

Medical Education - Changing perspectives

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Abstract

Various aspects of medical education have been reviewed with special reference to medical institutions in Nepal. The newer trends in teaching methodology like audiovisual and computer aided methods are being followed in most of the institutions of Nepal. Similarly, attempts are being made to implement integrated teaching which, though not perfect, differs from institution to institution. The attempts seem to be more or less satisfactory with awareness amongst most of the teachers and planners.

However, the methods of assessment of the students at every level, call for changes and improvement, in the light of modern trends. Similarly, the process of selection in medical colleges needs change.

The replies to the questionnaire given to the students of two batches were very interesting and it is worthwhile to undertake such studies in other institutions as well. Valid suggestions opined by them should be implemented.

Keywords: Medical education, medical institutions in Nepal, teaching methodology,

More and more students are becoming interested towards taking medicine as their career, not because of any philanthropic ideas, but more because of the lure of money and fame supposedly attached to the medical profession.

To meet this increased demand, more and more medical institutions are coming up all over the world especially in India and Nepal where many private medical institutions have come up and more are coming up every year. There are at present twelve medical colleges in Nepal for a total population of about 25 millions. In addition, many students go to Bangladesh, China and Russia. Thus, about one thousand doctors are added to the register every year. Obviously, maintaining the standards of the medical graduates is a tough job. It is essential on the part of the institutions to see that their training maintains credibility, is effective and relevant to the needs of the society. There are medical councils and other bodies, which are empowered to see that the institutions have the minimum requirements available.

Every institution is interested in producing good, competent, sincere and dedicated doctors. To achieve this objective the process should start at the stage of admissions to the medical college. A particular curriculum in the country and institution is planned. How far the particular curriculum of a particular institution in a particular country, satisfies the objective cannot be affirmed fully. The requirements differ from country to country and even in one particular country, from place to place. By and large, however, the broad objective of making a doctor in

most of the countries and institutions is, to impart certain skills, lot of information and knowledge in such a way that the students are able to demonstrate their achievements at the time of evaluation or requirement.

Education can be defined as the art of acquiring, retaining and utilizing knowledge at correct required time and knowledge is information plus experience. The ideal basic objective of medical education in every country and institution is to educate the students regarding health, which includes physical, mental, social and possibly spiritual well-being.

The most difficult task of proper training starts after the students are admitted. The pattern of this again varies from country to country and place to place in a country. Finally, the students are judged by examining them at every level whether they could deliver goods to the society and the country.

The cost of making a doctor is very high and is going higher day by day. It is therefore necessary that the doctors produced are of high quality and are appropriate to the needs of the community.

Curriculum planning

Though the curriculum for medical education varies from country to country, it has lately been thought that some minimum essential requirements should be pointed out.

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These should be met by the future medicos throughout the world. This has been made necessary because of opening of doors by different countries to global mobility and development of common education standards, mutual recognition of degrees and diplomas and liberalization of the processes by which the professionals are allowed to practice all over. Although it appears that the subjects in a medical college are the same throughout the world, common worldwide content standards or/and essential requirements do not exist. Therefore, these are necessary to be included in the course content throughout the world. These should include basic sciences, clinical experiences, skills, knowledge, competence and ethical values. These requirements would represent only a portion of the curriculum. Each country would naturally superimpose other contents as per requirements depending upon the respective socio-economic factors, cultural, religious or/and many other values.

The institutes of international medical education (IIME), New York, defined global minimum essential requirements (GMER), which are grouped in 7 broad educational domains¹;

1. Professional values, attitudes, behaviour and ethics.
2. Scientific foundation of medicine
3. Clinical skills
4. Communication skills
5. Health scheme
6. Management of information
7. Critical thinking and research

The seven domains are further divided into various instructional objectives the main being²:

- ◆ Moral and ethical principles and legal responsibilities.
- ◆ Excellence, responsibility, empathy, honesty, integrity and commitment.
- ◆ Self-regulation and recognition for the need of continuous self-improvement with an awareness of personal limitations.
- ◆ Respect for colleagues.
- ◆ Moral obligation to the patient.
- ◆ Personal responsibility for the care of individual patients.

The knowledge of basic medical subjects is, of course, mandatory to all the students all over the world. The core curriculum should include the following regarding knowledge, skills and attitudes^{3,4}.

