreditation standards and guidelines of PharmD programme by the American Association of Colleges of Pharmacy (AACP) and Centre for the Advancement of Pharmaceutical Education (CAPE), pharmacy educational outcomes by the Accreditation Council for Pharmacy Education (ACPE), accreditation standards for postgraduate pharmacy residency programme by the American Society of Health-System Pharmacists (ASHP), the MPharm programmes by the Royal Pharmaceutical Society of Great Britain (RPSGB), and the World Health Organization/United Nations Educational Scientific and Cultural Organization/International Pharmaceutical Federation (WHO/UNESCO/FIP) pharmacy education task force.

Pharmacy curricula in Sudan were assessed for knowledge gained from courses currently taught at undergraduate level and possible attempts to develop them to meet the current and future professional demands. The state of clinical training at both undergraduate and postgraduate levels was investigated. At practice level, MOH annual reports were assessed for information regarding pharmacy workforce, pharmaceutical needs and priorities. Barriers for implementation of clinical pharmacy practice in Sudan were explored and the role of leadership in alleviating these barriers was highlighted.

**Results and Discussion**

**Pharmacy Teaching at Undergraduate Level**

**Current Pharmacy Curriculum (U of K):** The curriculum follows the full academic year system. The total number of hours for the Bachelor of pharmacy degree (BPharm) is 3960 hours (4 years, excluding the preliminary year) and consists of 1680 hours of theory (42.4%) and 2280 hours of practical experiments (57.6%). Subjects’ distribution throughout the 4 years is shown in figure 1. Additionally, student have
200 hours of training at a community or a hospital pharmacy after second and third years, and 200 hours of pharmaceutical industry training at the end of fourth year. Although some clinical aspects are taught sporadically, the teaching and practical training are merely product-focused. The curriculum focuses on teaching the traditional pharmacy subjects that enable the pharmacist to practice dispensing and perform laboratory experiments. The teaching methods are confined to large group lectures using the white board and multimedia projection and small group practical sessions. Traditional written, practical and oral examinations, as well as some assignments are used to evaluate students’ learning. Currently there are 16 schools of pharmacy in Sudan (4 public and 12 private). It is worth mentioning that the curricula, methods of teaching, evaluation and degree offered are more or less the same at all schools.

Review of documents about pharmacy education showed wide variations not only between countries but also within the same country. Table 1 provides a summary of pharmacy education in Sudan compared to some selected countries. In Sudan the admission to the college of pharmacy follows eleven years of school education compared to 12 – 13 years in other countries. Unlike many countries which shifted to either Mpharm or PharmD six years degrees, the first pharmacy degree in Sudan is the Bpharm which is completed in 5 years. The FIP has established a formal collaborative partnership with the UNESCO and the WHO and launched a Global Pharmacy Action Plan (2008 – 2010). Accordingly four domains of action have been identified which are, vision, competency, quality assurance and academic and institution capacity. The plan emphasized that pharmacy education should be geared towards preparing a workforce that is competent and meets the local needs.23
### Table 1. Pharmacy Education in Selected Countries

