highly motivated picture of CFD (computational fluid dynamics) and its role in long range missiles like Agni, Prithvi, etc.

P. L. Sachdev (IISc, Bangalore) presented the connection problems for Euler–Painleve transcendents. He gave a comprehensive analytical-numerical treatment of ODE arising from GBE with general nonlinearity and variable viscosity. D. Y. Kasture (Aurangabad University) talked on differential inequalities and their applications in mechanics. V. Raghavendra (IIT, Kanpur) talked about the new method in the analysis of elliptic b.v.p. for exterior domain. P. S. Datti (TIFR Centre, Bangalore) explained the global existence of classical solutions to nonlinear wave equations.

D. S. Chandrashekharaiah (Bangalore University) reviewed his work on complete solutions for a coupled system of partial differential equations arising in elastodynamics, thermoelasticity and poroelasticity. Vasudevmurthy (TIFR Centre, Bangalore) gave a detailed picture of power boundedness of matrices and his work. M. Venkatachalappa (Bangalore University) talked about the stability of stratified conducting sheer flows. Palaniyappan (IISc, Bangalore) presented his work on Stokes flow images in a no slip plain wall. P. S. Hiremath (Gulbarga University) analysed the fluid flow in corrugated pipe. M. S. Malshetty (Gulbarga University) talked about convective instabilities in a horizontal porous layers and their applications in chemical engineering. N. M. Bujurke (Karnatak University, Dharwad) explained the role of computer-extended series solutions of ODE and PDE (linear and nonlinear) in unveiling the analytical structure of unknown functions and the ideas leading to analytic continuation.

S. Bhargava (Mysore University) presented a glimpse of Ramanujan's contributions to the theory of elliptic functions as well as to Jacoba's and Weierstrass's theorems. S. K. Sen (IISc, Bangalore) explained the significance of linear algebra and its scope in various fields. B. S. Kiranagi (Mysore University) talked about Lie algebra and Lie group bundles. Vanaja (Bombay) lectured on extended modules. C. Puttamadaiah (Mysore University) highlighted orthogonalities in normed linear spaces. R. Balakrishnan (Annamalai University) presented some known as well as new results and some challenging problems in Hadamard matrices. He also discussed the integral equivalence and Hadamard equivalence of Hadamard matrices. E. Sampathkumar (Mysore University) surveyed the concepts and results associated with global dominations, set dominations, global set dominations and point set dominations. Walikar (KUPG Centre, Belgaum) presented his work on winding number of graph. K. S Amur (Karnatak University) presented a talk on minimal surfaces and reviewed the nature of open problems listed by Osserman. R. Parvathamma (Ramanujan Institute, Madras) gave a brief account of the neighbourhood of univalent functions. S. Ponnuswamy (SPIC Science Foundation, Madras) talked on Hall's conjecture on starlike mappings and its proof and posed several problems. S. R. Malghan (Karnatak University) lectured on non-continuous transformations and elaborated the concepts like connected mappings, almost continuous maps and functions with closed graphs.

Besides invited talks, there were presentations of papers on various topics which included complex analysis, graph theory, algebra, topology, fuzzy analysis, fluid dynamics, numerical methods and number theory.

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COMMENTARY

Crisis in undergraduate medical education in India

Om Prakash

It is a matter of great concern that we are facing today in the education scene in our country. In this paper, I would like to portray some of the aspects that have impressed me as important with respect to undergraduate education in India.

First of all, is there a crisis? I do believe that there is a situation that is bordering on a crisis. Over the past few decades, we seem to be moving in a direction in terms of medical education that is far from 'healthy'. We are, no doubt turning out a large number of doctors, but it appears that a large majority of them are somehow alienated and insulated from the stark realities of health care delivery. The persistent and increasing lack of equitable health care distribution to the masses at large is not causing any impact on the younger generation. It is not perhaps the fault of the younger generation alone; the planners of medical education in our country have to bear a large proportion of the responsibility for the errors of judgement which has, over the years led to the present state of affairs.

Are we recognizing that there is a crisis? One supposes that we are, to some extent, doing so. Several committees and conferences have addressed themselves to this very problem, but while they have succeeded in producing documents and recommendations, there has been little in the way of implementing these suggestions in innovative means to modify medical education. In other words, while we realize that there is a need for substantial change in the very ethos of medical education, there are few attempts to make any meaningful changes.

What are the implications of these trends? The implications are clear.

There will be increasing overcrowding of doctors in urban areas, with little improvement in the rural sector. This trend, already seen now, causes further dilution of the standards of ethical care in urban areas too. The desire to specialize and stay in lucrative urban and semiurban areas will largely undermine efforts to encourage young graduates from taking up challenging roles as primary care providers in vast areas where they are direly needed.

