

Medical Education in India

JACOB CHANDY, M.B., M.Sc., F.R.C.S. (C), F.A.C.S., F.I.C.S., F.A.Sc.*
Christian Medical College, Vellore; India

It is possible to trace good public health and medical practice in India to as early as 3000 B.C. Records show that, even before the time of Hippocrates, physicians came to India from Greece to learn the art of medicine. Excavations at Mohanjodharo and Harappa reveal that the Indus Valley civilization had planned cities with systems of drainage. Evidence of excellent sanitation was again found at the excavations in Southern India at Andhra Pradesh.

Indian medical tradition took form from a mythical, through a semi-mythical, to a historical beginning sometime between 600 and 400 B.C.—i.e., the period of Lord Buddha. It is recorded in Buddhist Jatakas that there were two universities in India—one at Taxila and the other at Kasi, where all sciences including medicine were taught. The city of Taxila existed near the present city of Rawalpindi, and Kasi is now known as Banares. Charaka, a teacher of Taxila University, made important contributions to ancient Indian Medicine. Another famous early contributor to Indian Medicine was Susruta of the University of Kasi. It is interesting to note that Charaka was a physician, whereas Susruta was a surgeon. Evidently, specialization as physician and surgeon had started even in that age! Evidence would lead us to believe that Charaka and Susruta lived sometime between 500 and 100 B.C.

* Principal, Christian Medical College, Vellore; Professor of Neurology and Neurosurgery; Editor, *The Indian Journal of Medical Education*.

In the early medical literature of India treatises on osteology, anatomy, physiology, embryology, and therapeutics are found. The greatest volume of literature pertains to the preparation and administration of medications. The method of education during that period and the following centuries was that of the "pupil studying at the feet of the master." The pupils left their homes and lived with the master to learn the principles and practice of medicine. An oath, similar to the Hippocratic oath, bound the student to high standards of personal hygiene and moral behavior. Even hospitals for men, women, and animals were developed during the reign of Rahula Sankirtayana, son of Buddha. In later years the standards of these institutions were improved by King Ashoka.

The tragedy is that, from that time onward, there was almost no scientific development in medicine. In fact, many of the advances were lost with the decline of the Indus Valley civilization. Susruta had been performing feats of plastic and reconstructive surgery centuries before Christ. His operative techniques were almost identical with the techniques developed in this century. It is not known why these remarkable advances were lost. It was not because of secrecy, however, since his published works are available today.

Considerable literature also exists concerning materia medica and the symptomatology of diseases. This system of medicine is called "The Ayurveda." With the Moghul conquest, Unani or Greek medicine was also introduced into India.

Gradually the earlier universities disappeared, and medical education was handed down from generation to generation by classes and families. Centuries went by during which medical practice depended on the integrated knowledge of symptomatology, therapeutics, and preventive and social medicine as such—an approach that was an integral part of Ayurvedic medicine. Two and a half centuries ago, with the advent of the East India Company, scientific medicine was brought by the British into India. Because their medicines and methods were different, it was considered as an entirely different system of medicine. Thus, the Ayurvedic or the indigenous system of medicine, Unani system of medicine, and modern scientific system of medicine co-existed in our country. All three systems still have their adherents today.

The first modern medical school in India was started in 1822, and in 1835 medical colleges were started at Calcutta, Bombay, and Madras. These colleges have been recognized by the Royal College of England since 1843, and their standards were acceptable to the General Medical Council of Great Britain. At that time there were no universities in India, but in 1857 three universities were established, again at Madras, Bombay, and Calcutta. Gradually more and more medical colleges and universities came into being.

Until 1933, when the Indian Medical Council was established, medical education in India was under the direct supervision of the General Medical Council of Great Britain. The university degrees during that period were registered in the Register of the General Medical Council. This implied that the standard of medical education in India also was acceptable in Great Britain. At one time medical schools giving a shorter period of training also existed in India, but the degrees given were not recognized by the

Indian Medical Council as equivalent to university degrees. These have now been either abolished or upgraded to the university level.

The British government had established many hospitals, big and small. These hospitals were staffed either by British with British qualifications or by Indians who had been educated in the Indian medical colleges. The Medical Council of India was constituted in 1933 with functions similar to those of the General Medical Council. Its twofold responsibility was to maintain uniform minimum standards of medical qualifications in India and to further the recognition of these qualifications outside the country. The standard of medical education set by the Indian Medical Council is acceptable to the General Medical Council of Great Britain, so there is reciprocal recognition of degrees.