<table>
<thead>
<tr>
<th>Country</th>
<th>No. of Schools</th>
<th>Admission/ year</th>
<th>Admission Criteria</th>
<th>(FPD) &amp; other academic programmes</th>
<th>Programme Length (years)</th>
<th>Accreditation Body</th>
<th>Ref</th>
</tr>
</thead>
<tbody>
<tr>
<td>USA</td>
<td>116</td>
<td>10,000</td>
<td>2 years Pre-Pharmacy College + PCAT</td>
<td>PharmD</td>
<td>6</td>
<td>ACPE</td>
<td>3, 4</td>
</tr>
<tr>
<td>United Kingdom</td>
<td>22</td>
<td>3300</td>
<td>A-Level (2 years)</td>
<td>MPhil/PhD</td>
<td>4</td>
<td>RPSGB</td>
<td>5, 6</td>
</tr>
<tr>
<td>Canada</td>
<td>10</td>
<td>1400</td>
<td>5 years of postsecondary education</td>
<td>MSc, PhD</td>
<td>5 – 6</td>
<td>CCAPP</td>
<td>7, 8</td>
</tr>
<tr>
<td>Australia</td>
<td>21</td>
<td>≤ 250/ school</td>
<td>Year 12-secondary school</td>
<td>(BPharm + MPharm)</td>
<td>4</td>
<td>NAPSAC</td>
<td>9, 10</td>
</tr>
<tr>
<td>France</td>
<td>24</td>
<td>3090</td>
<td>Baccalaureate exam</td>
<td>(PharmD/DES)</td>
<td>6 - 9</td>
<td>AERES</td>
<td>11</td>
</tr>
<tr>
<td>China</td>
<td>257</td>
<td>42,000</td>
<td>High school standardized college entrance examination</td>
<td>PhD (BS + BM + MM)</td>
<td>4 – 5</td>
<td>Ministry of Education</td>
<td>12, 13</td>
</tr>
</tbody>
</table>

FPD = First Pharmacy Degree  
PCAT = Pharmacy College Admission Test  
MPH = Master of Public Health  
MSCR = Master of Science in clinical research  
ACPE = American Council on Pharmaceutical Education  
RPSGB = Royal Pharmaceutical Society of Great Britain  
CCAPP = Canada Council for Accreditation of Pharmacy Programmes  
DCP = Doctor of clinical pharmacy  
NAPSAC = New Zealand and Australian Pharmacy Schools Accreditation Committee  

**Pharmacy Curriculum Upgrading (U of K):** A workshop on development of pharmacy curriculum was accomplished in collaboration with the WHO in 1994 and clinical pharmacy teaching was suggested then. Due to certain constraints the curriculum was not processed to the final steps of implementation. Nevertheless many of the workshop’s recommendations were implemented in the form of random clinically focused teaching through individual efforts at some departments. In 2006, an academic reform was appointed to revise the current curriculum and come up with an alternative that can be implemented in Sudan taking into consideration professional and society needs, availability of resources and current facilities. Unfortunately the
work of this committee was hampered by many constraints. Interdepartmental conflicts, fear among some academics that clinical pharmacy will replace or eliminate traditional subjects as well as instability of academic staff are the main highlights of these constraints.\textsuperscript{23}

Schools of pharmacy in many countries are now offering either PharmD or MPharm as first pharmacy degree (FPD) instead of BPharm. In 1997, the ACPE formally adopted new accreditation standards and guidelines for a new PharmD curriculum as the sole professional training programme for the profession, which became effective in 2000. Currently all schools in the US offer PharmD, as the FPD. Most European countries are adopting MPharm in pursuit to satisfy their professional and practice needs while other countries are considering the shift. This involved drastic changes that are not applicable to our current circumstances. However, we have got to match recent development and keep pace with our actual needs and facilities. At present, neither the facilities nor the manpower or available resources allow full operation of PharmD in Sudan. The best alternative is to offer two options for the FPD to allow for smooth transition between them i.e. BPharm/MPharm programme. The first option is to offer a BPharm degree (Five year programme) with modified courses directed towards patient care and at the same time meet the actual needs of society. The second option is to offer MPharm degree (Six year programme) with an optional additional one academic year fully assigned to clinical training. This degree is an undergraduate master of pharmacy degree similar to that of the United Kingdom. The criteria for the admission of the students to this additional year will be based upon academic excellence and competence as decided by agreed upon regulations. The new curriculum must be built on predetermined educational outcomes, a defined list of competencies, a system of evaluation and assessment against which performance can be measured. This way of transition was proved successful in many countries including UK and USA.