What are the reasons for this situation? Medical profession has been blamed all over the world, more so in developing countries, for a businesslike approach far from humanistic and holistic attitudes. These trends are particularly poignant in the context of developing countries such as ours which can ill-afford gross and systematic neglect of primary and secondary care for the masses.

We have inherited our medical education system from the British, an inevitable consequence of history. Having done so, we seem to be adhering to this anachronistic system of education: a system that is largely directed towards curative care rather than community-oriented preventive health promotion. Over the years, youngsters have seen that practice of specialized medicine is far more lucrative than the preventive realm. Even the honours that society bestows to members of the medical profession are mostly to specialists in glamorous curative areas; accolades for the workers in the preventive and promotive aspects are few and far between. It is no wonder then that young doctors imitate the peer images of successful doctors in large cities, keen for early and lucrative pecuniary benefits rather than more idealistic pursuits. Another overriding reason why rural challenges are shunned is the more real issue of being unaware of the rural conditions and the constant threat of the less enlightened rural population reacting emotionally and violently to medical failures. It is but natural that unaware of the variables that exist in the rural environs, young graduates prefer the comforts, albeit extremely competitive, of the urban familiar surroundings. At present, when our society at large is becoming increasingly nonaltruistic and materialistic, perhaps it is unfair to single out the medical profession alone in this context.

What corrective steps would have averted the present impasse? The need for such measures was either not realized early enough or not implemented effectively in our context. Teaching of medical students in semiurban or rural environs suggests itself as an option. But for reasons not yet clear, there seems to be violent opposition to this type of effort in the corridors of medical colleges. One reason would be that teachers then would be forced to be in nonpractising situations, causing financial problems. The other reason is perhaps that teachers are more comfortable in the urban, college environs where diagnostic facilities are more readily available.

The very process of selection of medical students leaves much to be desired. A young person's aptitude, motivation and commitment are not the yardsticks at all; the academic merit in terms of the marks alone count. Is it any surprise then that many a medical student gets soon disenchanted with the profession and the rigorous demands it makes on the individual's physical and emotional resources. The curriculum of studies is mostly oriented towards somatic and lesion-oriented approach rather than a grassroots approach towards community health.

The present curriculum has other drawbacks in practical terms. Close to a third of the practicing clinician's patient population suffer from illnesses related to emotional distress as the main cause – the psychosomatic diseases. Yet, a graduate is very poorly equipped to handle these patients as there is hardly any worthwhile teaching of important areas of psychologic medicine during the formative years. Holistic medicine, then, is a distant dream. A dream because it would be a system based essentially in the periphery, with large community participation in health matters, and prevention and promotion as the main thrust as opposed to undue emphasis on curative care and costly and non-cost effective 'high tech' care as obtains currently.

In recent years, another phenomenon has caused further problems. Realizing that the state cannot provide professional education to the large numbers of candidates, private sector promoters have started the so-called capitation fee colleges in urban areas. These have attracted a large number of students with sound financial resources to take up medical profession. Karnataka has the dubious distinction of having the largest number of such colleges. Unfortunately, the standard of some of these institutions has not kept pace with current rapid progress in medical theory and practice and consequently there are a large number of graduates who remain unrecognized by the Medical Council of India – an anomalous situation indeed. Many of these graduates are unaware of the implications of the competition involved and the difficulties in setting up practices nor the factors operative in urban medical practice. The problem of capitation in medical colleges is to a small extent mitigated by the recent Supreme Court verdict, but yet the overall ethos of 'selling medical education' remains a dark cloud. It is clear that a medical degree obtained under these highly competitive and financial backgrounds does not augur well for the practice of holistic medicine with community health and altruism as the main motivations.

Doctors, after all, are products of contemporary society; is it realistic then to expect doctors alone to be idealistic in our context? A context where there is little in the way of national ethos, pride or altruistic ideology.

What of political will? Are not political will and sense of direction important? Certainly these are of crucial import in shaping and execution of policies regarding health and medical education. This would need well-informed and motivated leaders; at the present time, we see around us politicians largely devoid of these sterling qualities. To expect them to lead us to better standards of medical education would be to say the least, highly unrealistic. Yet, it must be mentioned that an enlightened political will is very necessary in this context.

It may be pertinent to mention a couple of innovative experiments that have been done to modify medical curricula and education methodologies. The Ohio experiment started in 1976. Realizing the need for more doctors to migrate to rural and underserved areas, medical education was modified so that a substantial portion of teaching was done in the rural environs. This was accomplished in hospitals and clinics located in rural areas of Ohio after graduation.

Closer to home, in Nepal, a similar experiment is being tried with some success.

These examples have to be tried out in large numbers and innovative teaching methods keeping our local problems in focus have to be implemented. Unless these steps are taken soon, the present situation of urban overcrowding with doctors who are underemployed or unemployed will increase, decreasing the standards of care; pari passu, underserved areas of the country will continue to suffer and health for all will remain a utopian dream.

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