By the time India attained its independence in 1947 there were twenty medical colleges. However, there were only a few postgraduate training programs available in India at that time, so Indians who wanted postgraduate training in order to be teachers in medical colleges went to the United Kingdom for postgraduate study. During the last 15 years there has been a phenomenal increase in the number of medical colleges; there are now 63, and it is expected that by the end of the third 5-year plan—i.e., by 1966—there will be at least 75 medical colleges. The great majority of these medical colleges have been developed and are entirely financed by government agencies, mostly state governments. The national government is taking a major financial responsibility in aiding the state governments in developing these new medical colleges.

India has been faced with the tremendous problem of development from the time of its independence. As the health of man is a prime requisite for

the success of all plans related to any developing country, the importance of health in governmental planning is well recognized. The planned program in India has been instituted with the objective that the entire country should grow in all its aspects. To meet this need, the Community Development Project was launched by the Government of India in 1952. It is one of the biggest social experiments of its kind in the world. The standards of living, especially in the rural areas, are deplorable. Can this standard be raised to a satisfactory level by democratic methods? If the answer is yes, it is a triumph for democracy. If we do not succeed, we dare not imagine the consequences. For this reason the whole world is watching with interest the progress of India's development.

The Community Development Project is mainly an attempt to improve the living standards on all fronts. All the nation-building departments of the Government—such as education, health, co-operation, agricultural and food production, animal husbandry, communication and industries—are involved in this project and are working together under a common administrator, the Block Development Officer. Application of this concept—that progress is based on the development of all fronts—is expected to bring about improvement in the standard of living of the rural population. Because health services form one of the important components in this total program, the health program must develop hand-in-hand with all the other nation-building activities. Thus, the motivation in the medical educational program in India today is the training of enough doctors and paramedical personnel to meet, in the comprehensive health schemes, the present and future needs of the rural population.

It is no wonder, therefore, that the state and national governments are push-

ing hard to increase the number of medical colleges. Yet it is very important for the medical educators to maintain a good standard in all these medical colleges. Although most of the medical graduates are working in government hospitals and dispensaries, more medical men are needed. Politicians and public-minded laymen see the tremendous need for scientifically trained medical men to work in villages and are forcing state governments to start more and more medical colleges, with the result that too much emphasis is laid on the quantity of medical men rather than the quality of their medical education. Also, for political and economic reasons, there is considerable pressure to support and develop the Ayurvedic system of medicine; so schools and colleges are being developed to teach these systems. In these colleges, a ludicrous blend of modern medical science and traditional Ayurveda is being attempted.

The pattern of universities in India is different from that of universities in the United States of America. Universities in India are statutory bodies established primarily for the purpose of controlling and organizing education as a whole. It is an administrative organization controlling the curriculum, standards, faculty, equipment, and facilities of the various colleges affiliated with the university. It conducts the examinations and gives the degrees and diplomas. Although these universities are financed to a great extent by the government and may be subject to political pressures, they are autonomous bodies; in general they maintain a good standard.

Thus each university has colleges of almost all faculties and even many colleges in each faculty or discipline. For example, under the supervision of the Madras University there are seven medical colleges; one is financed by the Indian national government, another by a private organization, and the remaining

five by the Madras state government. All seven schools are subject to all the regulations of the Madras University, and their curriculum, examinations, and degrees are controlled by this university. Even though in this system there are advantages of standardization and control of curriculum, the freedom of development and experimentation of the individual colleges is very greatly curtailed. The individual colleges cannot determine their own curriculum and cannot give examinations, diplomas, or degrees which will be acceptable to the government or to the Indian Medical Council. The greatest disadvantage in this university system is that the student as well as the college must place more emphasis on passing the examinations than on acquiring or imparting knowledge and experience.

With this background, let us now consider the educational program and curriculum of the scientific medical colleges. Recently, there has been a radical revision of the general educational system in India. The standards of medical education in the various medical colleges are to a great extent controlled by the Medical Council of India. With a few exceptions the accepted policy is to allow a student to take a 1-year pre-University course after 11 years of elementary and high school education. After this pre-University course, he can be accepted by the medical colleges as a pre-professional student for 1 year. At this stage he is taught physics, chemistry, biology, English, and statistics. Next he is given 1½ years of the preclinical subjects— anatomy, physiology, and biochemistry. Following this, he spends 3 years studying pharmacology, pathology, microbiology, ophthalmology, medical jurisprudence, preventive and social medicine, surgery, medicine, and gynecology and obstetrics. After successful completion of this course, he must work as a student-intern for 6 months to 1 year in a

recognized teaching hospital. The duration of the internship varies in different states. During a 1-year internship, for example, he spends 3-month periods in medicine, surgery, gynecology and obstetrics, and preventive and social medicine. On completion of the internship, he receives his degree of Bachelor of Medicine and Surgery (M.B., B.S.) from the university with which the particular medical college is affiliated. Thus a medical graduate, under the above terms, spends 6½ years of study in a medical college, and yet may be only 23 or 24 years old when he starts practicing.