**Patient-Focused Training at Postgraduate Level**

**The Establishment of Master of Clinical Pharmacy (MCP) by Courses:** Training of postgraduate students in clinical pharmacy before modifying the undergraduate curriculum is deemed essential since the latter involves the availability of qualified clinical pharmacists for the supervision and follow-up of the clinical activities as part of the revised undergraduate curriculum. The country lacks such human resources. Accordingly the MCP degree was established at the Faculty of Pharmacy, U of K in 2004 in collaboration with Bath University, UK.

The MCP course extends over a period of two academic years. The first year comprises 15 courses and the second contains 4 courses, a research project and clinical pharmacy clerkship. Training forms, adapted from Bath University, were used to guide both physicians and students during clerkship. The students rotate around the four main departments at Soba University hospital; medicine, surgery, paediatrics and obstetrics and gynecology. Two departments were covered per semester, 10 weeks each. All components of the programme are compulsory; however, future plans to include optional departments, other hospitals and community pharmacy residences are under consideration. Modern methods of teaching are used including discussion groups, problem-based learning, role playing, students’ presentations, evidence-based course work and clinical audits.

The programme was successful and gained very good reputation throughout the pharmacy profession. The annual number of applicants ranged between 75 and 100. Although class size is generally limited to 20 students, high demands on the programme, especially by the MOH and other universities, have forced the faculty to exceed this number. Currently the programme graduated six batches and made available about 200 clinical pharmacists. The Profile of MCP Students during the period of 2005 - 2009 is shown in table 3. The MOH recognized the MCP course and provided annual scholarships to their employees who represented 50 – 60% of MCP students.

**Modernization of Hospital Pharmacies “The Soba Project”:** The pharmacy at Soba hospital was redesigned to include services such as IV admixtures, Unit Dose dispensing, a central manufacturing and compounding area, drug information, narcotic room, quality improvement and staff development programme and clinical services such as Total Parenteral Nutrition (TPN), patient education and
counseling, active participation in medical rounds, medication use evaluation (MUE), medication reconciliation, health care staff education, and Therapeutic Drug Monitoring (TDM). The project was unprecedented by any other during the past several decades. Complete demolish of the old pharmacy building and restructuring of the space provided was accomplished. The new building is fully furnished and now ready for accommodation of the suggested services. Unfortunately, due to lack of funding the specialized equipments are still awaiting purchase. Staff availability and training are important factors for implementation of the proposed services. The pharmacy workforce at Soba hospital is severely compromised with only 2 pharmacists and 12 pharmacy assistants. According to international standards, 7 full time equivalents (FTEs) are required for in-patient drug supply per 100 beds. Soba is a 500 bed hospital that requires 35 FTE pharmacists. It is clear that the project provides more job opportunities that allow integration of MCP graduates within the health care system. Plans for further specialized training of MCP graduates were discussed with the WHO regional office in Khartoum.

The Practice

Current State of Pharmacy Practice in Sudan:
The entry-level to practice is the BPharm degree. A 3 months preregistration in-service training and a license examination, held by the Sudan Medical Council (SMC), are the requirements for licensure. Currently, the total number of registered Pharmacists in Sudan is 5,222 i.e. 1 pharmacist for every 7468 individuals. The current US ratio is 1 pharmacist for 1500 individuals. The WHO threshold is 2.5 health care professionals (including pharmacists) per 1000 population to achieve Millennium Development Goal. This shows that there is severe shortage of pharmacists in Sudan, a concern that is shared by many other countries. As can be seen in table 2 the total number of pharmacists in Sudan is much less, and pharmacist to population ratio is (1:7468) is much higher than those of countries with comparable or even smaller populations. No Pharmacy technicians are available; instead their services are covered by pharmacy assistants. The total number of Medical assistants in Sudan, including pharmacy assistants, is 6932.

