

CHANGE IN UNDERGRADUATE MEDICAL EDUCATION

by

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Summary — Undergraduate medical education didn't undergo major changes since the Flexner report in the beginning of this century and has since been copied without important modifications worldwide. The bulk of the medical education is given by subject specialists and general practice is only marginally covered.

The result is that the training of medical doctors has become inappropriate and that a change is urgently needed. The aim is on the one hand to improve the clinical skills of doctors, on the other hand to prepare doctors for enhanced roles and to have some community perspective.

Innovations such as problem-based learning and community-oriented education took mainly place in new medical schools. The need to change medical education is however greater in established medical schools, but innovation seems more difficult to reach there, although some successful experiences are described.

Most innovations failed to tackle reform of the health system in which new graduates will function. This is probably one of the main reasons for their limited results.

Five presentations to the Colloquium illustrate the difficulties and possible successes of change in undergraduate medical education.

Introduction

There is a large consensus on the fact that medical schools do not well prepare future doctors to manage in an appropriate way the health problems of their patients, nor the health problems of the communities at large. This chapter tries to place this criticism in a historical context and to analyse to what extent recent changes in undergraduate medical education have contributed to tackle these inadequacies.

On the Basis of Modern Medical Education (1)

In 1910, the Flexner report defined the medical curriculum for the USA, and instituted the absolute predominance of biomedical science in the field of education of medical doctors (2). In 1913, Sir William Osler (3) voiced his concern about the fact that medical schools in the UK focused too narrowly on clinical care for individual patients «[...] The past and the present are in the melting pot [...] Naturally conservative, we are bewildered by the rapidity of a forced progress and change. There is a new outlook in every department — not alone in the fundamentals of science and in methods of practice, but in the relations of the profession to the public and to the State. The actual care of the sick, once our sole duty, is now supplemented by such a host of other

activities, social, scientific and administrative, that an ever increasing number of our members have nothing to do with patients as such. ... The truth is, we have outrun an educational system framed in simpler days and for simple conditions.»

His observations are as relevant today as they were 80 years ago.

Since then, the Flexner curriculum has been copied all over the world. Only minor changes were introduced within the medical curriculum, consisting mainly of updating the state of knowledge, but without changing its basic concept.

Developing countries also copied this curriculum as such, without questioning its relevance for the local situation. The main concern was to teach according to «international standards» with the purpose to obtain international recognition (4,5).

Since 1910, the body of biomedical knowledge has relentlessly grown. Within this «flexnerian» (6) approach to medical education the split in specialties and subspecialties was consistent, and resulted in specialist doctors knowing more and more about yet smaller and smaller organ-systems. What is more, these highly trained organ-specialists dominated teaching in medical schools. Medical education was reduced to a subspeciality-oriented education, even for general practitioners (GPs). As postgraduate curricula for specialists developed, general medicine became progressively non-specialised. It became progressively a second choice for less brilliant or less ambitious doctors (Europe), or a transition period of young doctors before embarking on a speciality training (Latin America), or almost even disappeared (USA).

In 1963 in Edinburgh, the first chair of general medicine was created, and only recently general medicine has been more widely recognised as a separate and specific entity, thereby expressing the recognition that a person is more than a collection of potentially sick organs.

The creation of chairs of general practice in many medical schools has not changed the fact that the bulk of medical education still is delivered by specialists. This is inappropriate for several reasons: specialists deal with another patient population and another case-mix, specialists often are less concerned by whole-person care, pay less attention to the psychological and social aspects of the problems of their patients and long-term continuity in the doctor-patient relation is often less important.

Specialists care, at least in principle, for selected patients, not representative of patient populations seen by GPs. As a consequence, the predictive value of signs and symptoms of patients admitted in University Teaching Hospitals is quite different from those in general practice. Therefore, the expected value of clinical information, tests and investigations is very different for GPs and hospital specialists. Unfortunately, many medical teachers do not grasp the implications of these differences for medical decision making. They consider their own process of clinical decision making as universally valid, and teach it accordingly, although it is often inappropriate and leading to dangerous over-medicalisation in primary care settings.