Since the medical students enter a medical college as early as 17 years of age, it is no wonder that the maturity of thought and action are usually lacking during much of their student days. It is during the latter part of their period in the medical college that they may acquire real motivation and incentive. The success of the candidate for each subject taught during the medical course is tested by a series of professional examinations conducted by the university. The university appoints an examination board for each subject. At least half the members of this examination board have to be medical teachers in those subjects from other universities. The chairman of the examination board is given the responsibility to make up questions for the written part of the examination. The examinations consist of written papers, practical, clinical, and oral tests. The written tests are conducted at the various centers, and practical, clinical, and oral tests are similarly arranged at centers where the students from medical colleges under the particular university appear for the examinations. A candidate usually is given the tests, practical, clinical, and oral, by two examiners, one of whom, the external examiner, is in most instances from an outside university. Three professional examinations are held, each 18 months apart. They are

given twice a year, so there are usually two groups of students annually. The first examination covers anatomy, physiology, and biochemistry. Without the successful completion of these subjects the student is not permitted to continue his studies to the clinical years. The second professional examination includes pharmacology, bacteriology, forensic medicine, and pathology; the third, ophthalmology, preventive and social medicine, surgery, medicine, and gynecology and obstetrics.

At these examinations there is usually an average failure rate of 20-40 per cent of the candidates. It is estimated that only 20-30 per cent of the candidates admitted to the medical course will complete the entire course in the prescribed minimum time. In most of the universities there is no recognition of day-to-day class work of the students, nor are there any periodic examinations conducted by the particular medical college. The method of assessment of the standing of the student is done entirely by the university examinations; therefore the student places major emphasis in his studies on material, which may or may not be important, but which will help him to pass the examinations. For postgraduate training also, the same examination principle prevails in all the universities. Little, if any, emphasis is placed on actual training experience.

Many medical specialty degrees are now offered by Indian universities. For these, students register as postgraduate students in the colleges and fulfill the requirements of study for the examination conducted by the various universities. In-service residency programs, which give practical experience, are not yet widely accepted, though a few institutions are demonstrating the effectiveness of such programs. In postgraduate work, the universities are trying their best to maintain proper academic

standards. However, passing the examination is the most important thing. There is no accurate system by which the experience gained by the postgraduate student is evaluated. These requirements are primarily academic and at times can be met without the trainee's acquiring any practical experience. It may be possible for a candidate to obtain a postgraduate surgical degree without performing a major operation!

Most of the staff of the government colleges are part-time. This has resulted inevitably in lowering the standard of medical education because the part-time teachers must divide their interest between private practice, teaching students, and conducting research. At present considerable effort is being expended by the governments to establish full-time teachers in the medical colleges.

Although the newly established postgraduate training programs in some of the medical colleges in India provide opportunities for medical graduates to acquire specialty qualifications, a large number of medical graduates still go abroad, particularly to the United Kingdom and the United States, to acquire experience and qualification for teaching. Since so many medical colleges have been established so rapidly, many teachers who have not had time to gain experience or maturity have been given positions of responsibility in medical education. The few medical colleges that have a core of full-time teachers have a special role to play in keeping up a high standard of medical education and in leading the development of medical education. Within the limits of the university regulations, the few private colleges have an unusual opportunity to demonstrate and experiment in newer methods and techniques of medical education.

The concern for development and progress in medical education really started long before India became independent. In 1944 the Government of India under

British supremacy instituted a committee known as the Health Survey and Development Committee or the Bhoré Committee. As a result of a two-year study, this committee made a number of recommendations to the government in regard to the planning and development of the health status of India. The recommendations regarding medical colleges were responsible for much of the ensuing development in medical education.

In 1959, under the leadership of Sir A. Lakshmanaswami Mudaliar, the national government set up another committee, the purpose of which was to survey and make recommendations for the development of the nation's health. In regard to the medical schools the recommendations were to take into account the remarkable changes that had been taking place during the post-independence years. The committee has just recently submitted its reports, and the national government has started to study its recommendations.

During this same period the national government called three conferences on medical education with the object of getting the opinion of all leaders in medical education from all the various states and medical colleges. The Medical Council of India has also convened a similar conference. Thus there has been an awakening among the authorities in medical education throughout India to the need of the promotion of medical education.