Pharmacy Practice Research: The importance of research in providing evidence that clinical pharmacy teaching and practice are essential and beneficial to society is unquestionable. Several Master and PhD projects involving clinical pharmacy practice have emerged within the Faculty of Pharmacy, U of K. and abroad. MCP research projects are all directed towards PC related issues. They verified the need for transition from traditional dispensing to PC and helped in the awareness about the new role of pharmacists. Many doctors showed interest in collaboration with the MCP programme through supervising or co-supervising MCP projects and facilitating the access of the students to their wards during clinical clerkships. Links with other teaching hospitals were established through research projects and some hospitals requested involvement in MCP clinical residencies.

Table 3. MCP Students Profile (2005 - 2009)

<table>
<thead>
<tr>
<th>Batch No.</th>
<th>No. of Students (F/M)</th>
<th>Started</th>
<th>Successfully completed or Expected to complete the MCP</th>
</tr>
</thead>
<tbody>
<tr>
<td>B3</td>
<td>36 (27/9)</td>
<td>October/2007</td>
<td>December/2009</td>
</tr>
<tr>
<td>B4</td>
<td>36 (26/10)</td>
<td>October/2008</td>
<td>September/2010</td>
</tr>
<tr>
<td>B5</td>
<td>35 (27/8)</td>
<td>October/2009</td>
<td>September/2011</td>
</tr>
</tbody>
</table>

Table 3. MCP Students Profile (2005 - 2009)
Pharmaceutical services in most countries revolve around community pharmacies, hospitals, industry, academia, government and professional organizations in addition to “need-specific” sectors. According to the MOH annual report, pharmaceutical services in Sudan are distributed mainly among 6 sectors. Community pharmacies (retail pharmacies) who constitute for approximately 70% of pharmacists,

<table>
<thead>
<tr>
<th>Country</th>
<th>Licensure requirements</th>
<th>License Examination Board</th>
<th>Population (Million)</th>
<th>No. of Pharmacists (Pharmacist: Population ratio)</th>
<th>No of Community Pharmacies (Community Pharmacies: Population ratio)</th>
<th>Community Pharmacists (%)</th>
<th>Ref</th>
</tr>
</thead>
<tbody>
<tr>
<td>USA</td>
<td>Internship training period + NAPLEX + MJPE</td>
<td>NABP</td>
<td>301</td>
<td>269,900 (1 : 1115)</td>
<td>58,768 (1 : 5121)</td>
<td>65%</td>
<td>3, 4</td>
</tr>
<tr>
<td>United Kingdom</td>
<td>1 year preregistration work</td>
<td>RPSGB</td>
<td>60</td>
<td>46,153 (1 : 1300)</td>
<td>13,333 (1 : 4500)</td>
<td>52%</td>
<td>5, 6</td>
</tr>
<tr>
<td>Canada</td>
<td>3-4 month internship + Provincial and National exam</td>
<td>PESC</td>
<td>35</td>
<td>31,000 (1 : 1129)</td>
<td>8,400 (1 : 4167)</td>
<td>70%</td>
<td>7, 8</td>
</tr>
<tr>
<td>Australia</td>
<td>1 year internship + competency-based registration exam</td>
<td>State Pharmacy Board</td>
<td>21</td>
<td>2,978 (1 : 7052)</td>
<td>5,000 (1 : 4200)</td>
<td>67%</td>
<td>9, 10</td>
</tr>
<tr>
<td>France</td>
<td>PharmD</td>
<td>College of Pharmacists</td>
<td>61</td>
<td>73,486 (1 : 830)</td>
<td>22,561 (1 : 2703)</td>
<td>74%</td>
<td>11</td>
</tr>
<tr>
<td>China</td>
<td>License examination</td>
<td>SFDA</td>
<td>1.3 billion</td>
<td>300,000 (1 : 4333)</td>
<td>120,000 (1 : 10,833)</td>
<td>9%</td>
<td>12, 13</td>
</tr>
<tr>
<td>Egypt</td>
<td>1 year preregistration training + entry-to-practice exam</td>
<td>EPA</td>
<td>82</td>
<td>138,000 (1 : 594)</td>
<td>60,000 (1 : 1366)</td>
<td>65%</td>
<td>14</td>
</tr>
<tr>
<td>Saudi Arabia</td>
<td>Council specified requirements</td>
<td>SCFHS</td>
<td>28</td>
<td>6,273 (1 : 4463)</td>
<td>4,747 (1 : 4988)</td>
<td>76%</td>
<td>15</td>
</tr>
<tr>
<td>Sudan</td>
<td>3 month preregistration training + entry-to-practice exam</td>
<td>SMC</td>
<td>39</td>
<td>5,222 (1 : 7468)</td>
<td>2,222 (1 : 17551)</td>
<td>70%</td>
<td>Current study</td>
</tr>
</tbody>
</table>

