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THE CHALLENGES OF PHARMACY EDUCATION IN THE SUDAN

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Active steps to establish a college of pharmacy affiliated to University of Khartoum began in the early 1960s.The graduation of the first batch of pharmacists dated back to 1968. Five academic years, including a preliminary one, are required to obtain the degree, B. Pharm.

The applied disciplines taught in the 1960(s) in many parts of the world were: Pharmaceutical Chemistry Pharmaceutics. Pharmacology and Pharmcognosy. The basic subjects which preceded the applied courses comprised mainly pure chemistry, botany, zoology, human physiology, biochemistry, mathematics and physics.

Pharmacy education worldwide (particularly in the United States, Europe and Japan), has made tremendous strides in the last fifty years (1). Global Changes in pharmacy profession and pharmaceutical education have occurred as a result of huge developments in pharmacy practice, bio-medical research and technology (2).For instance, in Europe; pharmacy programs have been restructured and expanded to culminate to a master degree instead of a bachelor degree. Today in USA all pharmacy programs are required to offer the doctor of pharmacy or Pharm. D. as the sole degree for licensure (3).

In the Sudan pharmaceutical education today requires a new vision. Needless to say that the needs of the Sudanese communities differ from those in America or Europe. However, it is clear that neither pharmaceutical education nor pharmacy profession has made adequate progress within the last forty five years in this country.

Since the start of the revolution of higher education in the 1990s in this country, there are now many colleges of pharmacy (state and national institutions

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combined). The curricula in these colleges offer replicate courses of five years leading to B. Pharm. degree of general nature which qualifies the graduate pharmacist as a general practioner.

In view of the recent enormous advancement in pharmaceutical sciences and related technological fields, our colleges of pharmacy should restructure their curricula and make new arrangements to meet the challenges of today. Furthermore, colleges of pharmacy have to improve the quality of their academic programs and introduce a systematic assessment of student's performance. In this respect feedback from stakeholders will help in defining the requirements for a competent pharmacy graduate.

Another point to be raised is the fact that our colleges of pharmacy award B. Pharm. degrees which are not in harmony with regard to contents and standardization of the general subjects taught. To differentiate between pharmacy graduates at times of competition, their bachelor degrees should agree in terms of contents and scheme of evaluation. To accomplish that, colleges of pharmacy should sit together and find a common ground to achieve that goal. In this connection, establishment of an accreditation body is of paramount importance.

A significant point to be raised by the authors of this article is the fact that our pharmacy graduates lag far behind in terms of specialized knowledge and skills. The graduates neither take the blame nor the responsibility for this unfortunate situation.

To address this problem, one should first of all agree that research today has produced a vast wealth of information in life-sciences and humanities. This is facilitated by the technological advances which permeate all walks of scientific activities, including pharmaceutical sciences. It has become impossible to cope with all the advances related to a particular profession such as pharmacy. Indeed gone are the days of jack of all trades.

One adopted way of tackling this issue in some colleges of pharmacy is to agree on a definitive curriculum comprising basic sciences and general applied subjects to be taught during the first four years. In the fifth year some advanced courses related to the main different aspects of pharmacy can be introduced. These different aspects of pharmacy may be viewed as the main areas of interest or areas of emphasis for the finalist pharmacy students to choose from. The chosen area of interest in the fifth year will constitute the foundation for further postgraduate specialization.

However, the outcome of this approach is not up to the expectations due to several factors. The chief contributing factors are the hard circumstances under which the university students live, the unavailability of text-books and the lack of interest and motivation on the part of a lot of students. Therefore, it is not surprising to see that this situation has lead to graduation of incompetent pharmacists. It is also clear that the course of four years is not sufficient to expose satisfactorily the undergraduate pharmacy student to basic and general pharmaceutical sciences. It appears that the fifth final year of specialization is set at the expense of the general pharmaceutical sciences.

One option to circumvent this problem and create conditions conducive to graduation of competent pharmacists is to adopt a five-year course for the obtainment of bachelor degree of pharmacy (B. Pharm.). The span of five years is adequate to expose the undergraduate pharmacy student to the basic and general pharmaceutical sciences. No doubt the five-year graduate pharmacist will be capable to carry out his duties professionally.

An extra optional sixth year may be proposed for specialization and achievement of a higher diploma or a master by course and dissertation. After the sixth year the post-graduate pharmacy student may pursue higher studies to Ph.D.

Now comes the role of the pharmacy staff members to further shoulder the responsibility in the next phase too.

Today common knowledge is everywhere, but there is scarcity of specialized knowledge. Since it is feasible to go deep in the study of a particular subject of interest, rather than two or three subjects, it will be a good idea for our colleges of pharmacy to work in groups of two or so. Each group of common interests can participate in research and graduate studies. In doing so, we can have a group specializing in, for instance, medicinal plants (4). This area is still virgin in the Sudan and a genuine scientific effort is needed to uncover its potentials. A second area of interest is that of pharmaceutical analysis and quality assurance.

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Here a qualified cadre of pharmacists has a vital role to play in running quality control laboratories in academia, industry and state institutions. A third area may involve pharmaceutical technology and related topics such as bioequivalence, drug stability, preformulation studies, biotechnology and so forth. Still a fourth area may deal with the different issues of pharmacy practice and so on.

It is of paramount importance that there should be collaboration between pharmacy colleges and engagement in common projects that foster the spirit of team work. On top of that, pharmacy colleges should establish centres of excellence where talented pharmaceutical scientists perform high quality research related to pressing domestic issues.

By doing so, our colleges of pharmacy will be able to proceed deeper and deeper to bridge the gap between us and those ahead. Our pharmaceutical scientists can concentrate and promote the quality of their research. In that way the outcome will be more fruitful and the quality of health services to the community will be improved.

It is to be noted that pharmaceutical education in some countries of the Arab World is undergoing a process of transformation. The eleventh scientific congress of the association of the colleges of pharmacy in the Arab World (hosted by Libya during 2007/12/9-7) (5) addressed this issue under the title: **"Quality, Development and Performance"**. For instance, in Tunis the bachelor program is expanded from 5 to 6 years to accommodate the necessary pharmaceutical knowledge and skills for the graduate pharmacist to participate fully as a member of the health care team.

In conclusion it can be stated that pharmacy programs should be regularly revised and improved in all fields of the profession. These fields cover the delivery of evidence-based pharmaceutical care in hospitals and community pharmacies, excellence in teaching and proper conduct of research, active participation in industrial pharmacy and contribution to public education. One should also point out that the problems in pharmacy education and the role of pharmacy colleges in improving the quality of health care may not be so much related to lack of knowledge but rather in its application to get the right results. Colleges of pharmacy are encouraged to take the leadership role in reshaping the profession to be an integral part of an advanced health-care system and to achieve excellence in academia, industry and patient care. This of course entails the active participation of regulatory bodies and the departments concerned in the **Ministry of Health and Ministry of Higher Education** (6).

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