The need for a nonofficial organization to deal with the ever-increasing problems of medical education in this vast country was expressed on the occasion of the Medical Education Conference in 1955 but remained a pious wish after the termination of the conference. This idea was revived again during a similar conference in 1960. At an informal meeting held at the conclusion of this conference, it was decided to form an *ad*

hoc committee to organize an association for the advancement of medical education. This *ad hoc* committee, after making the necessary preparations, decided to hold the first meeting of the leaders in medical education to form and inaugurate the association for the advancement of medical education. This meeting was held, along with the usual annual meeting of the Indian Council of Medical Research, at Hyderabad on the invitation of the Director of Medical Services, Andhra Pradesh. The Union Minister for Health inaugurated this association. Thus came into existence the Indian Association for the Advancement of Medical Education. Sir A. Lakshmanaswami Mudaliar, the Vice-Chancellor of the University of Madras, was elected the first president of the Association.

During the last 15 years, the national government has offered assistance to state governments for the development of many medical colleges and also for the development of many departments to the level of imparting postgraduate training and qualifications. Several subcommittees were organized to inspect the various medical colleges and to recommend to the government the upgrading of certain departments in the qualified colleges so that, at such departments, not only could undergraduate teaching continue, but also students could be admitted for postgraduate courses and examinations under various universities. Special emphasis was placed by the national government on developing departments of preventive and social medicine. International and foreign agencies have also given assistance through visiting consultants. They have also given fellowships for the training of teachers in foreign countries for the various departments in the medical colleges throughout India. Special emphasis is being placed on a few colleges. They have been given equipment and

supplies, and in several colleges research activities have been encouraged.

The need for medical research has been recognized for a long time, and it has been directed toward meeting special demands arising in various parts of the country, mainly due to epidemics. The Indian Research Fund Association was started in 1910 by the British Government; as recently as 1949 the Indian Research Fund Association was redesignated as the Indian Council of Medical Research, and its activities were broadened to include supporting medical education through research in medical colleges. The Indian Council of Medical Research took great pains to see that its medical research plans included both fundamental and clinical research. The Bhoré Committee had shown the complete lack of research in medical colleges and universities. A Clinical Research Advisory Committee was appointed by the Indian Council of Medical Research, and greater attention was paid to development of clinical research in medical colleges. In order to encourage the various medical colleges to undertake some such research activities, the Council has in the last 10 years taken several measures such as holding annual meetings of the Advisory Committees and the Scientific Advisory Boards in various medical colleges. The inauguration of the program of training the junior members of the staff of medical schools in the methods of research, the creation of several units of such research activities in medical colleges, and also the starting of drug research units in medical colleges have all been valuable. There is hardly a medical college in India now which is not sending some such research scheme to the Indian Council of Medical Research for its approval and support. The far-reaching effects of promoting medical research have helped to maintain a better standard in medical education today.

One can state without hesitation that medical education in India is going through a revolutionary period. It is still heavily dependent on foreign relationships for its continued growth and reflects the influence of British and American medicine and science. One reason for this continued dependence is that India lags behind in the development of the basic medical sciences—the foundation of scientific clinical medicine. The standard of these basic medical sciences, especially pharmacology and therapeutics, must be raised. Fundamental research will have to convince the advocates of Ayurvedic medicine of the uselessness of conventions, traditions, and superstitions. Another reason for a continued dependence on foreign medicine is the lack of sufficient scientifically trained personnel for the nation's need.

The economic situation in the country also plays a great part in hindering the growth of scientific medicine. Modern scientific medicine is expensive. How can this modern scientific medicine reach the majority of the people when they cannot afford even adequate food? These illiterate, poor people, will accept anything called "medicine" that is priced at their economic level.

Such a situation is frustrating to the present-day scientifically trained medical man. The medical graduate who has been trained in the surroundings of highly technical personnel, equipment, and medicine, is asked to function in the same scientific manner in rural areas. He is expected to translate his training to a situation where there is little or no equipment, little or no technical help, and almost none of the expensive medicines used in the training hospitals. No wonder he is at a loss and discouraged. It is not surprising that most graduates avoid this situation and crowd into the cities where they may have more opportunity to practice the type of medicine they have been taught. Even devoted, public-

minded young doctors find the practice of scientific medicine in rural areas difficult. Yet, throughout India, rural primary health centers are being developed where some of the scientifically trained personnel must work.

The problem of providing doctors for rural areas faces medical educators throughout the world, but is not so apparent in economically developed countries. The communist countries are trying to solve this problem by regimentation. It can be solved democratically only if we can demonstrate during the medical college and student-intern period effective, simple, but scientific, methods

applicable to village medical work. We must instill in the young graduate both concern for village health and enthusiasm for rural work. This concern and enthusiasm, which have been very real assets in the practice of the Ayurvedic system, need to be encouraged in the development of modern scientific medicine. If they can be developed in India, we will be making a real contribution to the world. There is no doubt that great responsibility and opportunity—to maintain and develop high standards in medical education and to find ways of integrating the social emphasis—rest on the medical educators in India today.