NAPLEX = North American Pharmacist Licensure Examination
MJPE = Multistate Pharmacy Jurisprudence Examination
NABP = National Association of Boards of Pharmacy
PEBC = Pharmacy Examination Board of Canada
SFDA = State Food and Drug Administration
EPA = Egyptian Pharmacist Association
SMC = Sudanese Medical Council

Pharmaceutical services in most countries revolve around community pharmacies, hospitals, industry, academia, government and professional organizations in addition to “need-specific” sectors. According to the MOH annual report, pharmaceutical services in Sudan are distributed mainly among 6 sectors. Community pharmacies (retail pharmacies) who constitute for approximately 70% of pharmacists, a
proportion which is comparable to most countries. The total number of community pharmacies in Sudan is 2222 i.e. 1 pharmacy for every 17551 individuals. This ratio is tremendously high compared to that of other countries. About 50% of community pharmacists are located in Khartoum state (population of 6, 182, 401). Other pharmaceutical sectors include: drug stores (956) which are limited to 50 items only and are predominant in some remote areas where the number of pharmacies is small, agents and wholesalers with a total number of 283, national (24) and international pharmaceutical factories (625) and hospital pharmacies. The total number of hospitals in Sudan is 357 with mostly one to two pharmacies and one to five pharmacists in each hospital.

A great leap on pharmacists’ numbers during the last five decades had started in 1999 (Figure 2). The number of pre-registered pharmacists increased by 305% between the year 2002 and 2009. The number of pharmacists employed in the public sector (MOH) has also increased during 2000-2005, where public hospitals accommodated about half of the pharmacists (48%).

The increasing number of pharmacy graduates and the public demand for their clinical services is encouraging to initiate clinical pharmacy and patient-focused modern pharmaceutical care services.

Figure 1. Faculty of Pharmacy course distribution

Pharmaceutical Care at Community Pharmacy Setting
In Sudan, community pharmacists are the most accessible and sometimes the sole providers of health care advice or services. Nevertheless, little has been done regarding implementation of clinical pharmacy practice in community pharmacies. This involves several dimensions such as restructuring of the pharmacy to include private areas for counseling, appointment of pharmacy technicians and reimbursement of pharmacists. These needs can hardly be accepted by pharmacy owners at the moment. Some postgraduate research projects provided evidence that patient care at community setting can make a difference. It has been observed that some pharmacies in Khartoum state are attempting to integrate some pharmaceutical care aspects within their services.