Specialist medical teachers usually stress the importance of finding a precise diagnosis, rather than having a problem solving approach in which a precise diagnosis is often not relevant.

These attitudes are naturally transmitted to students for whom these teachers are the main, if not only, role models.

Consequently, these students who become GPs, often are not well trained to deal with health problems in an appropriate way. More specifically:

- * As GPs, they have to work within a scope of higher uncertainty than do specialists. If as a GP, the young graduate would explore every case of headache in the same way as he was taught by the university neurologic consultants, patients would be submitted to many unnecessary examinations and costs would skyrocket; not to speak of the iatrogenesis and over-medicalisation.
- * For GPs, a more pragmatic approach is often indicated: i.e. the shortest way to an adequate decision, even if this implies that diagnoses such as «acute respiratory infection», «watery diarrhoea» or «possible typhoid fever» will be used.

Calls for change

Currently, many voices are raised to acknowledge that the training of medical doctors is inappropriate and that a change is urgently needed (7-9).

Medical schools are doubtlessly producing ill-equipped medical doctors to deal with the health problems of the people they are supposed to care for.

Too often, the purpose of the teaching is about the question: «How as a medical doctor, do you tackle the disease of the person in front of you, or, still better, of the patient in a hospital bed?». What is more, this strictly clinical aspect is not always taught in a satisfactory way, as states Bishop, quoted by Engel (10): «What emerges are physicians without enquiring minds, physicians who bring to the bedside not curiosity and a desire to understand, but a set of reflexes that allows them to earn a handsome living».

In these pleas for change, there are on the one hand, calls for greater skill on the part of doctors in dealing with patients; and, on the other hand, for a broader role for doctors.

Greater clinical skill:

It seems that worldwide there is a decline in the overall clinical performance of young graduates. There are many reasons for this phenomenon.

Theoretical knowledge is growing. How does this influence medical schools? In many medical schools, teachers do not have an overview of the whole curriculum, nor a clear perception of the educational objectives of the curriculum as a whole.

Most subject specialists consider it their competence to define what a GP should know about their subject. Their judgment is often influenced by the few, sometimes dramatic, 'false negatives' of the GPs, who arrived at the hospital in an advanced stage. The result is a tremendous information overload not enough separating core-matters from less important material, as well as imbalances between specialities.

At the same time, clinical semiology gets less attention, and is often replaced by imaging procedures and lab-tests. In many countries, medical students have less and less the opportunity to practise themselves, as the ratio patients/doctor is steadily declining. In certain developing countries, the growth in student population is tremendous without proportional growth in resources and staffing. This situation is worsened by the decline in general standards of care in medical practice due to the lack of essential resources and because of low staff morale, etc. This can go so far as to give the impression that formal teaching at the medical school and observed practise during traineeship in University Teaching Hospitals are two completely separate things. This decline in standards of care in health services makes the smooth articulation of the four different types of knowledge (theoretical knowledge, procedural knowledge, practical abilities and knowledge-in-practise) very difficult (26). This may lead to medical doctors who have a theoretical knowledge that is up to «international standards», but whose practise is more an imitation of observed bad practise than of a real professional performance.

In developing countries, the situation is still aggravated by corporatistic attitudes of surgeons and obstetricians. It is not exceptional that specialists trained in the North consider that they are the only ones owing the right to practise 'proper' surgery or obstetrics. In some countries (Niger, Burkina Faso, Senegal,...) they try, with changing success, to prevent GPs from being trained in even the most basic life-saving surgical procedures as Caesarean sections. GPs are often supposed to perform these procedures once they work in a district hospital. As a consequence, some rural hospitals doctors have to perform these operations without proper training, often with a catastrophic learning curve in the beginning; or they simply do not perform them, thus excluding large rural populations from access to basic surgical care.

Enhanced roles for doctors :

Some people advocate that doctors should have more a population perspective, which implies that doctors should have better epidemiological skills and have a higher awareness of cost and cost-effectiveness of medical procedures, techniques and treatments. Others advocate that doctors should be able to communicate better with their patients as well as with other professionals with whom they work in team.

In order to relieve these deficiencies, many efforts are made to give doctors a complementary training after their graduation (27).