- a. Knowledge → basic knowledge of all the basic medical subjects required later for medical practice. These should include ethical concepts and emphasis upon the pharmacoeconomics and pharmacovigilance.
- b. Skills → medicine is a life long learning process and this must be inculcated right from the beginning. The skills necessary are – clinical reasoning, problem solving and proper communication.
- c. Attitude → promotion of humanistic values and avoidance of dehumanizing process. Good medical practice where the expectations of the society regarding the behaviour and moral standards and sensitivity to religion and culture are absolutely essential.

The concept of essential minimum requirements implies a set of global minimum learning outcomes. However, it is essential to understand that local, national and even regional needs must also be taken into account. This may translate into need to understand cultures, socio-economic conditions and patient-physician relationships at global level. A curriculum is incomplete without the addition of the unique educational experiences necessary to address the local, regional or national health needs. Medical schools should adopt their own particular curriculum design but in doing so they should first ensure that their graduates will possess the core competence stated in the GMRE document and secondly, the competence necessary to meet the unique healthcare needs of the area they serve.

Thus, there appears to be a general consensus that the curriculum should not remain a hidden one and divergent from country to country but a standard common curriculum should be taught in an explicit way in view of changing trends in medical care, aiming towards processing caring doctors with an in-built system.

The existing curriculum in Nepal, though largely fulfilling the requirements lacks in some essentials--- there appears to be too many specialists, too few generalists and a geographic and socio-cultural misdistribution of work force and deficiencies in the training of doctors to practice in the community. This might be due to the existing curriculum.

It is necessary that training should be multidisciplinary, quality oriented and expanded to public sectors like jails, juvenile justice programmes and state hospitals. It should also provide education

for primary care medical ethics, pharmacoeconomics, and pharmacovigilance and research technology.

The present day MBBS curriculum of KU is an amalgamation of various curricula from various universities⁵. All the basic medical subjects are taught in first two years. This has obvious disadvantage that the student upon entering the medical college is overloaded with seven subjects. Another major demerit is that by the time the student reaches final year the knowledge of basic subjects is forgotten when it is required most; this is especially true for subjects like Pharmacology and Pathology.

The merits of this pattern are –the teaching of basic medical subjects could be integrated and more time could be devoted towards the teaching of clinical and bedside education.

In order to include the merits of the older system as well, Anatomy and Physiology could be taught in the first year and the teaching of Pharmacology and Pathology could be extended to final year or at least to seventh semester.

It has been generally claimed that the traditional teaching is old fashioned and too detailed and produces doctors with poor interpersonal skills. Key reforms suggested were a deliberate reduction in factual knowledge and replacement of didactic lectures with problem based learning directed by the students themselves⁶. It is true that practicing doctors do not need large tract of knowledge they acquire as students. This redundancy is particularly striking in basic medical subjects. The main reform suggested is replacement of passive teaching by problem-based learning, which can undoubtedly encourage useful discussion amongst highly motivated students who already have the factual knowledge⁷. However, with students who are not much motivated towards the studies, PBL could degenerate into a waste of time and energy. It is also an illogical and inefficient way to acquire basic knowledge. It is quite possible that the top elite students could learn better by the modern methods, but it is open to question whether the average or below average students would be capable of acquiring knowledge without didactic lectures. Surprisingly, an analysis has shown that PBL does not produce doctors with better factual knowledge than those from traditional curriculum. Undue enthusiasm in haste in developing countries has got to be critically evaluated^{8,9}.

Methods of selection in medical schools

Selecting candidates to be doctors of the future is a very important and sensitive issue. It has broadly been agreed upon all over the world, especially in Nepal and India, that students having a background

of physics, chemistry and biology and having passed intermediate science, i.e., 2 years after high school are eligible for selection. At most of the places, there is an age bar, i.e., minimum 17 years and maximum 21 years. With the KU course there is no upper limit and mature students are admitted. The process of selection, however, differs not only from country to country, but from a place to place in a country, at least in India. At some places, the candidates were admitted only on the basis of aggregate marks in Intermediate Science (I.Sc.) and this was true for Maharashtra and some other places in India. This process selected candidates who obtained not less than 95% marks. At most of the other places, pre-medical tests are conducted where the candidates appear and are examined in the subjects like physics, chemistry, zoology and botany, in which they have already passed in intermediate science. The criteria for selection depend upon the number of seats available and mostly the examinations are of objective type. The central government of India also holds a separate objective examination by which a small percentage of students are admitted in every college throughout the country.