Future challenges and the role of Leadership
Implementation of patient-focused teaching and practice in Sudan is held back by many obstacles and barriers. These are mostly the same as those faced by
Pharmacist worldwide in addition to our country’s own problems. The most dramatic problem is the shortage of pharmacists in general and of qualified academic staff in particular. This is due to immigration and absence of attractions and retention policies. Currently, the staff: student ratio at the faculty of pharmacy is 1: 50 which indeed is tremendously far beyond the UNESCO education indicator of 1: 15. This ratio reaches 1:150 in some schools of pharmacy in Sudan. Academia finds it difficult to attract suitably qualified applicant. The reason is twofold: first, academic salaries do not compete with salaries within other sectors of the profession; and second, there are only a limited number of practicing pharmacists that fulfill the criteria currently expected by universities. Lack of services in some remote areas is another problem which resulted in imbalanced distribution of pharmacists between big cities and rural area and created an even bigger problem to those areas. Training and retaining of pharmacists and qualified academics must be seriously taken into consideration since this will improve student: staff ratio and deliver quality education that can be reflected in improvement of pharmacy practice and consequently health services. This may also allow increased annual intake of pharmacy students which will enhance pharmacist: population ratio. Lack of awareness and recognition of the new role of pharmacists, as PC providers, by health authorities, health care professionals and the public resulted in their poor perceptions about pharmacists. This can be tackled by identifying pharmacists and pharmacy officials who would be willing to contribute effectively in increasing awareness through public appearances, seminars, workshops and conferences. There is conservation and fear among pharmacists themselves regarding implementation of PCP due to lack of appropriate knowledge, skills and attitude to practice pharmacy at a high level. Reinforcement and strengthening of Continuous Professional Development and initiation of specialized training of pharmacists in collaboration with international organization e.g. WHO, UNESCO and FIP is proved to be beneficial in many countries. Pharmacy technicians must be made available to alleviate the burden of dispensing and free more time for the pharmacists to provide clinical services. Financial payment for patient care services is another barrier. At hospital level this can be provided as service allowance by the MOH. However, involvement of insurance companies and related bodies for reimbursement of community pharmacists is essential. Provision of private counseling areas requires remodeling of community pharmacies which might be difficult to accept by some pharmacy owners. Means to inform the authorities and debate in the process of establishing acceptable standards for PCP in Sudan at both hospital and community levels must be reinforced. The role of regulatory authorities, professional bodies of pharmacists, pharmacy associations and organizations must be activated to recognize and support the pharmacist’s new role and work into removing obstacles and barriers. Employment records at MOH and Sudan Medical Council revealed that there is no official pharmacy position under the name of clinical pharmacist. There is a compelling need for reinforcement of pharmacy career development and revision of legislations that organize the pharmacy profession. Pharmacists’ career path needs to be well defined and the new role of pharmacist recognized to enable their reasonable integration within the health care system. The WHO/UNESCO/FIP pharmacy education task force stated clearly that standalone efforts that are developed in isolation from national and local priorities face challenges that compromise their sustainability. Accordingly, support of pharmacy leaders, professional bodies and collaboration of pharmacy academics is very much needed without which the development in pharmacy teaching and practice will be easier said than done. A lot of work has to be done by leaders for the profession to move forward. They have many resources that can influence pharmacy education and practice as well as the keys for removing all obstacles and barriers. Unless they become actively involved, our efforts will not be fully successful. Of course this will not stop the profession from evolving worldwide, but we are the ones who will continue lagging behind.

Conclusion
Pharmacy education and practice in Sudan are both product-focused. The new role of pharmacists is not yet implemented in Sudan. The idea of the transition to PCP is well accepted as inevitable, but its full
execution in Sudan is seen as a farfetched goal at the moment. Nevertheless, there is a general consensus that a starting point has to be set to more smoothly to apply this scheme efficiently. Despite all difficulties there is strong willingness among pharmacists to shift to patient care to improve their level of services. The colleges of Pharmacy must provide educational programmes that can appropriately address contemporary and foreseeable future changes in the practice and must undergo complete academic reform of their undergraduate curricula. This must be done in harmony with national priorities regarding pharmaceutical services needed and in collaboration with other professional bodies. The effort exerted by the faculty of pharmacy U of K need to be well supported and the experience shared at national level. The MCP programme must be strengthened and “The Soba project” completed. Pharmacy practice research is important and must be encouraged as it provides evidence that PC improves patient’s quality of life and helps raise the public and professional awareness regarding the new role of the pharmacist.

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References