Brief Overview of Innovations in Medical Education

Why not tackle the problem at its roots; i.e. at the under-graduate training programs of medical schools? Is it possible to introduce change in the very medical schools, which are not exactly the most flexible institutions?

Since more than 20 years, alternatives to the traditional medical curriculum have been formulated and implemented. Richards and Fülöp edited an interesting review of these innovations (11).

In fact, the two main developments have been the quest for relevance, i.e., community orientation, and the emphasis placed on the process rather than on the content, mainly through a problem-based learning approach.

As Engel describes, problem-based learning is a new approach to teaching and learning, based on research on how adults learn most effectively. It is an important means towards developing a capacity of critical reasoning. It aims at training practitioners who are well-equipped to pursue self-directed learning throughout their professional life. It tries to produce professionals capable of adapting to change and able to play an active role in change itself.

A large body of knowledge and experience is emerging from the medical schools with innovative curricula, such as McMaster (Ontario, Canada), Maastricht (Netherlands), New Mexico (USA), Gezira (Wad Medani, Sudan) and others.

Most of these schools tried to follow this new twofold orientation: to train doctors to be more clinically skilled to deal with their patients and to give students a population perspective or community-orientation.

In order to reach the first objective, they defined better the educational objectives, the skills and competencies expected from a graduate. They try to avoid that students through a process of passive learning and rote memorisation build up a large body of theoretical knowledge unrelated to real patient-problems. Students have thus direct contact with real and simulation patients from the very start of their studies.

A medical school like Maastricht organised a skills-lab where students can train and repeat over and over again many essential skills with simulation patients, dummies, etc. A Lancet editorial (12) recently stressed that this kind of training is as important for medical doctors as it is for sportsmen.

The evaluation of their students was also radically changed: evaluation techniques were linked to educational objectives. Information recall is much less important, but competence in practise-like situations instead is crucial, and is thoroughly tested.

These medical schools opened up to the outside world, in order to reach the second objective of community-orientation. This has taken many forms changing from one school to another. For the Maastricht medical school this meant training students in primary care settings. Gezira sends students into the community, practising curative and preventive care at the first level, doing surveys and discussing with community-leaders and common people. For other schools, it means that students will go for training to secondary hospitals as well, and not only to University Teaching Hospitals.

Many of these experiences have been described in several fascinating books, and in specialised literature. Cognitive psychology and pedagogical sciences (13,14) are supporting their foundations.

It often were new medical schools that played a pioneering role. Some established schools have initiated experimental parallel tracks, as did Harvard University. Other schools managed to make the switch from a traditional to a problem-based curriculum, as Sherbrooke in Canada (15). Notwithstanding those positive experiences, the majority of medical schools stick to the traditional teaching pattern, even if many teachers are convinced of the sclerosis of the curriculum, the information overload and the poor preparation of their graduates. It appears as if the difficulties of overcoming resistance to change are just too big. On the whole, the possibility of reorientating traditional medical schools towards problem-based and/or community-oriented approaches is not very convincing indeed.

White and Connelly describe in their book «Healing the Schism» (16) how the creation of Public Health Schools, separate from Medical Schools, created a gap between the individual-oriented, clinical medicine and population-based medicine or public health. This gap had disastrous consequences for both. They further describe how the Rockefeller Foundation is now trying to fill this gap, or to 'Heal the Schism' by introducing a population perspective in medicine. Their entry point is clinical epidemiology teaching to faculty of departments of internal medicine.

The different groups of innovators created their networks (e.g. the Network of Community-Oriented Educational Institutions for Health Sciences (17), the International Clinical Epidemiology Network (INCLEN) (18), the Health of the Public Programme, etc). They are the platforms of the enthusiastic promoters of these innovations and help to spread the necessary know-how to other institutions that engage in changing their curriculum.

Unfortunately, until now all these innovations remained rather marginal and didn't succeed in modifying fundamentally the medical schools on a large scale. Moreover, till date, no convincing evidence exists that these innovative schools would indeed produce better doctors (19,20). But most of the expected advantages of, for instance, problem-based learning will only reveal in the long term. Hence, it does not seem fair to judge similar innovative schools on short term results.