In Nepal, both the universities, (Tribhuvan and Kathmandu) conduct examinations for selection in IOM (institute of medicine) and all the other private medical colleges respectively, subjects being the same as in India. However, the students from outside the country are admitted without appearing in any examination. Whether the candidates are admitted on the basis of their aggregate marks or through the competitive examinations, the selection depends entirely upon the knowledge that is exhibited by them in their examinations, and this knowledge is purely informative. Other qualities, which should be necessary in a doctor, are not judged at all. Most valuable is aptitude towards medical studies. It is not an uncommon observation that brilliant students prove to be unsuccessful as doctors, whereas ordinary or even students below average are very successful as practitioners or even as medical teachers or research workers. This cannot be totally attributed to fate or destiny, but it is the aptitude which plays the most important part. Other necessary qualities that should be judged are sincerity, moral values, dedication, and capacity to work hard and different skills. True, it is difficult to judge all these qualities at the time of admission, but some attention has to be paid and criteria found out in order to make the selection process valid.

Teaching methodology

Age-old teaching method is the classroom didactic lecture with the help of chalk and blackboard. This

type of teaching appears as outdated and type of spoon feeding that stifles creative thinking, keeps the students inferior to the teacher, is informative, authoritative, puts the students at a lower pedestal and does not inculcate the habit of self study and creative thinking. It is also felt that this type of traditional teaching is old fashioned and too detailed. Moreover, this type of teaching is largely only auditory, mainly dependent upon the competence of the teacher and it is a well-known fact that the learning process can be improved by addition of visual methods. Thus, teaching aids like overhead projector, transparencies and multimedia are gradually coming up as essential parts of teaching methodology. However, at many places still the traditional age-old chalk and board method is continued and even preferred by medical students. It is obvious that some subjects like anatomy and pathology cannot be taught properly without the help of visual aids.

Key reforms suggested are, reduction of factual knowledge and replacement of didactic lectures with problem based learning (PBL) and self-study¹⁰.

It is true that practicing doctors do not use the large amount of knowledge acquired in basic medical subjects and several reforms have been suggested.

- ◆ Reduce information overload by reducing didactic lectures and replacing by seminars, tutorials and group discussions.
- ◆ Make undergraduate training a platform for lifelong learning, becoming a doctor is only the first stage of continued medical education (CME).
- ◆ Improve doctor's interpersonal skills – relates better to the patients and their problems.

PBL and self study operates through a combination of various methods like group discussion and seminars, where students are posed with simulated problems, discuss and find out the solution. A teacher who takes part in the discussion is an expert, but many a time, in most modern circumstances, the teacher may only be a facilitator without having much knowledge about the subject. This is an extreme form of PBL and may be called as self-study.

PBL encourages students to acquire knowledge in an active way so that in future during their apprentice period and practicing period they are confident to solve the day-to-day problems.

Integrated teaching

Till 1970s, the medical subjects were taught in sort of number of water tight compartments in the sense that

one subject's teacher being totally unaware and unconcerned about the topics taught in other subjects. Thus, students acquired knowledge piece meal. For example, they were told about the physiology of heart without knowing its anatomical aspects. Sometimes in 1970s, it occurred to some medical educationist that this pattern of teaching was not satisfactory and it could be better if the teaching could be integrated between different departments. The basic concept was that one particular system or topic from a system would be taken up by the members of the faculties of different departments, thus imparting knowledge to the students about a particular system in totality and in a more coordinated fashion instead of in pieces.

A pioneering medical school to start this type of teaching was probably in Newcastle – upon tyne in U.K. where concepts of horizontal, vertical and oblique integrations were developed. There were many takers of this new pattern of teaching throughout the world and in all the medical colleges in Nepal; integrated teaching amongst the basic medical subjects has been taken up in the first two years. The integration is system wise, i.e., one system, say cardiovascular system is taken up simultaneously by all the departments. However, it would be much better if the integration is brought down to the particular topic in a particular system is taken up by all the departments. In the present set up in Nepal, a perfect integration is not observed. It is desired that the heads of different departments of medical colleges sit down together to find out ways and means for a perfect integration.

