TABLE I

Contemporary Topics in Urology for Distance Education

1. Percutaneous nephrolithotomy.
2. Ultrasonic lithotripsy.
3. Artificial sphincters for urinary incontinence.
4. Penile prostheses for erectile impotence.
5. Laser in urology.
6. Medical treatment of urolithiasis.
7. Recent advances in immunology as related to urologic oncology.
8. Urologic ultrasonography.
9. Computerised tomography in urology.
10. Clinical uro-pharmacology.

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Methods to Improve Teaching of Cost Effectiveness in Curative Health Care at the University Medical Education Level

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Of late there have been many views expressing the drawbacks of the present system of teaching in medical colleges. Several suggestions have been offered to improve the conventional approaches, in order to make learning more efficient (Tandon et al, 1986). Apart from university teaching about patient care, sophisticated gadgetary in investigative and curative equipment and wider range of pharmacuticals, no attempts seem to have been made to emphasize cost-effectiveness of curative medicine in general, and to a good extent within the existing range of available financial, public and individual resources. The staggering burden of medical expenses (that are ultimately paid directly, or indirectly through taxation by the patient) are being felt even in developed countries like U.S.A. where efforts are already on to curtail costs of curative medicine. In India, where a sizeable portion of the population can ill afford this input into medicine, with most individuals not being covered by any form of social security or medical insurance, these appear even more out of reach to the majority of people. Obviously, teaching of such attitudes and steps at undergraduate and post-graduate levels to the mutual cost and time-saving convenience of the treating physician and patient alike (without necessarily sacrificing efficiency and concern in individual health care) appears highly desirable. The points at which such measures could be taught in the manner detailed against each will now be discussed.

(1) Promotion of Feasible Self-Care

The possibility of entrusting to a patient or relatives a good part of the health care in curative as well as praventive medicine can be periodically and informally introduced to the university student, particularly during hospital postings and bedside learning. This encouragement

becomes important when facing disabling or prolonged care problems like paraplegia and urinary retention, poor control of bowel movements etc. after serious injuries to spine, repeated urethral dilatations for stricture etc. The patient or attendants could be taught to pass a catheter up the urethra periodically to drain the collected bladder urine, self-calibrate the narrowed urethra in stricture cases, or remove stool daily by insertion of a gloved finger up the anus (Rao et al 1986). The students specially require to be exposed to the art of patient motivation and counselling rather than to teaching attitudes under-estimating the intelligence and willingness of the illiterate patient group, for instance. Once learnt, the patient or the attendant can perform these manovers confidently under home conditions, thereby cutting down on inpatient costs and time usually taken up by chronic care nursing problems alone. This would be far more efficient and less expensive on the long run than indwelling catheter drainage for example. Cancer, high blood pressure, heart and chest disease patients could also be selected so that considerable on us is transferable on an individual basis to the patient or relatives for home care.

(2) Promotion of Outpatient Curative Services

The next point at which cost effectiveness could be taught is at the outpatient levels The students can be instructed about proper sizing-up of an individual patient's clinical condition and specific problems, allowing for his/her selection for outpatient treatment in a sizable number of cases, and consequent influence of such attitudes on mutual patient and hospital costs, competition for limited hospital b etc. at such outpatient facility areas. A l proportion of major and minor surgery hernia repairs, circumcision, varico-electo hydrocele operation, endoscopic proced etc. could then be performed without necessi ing patient admission (Kaye, 1985).

Attention of the student could be focussed on the increased number of such c that can be treated at similar cost with given period than otherwise possible with conventional method of hospitalization undergoing the same procedures. Refres course and continuing medical education p grammes could also be effectively used impart this message of choosing patient ambulatory care thus achieving cost-effecti ness without sacrificing efficiency.