One of the limits of many of these innovations, and probably an explanation for the fact that their impact remains limited, is that they often focused only on curriculum content and educational methods, neglecting thereby the importance of the health care delivery system in which the doctors will work after graduation (21). In many countries it is much more difficult to alter medical practice and the health care system than to change medical education (22).

The problems faced by graduates from an innovative medical school, when working in the «real» health system is well described by Magzoub, in the case of the Gezira-University, Sudan (23). The present health system is too much oriented towards curative health care, even in rural areas. The working conditions are very difficult, often the most basic equipment and supplies are lacking. In fact, the present health system hinders the contribution of

graduates from a community-based curriculum. Some doctors initiated changes themselves, but this is all but obvious for young isolated doctors.

The Aga Khan University in Karachi, Pakistan, is one of the Universities that tried to tackle this problem. Its curriculum is largely community-based and closely integrated with the health system (24). The University has developed prototype primary health care facilities in Karachi slums. In a poor rural district it has tested village-, facility-, and district-level interventions. Federal policy makers have taken models from each for widespread replication.

But as Ransome-Kuti (25) points out: «.. It remains to be seen whether this will take root and flourish. Some other medical schools in developing countries also began with advanced ideas but were eventually dominated by traditionalists determined to produce what they saw as proper doctors.»

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ANNEXE 19

The contribution of CUSS to the training of district medical officers in Cameroon

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This contribution gives a clear example of the doubts voiced by Ransome-Kuti.

The University Centre for Health Sciences in Yaoundé, Cameroon, was created in 1969 for the training of health personnel with a strong public health orientation. It has undergone lots of changes affecting its basic philosophy over the years (Monekosso GL. The teaching of medicine at the University Centre for Health Sciences Yaounde, Cameroon: its concordance with the Edinburgh Declaration on medical education. Med Educ, 1993, **27**, 304-320).

The philosophy of the institution laid emphasis on problem-based, community-oriented education and pluridisciplinary team training. One of its aims was to train general duty medical officers.

After the founding dean left in 1978, his successors did not believe in the system established. The emphasis shifted away from the public health community-based orientation to a more traditional faculty approach. When budget reductions were imposed, public health and field work were the main victims of the reorientation.

Wankah stresses also that some of the features of the CUSS program — small-group tutorials, self-learning and problem-solving, as well as integrated teaching — are very demanding to both staff and students. And that there was a tendency to slide back into traditional habits.

Several evaluations were made and some of the weaknesses were tackled. The link with the overall health system remains one of the main problems. The settings in which rural assignments take place are not models for the acquisition of community-oriented skills and attitudes.

One of the priorities is now to work closely with the Ministry of Health to develop a number of model health districts based on PHC in which students can carry out effective rural health assignments.

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ANNEXE 20

An undergraduate training of GPs in Thai context

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The author presented a most instructive example of the problems faced by a community medicine programme in a traditional medical school, in a country where GPs have very little esteem.

Medical doctors in Thailand work in a strong hospital-based and curative-oriented environment; with mainly attention for the individual patient. The overwhelming majority of medical graduates turn to postgraduate training for specialists. GPs are seen as second class physicians and this career is not at all attractive for young doctors. Concepts and disciplines of community medicine are not integrated in clinical teaching and daily practice in the medical school.

The community medicine programme is very well conceived, but is marginalized within the medical school. They seem to row upstream.

They face a lack of suitable staff, field preceptors and models of good GPs. To overcome these problems, a model needs to be developed. This is now under way in the Ayutthaya project, where urban health centers lead by a GP are functioning. Although GPs at the first level are the cornerstone of the health system in countries as the UK, it is entirely new for Thailand. Surakiat emphasises that medical education reform should be in parallel with health care reform, aiming at strengthening the status of Thai GPs.

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L'expérience du programme de médecine communautaire et les insuffisances de formation du généraliste à la faculté de médecine de Sousse, Tunisie

M. Marzouki

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Le présentateur a exposé une situation qui au départ était intermédiaire entre celle du CUSS (Cameroun) et celle de Mahidol University (Thaïlande). La Faculté de Médecine de Sousse fût créé d'emblée avec l'objectif de former d'abord des médecins de première ligne, socialement pertinents en Tunisie. Mais l'enseignement a démarré sur une base assez traditionnelle; l'innovation, la responsabilité sociale fût déléguée au Département de Médecine Communautaire. Ce département a eu besoin de plus de dix ans pour mettre au point un programme de médecine communautaire apprécié par les étudiants.