Assessment/evaluation/examination

The evaluation that attempts to determine different aspects of educational structure, process and outcomes may have several forms. Any assessment procedure followed must have the following essential qualities^{11, 12}:

1. Validity – it ensures that it measures that what it is supposed to measure. This must contain a representative sample of what the student is expected to achieve. This is known as content validity and this is of utmost importance to the medical teacher.
2. Reliability – expresses the consistency and the precision of the test measurements. A variety of factors contribute to reliability. In an examination, there are three variables, student, examiner and the patient or any other material. In a reliable assessment procedure, variability due to the examiner and patient/other material should be removed totally.

3. Practicality – number of staff available, their status, availability of space and patients/materials is very important in the sense that all the above should be sufficient to the number of students to be examined. The resources available are mostly not sufficient, especially in the assessment of clinical skills where the numbers of patients available are lesser than ideal.

The common and universally accepted method of assessment is examinations in individual subjects at various levels during the stay of the student in a medical college. Mostly, the examinations assess the information acquired by the student, which can be reproduced during the examination in theory or viva-voce. So, the competence of the students to remember facts is judged. Apart from this, some skills in basic medical sciences and clinical sciences are also judged but it is desirable that the global minimum essential requirements must be judged, apart from the factual knowledge and some skills. It is generally accepted that prolonged periods of observation of students working with patients or in laboratories on regular basis would have the maximum validity. The evaluation that attempts to determine different aspects of educational structure process and outcomes may have several forms. The formative individual evaluation provides feedback to an individual learner, whereas the formative programme evaluation provides suggestions for improving a curriculum.

Although the evaluation of professional competence is considered as one of the final goals of medical education and the most important task of teachers, the term competence was not defined clearly, broadly, however, competence is supposed to be what the student should be able to do at an expected level of achievement.

To improve the quality of the assessment procedure, it is necessary to be more precise in defining what is aimed to be assessed and introduce methods of assessment which are valid and reliable. As no single method is adequate to appropriately measure all aspects of knowledge, skills and problem solving techniques, the multi format assessment is essential. Thus, the following assessment/evaluation tools have been generally agreed upon-

1. Descriptive type of theory examination
2. Multiple choice questions
3. Objectively structured practical examination (OSPE)

4. Objectively structured clinical examination (OSCE)¹²

All these have to be periodically held so that the judgment is continuously being made. It is further advisable that more than one teacher/examiner assesses throughout the course of the curriculum so that objectivity is maintained. The global minimum essential minimum requirements should first be assessed and further the competence of the students to acquire, retain and reproduce the knowledge apart from utilizing it at the time of requirement is assessed regularly and constantly.

Discussion

A broad outline of various aspects of medical education with special reference to the existing pattern in medical colleges of Nepal is reviewed. Generally, the planners of medical education in Nepal appear to be aware of the changing trends and requirements all over the world and attempts are being made to implement various changes as suggested by number of studies conducted.

Curriculum planning is a very significant aspect of the whole education, rather it is the core of not only medical but all types of education which is a constant process not only of continuous learning but also of utilizing the lessons learnt and this utilization is the most important and useful aspect, specially of medical education. A doctor is a student throughout life, learning to get newer experience with each and every patient he examines, operates and studies. This is the main core which has got to be inculcated amongst the medical students and it is for this reason that the old teaching methods were thought to be passive and the modern medical educationists have started taking note of this and accordingly the course contents are being modified from time to time. In medical colleges of Nepal, it is a very welcome trend that proper emphasis is being laid upon the integration of various subjects, problem based learning and self-study, all of which stimulate the students to make attempts to actively participate in the learning process.

Accordingly, modern teaching methods which utilize audio-visual aids and computer aided teaching methods are taken resort to. Though the deficiencies would exist in every system but those are to be minimized and the best available should be adopted. It is a welcome sign that the medical educationists in Nepal are constantly reviewing and modifying the course contents.

The assessment process, however, is not keeping pace with the fast changes in education process and it is high time the educationists pay more attention to this aspect. Still the information acquired, retained and memorized and the ability to reproduce at the time of examination is assessed maximally.

Similarly, the selection process also requires a serious thought. It is no use pushing a student to learn medicine merely because the parents desire so and his real interest is in something else. The aptitude has to be examined. Unless the student is interested, he or she cannot work hard and will try to pass out somehow. Medical education requires labour and sincerity more than intelligence.

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