La Faculté, en tant que telle, a peu contribué à réaliser sa mission sociale. Elle continue à former des «poly-micro spécialistes hospitaliers».

Marzouki souligne le rôle négatif du recrutement d'un nombre trop important d'étudiants, et de critères de sélection inappropriés, parce que relevant uniquement des sciences positives.

La présentation identifie le besoin de mettre en valeur la médecine générale, mais surtout d'adapter les structures de santé de première ligne. Dans l'état actuel des choses, les étudiants n'y peuvent pas appliquer leurs connaissances. En attendant les réformes de fond, une politique de «replâtrage» — la création d'une maîtrise postgraduée en médecine de première ligne — constitue la seule alternative réaliste.

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ANNEXE 22

Expérience à la formation de médecins généralistes à la faculté de médecine de l'Université Nationale du Nord-Est, Argentine

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Le présentateur expose la situation de la faculté de médecine dont le curriculum est traditionnel, dans une région hypermédicalisée (un médecin pour 500 habitants). La médecine générale est presque toujours perçue comme une étape, préalable à l'entrée en spécialisation. Former des médecins généralistes dans un tel environnement semble très difficile d'emblée.

Pour dynamiser la formation des généralistes dans sa faculté Zurita utilise l'enseignement de la santé publique, car il n'a pas de prise sur l'ensemble du curriculum. Le principe de sa stratégie repose sur une analyse particulière de certains problèmes de santé et le développement d'un nouveau modèle des soins. Il diffuse donc une «approche d'analyse des problèmes de santé» et un «modèle des soins».

L'analyse scientifique des maladies et problèmes de santé, à partir de la connaissance de son histoire naturelle et socio-culturelle permet de déterminer l'utilité réelle des interventions possibles et la manière de les opérationnaliser dans les hôpitaux et centres de santé.

Le «modèle de soins» considère le médecin généraliste, partie d'une équipe de santé, comme le responsable d'un premier niveau des soins pour une population définie, chargée de délivrer :

- * une première réponse à la demande des soins médicaux courants, y compris des problèmes psychologiques et familiaux. Le médecin généraliste est compétent pour solliciter l'aide de spécialistes, pour prendre des décisions rationnelles, en prenant en compte l'ensemble des problèmes de leur population
- * la gestion des soins aux malades chroniques
- * la surveillance de la santé de leur population, le contrôle des risques, la prévention primaire et la promotion
- * la recherche et l'évaluation de ses activités

Il indique également dans son enseignement le rôle de chaque pièce du système de santé et les conséquences de son fonctionnement intégré.

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L'intégration des soins de santé primaires dans l'enseignement à la faculté de médecine de Lubumbashi — Zaïre (théorie et pratique sur le terrain)

N. Luboya

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L'objectif de formation à Lubumbashi est double : rapprocher l'étudiant de la communauté, et former des médecins capables d'appliquer la stratégie des soins de santé primaires.

La faculté a opté radicalement « pour former un médecin adapté et adaptable aux réalités de son pays. Il doit aussi être un agent de changement et un promoteur du progrès social, en d'autres termes un médecin impliqué dans le processus de développement global du pays. »

Comme la plupart des professeurs ont été formés dans le système traditionnel, les responsables de cette orientation académique ont d'abord recyclé les professeurs. Ceci se faisait par des stages de quelques professeurs dans la zone de santé rurale de Kasongo, une zone de recherche et de démonstration, suivi par des séminaires pour tous les formateurs animés par ceux qui avaient suivi le stage.

Dans un deuxième temps, la faculté de médecine a développé la zone de santé rurale de Kapolowe, selon la politique des districts sanitaires, pour qu'elle puisse servir de zone de stage.

A Lubumbashi l'accent a été mis avant tout sur la création d'un lieu de stage instructif pour le travail futur des médecins.