(3) Cost-Reduction During Investigation, Tre ment and Hospitalization

Carrying out of as many of the reque investigations for a given case at an outpat level (except for emergencies) can be inculc and demonstrated to the students as con buting to reducing inpatient costs. Diagno tests for a specific disease entity or pati should never be a habitual ritual, but sho be organised in as logical an order as poss with the goal to obtain the maximal infor tion from the minimal number of proced (preferably arranging the non-invasive before the invasive), taking care to avoid th which are merely confirmatory to that obta ble by others. Similarly, selection of invest tions which are economical and feasible given situation and at the same time provi

desired information from the treatment nt of view could be brought to the student's . This will help in his or her adaption various altered facility situations better in ir individual career life. For example, ultra- nography at times could obviate need for ther radiological contrast studies.

If the patient presents to the institution with multiple disease problems, emphasizing to the trainee or student group on priority to gently investigate and treat the entity immeiately threatening to that individual patient comes important. The message of avoidance increased costs from further compelled, proged hospitalization for treatment of any complications resulting from wrong priority considerations causing delay in timely attention could then be brought in. Priority of attention to the vital body system e.g. head thorex over others in a multiple trauma case is an example of such teaching.

Teaching judicious selection and usage of drugs has also an equally important bearing on cost-effectiveness. Although a wide range of pharmaceuticals are available for treatment of various ailments, the students require to be cautioned about drug abuse (e.g. tonics, antibiotics etc.) which in turn can create a cost-ineffective & risky situation for physicians & patients alike. The futility of prolonged antibiotic prophylaxis or overuse of combinations of such drugs without detection and simultaneous correction of often underlying basic surgically treatable infective disease results in bacterial resistance, as a consequence of which costlier and a more toxic compounds are repeatedly and compellingly brought into play for combating such initially avoidable treatment failures. Short term antibiotic therapy (e.g. 6 months instead of former 18 months for pulmonary tuberculosis, single dose treatment for cystitis in woman etc.) combining both cost-effectiveness and efficiency should be brought to trainee attention.

Optimal utilisation of the available hospital beds and personnal resources by minimization of post-treatment time at which point a given patient could be sent out to be looked after at home (or as an outpatient), could be highlighted during bedside posting of students, particularly the post-graduates.

(4) Projection of cost inputs towards patient care facilities adjusted to individual student career concerns

A post-graduate student wishing to start his own private hospital or joining a new group requires to be given guidelines as to the optimal investment with cost-effective relevance to his future working enviroment. Many students are under the impression that with progress of medical sciences and growth of specialities, one will expect prompt increased investment costs towards the ultimate laudable goal of providing efficient care, at his rapid command and demand. Disillusionment soon follows, as the affordability of providing such services is limited by the slowly expanding resources of any public or private financing agency. The pinch of this problem is being felt even in developed countries. Therefore the postgraduate student needs to be informed about rapid, cheep and easily conducted methods of investigations but yet of proven bulk accuracy e.g. dip slide or

strip test for bacteriurea before resorting to urine culture (Rao et al, 1984). The latter facilityin this instance could be reserved for those few patients in which the rapid testing is anticipated to be fallacious.

The art of sensing feasibility of acquiring capital expenditure equipment for one's own facility by combining demands with other professionals or departments could be introduced to the post-graduate student at a suitable point of learning activity (e.g. C.T. scan or ultrasonography with radiology, laser source equipment sharing with Ophthalmology etc.). Both justification for wide range of use and hence optimal cost-effective utilization of the new equipment is reinforced by such attitude.

(5) "Balanced" follow-up care

The students, during their outpatient training, could be exposed to the art of follow care balancing between "no-concern" or "... concern" attitudes in regard to number out-patient visits or frequency of investigat towards the goal of mutual patient/hosp cost-effectiveness. The students should given opportunity to observe consult (teaching staff) making use of the dictaph telephone or postal correspondence facil to the maximal mutual convenience and ad efficiency of the patients and themselves.

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The Training and Utilization of Paramedics in Health Services of Bangladesh

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ABSTRACT

The developing countries like Bangladesh are facing the challenge of providing need based health services to a large population at a limited cost. Thus development of appropriate training programmes for different kinds of auxillary health personnel assumes great significance in the light of the countries' commitment to provide HFA by 2000 AD through primary health care approach. An attempt has been made to examine the present situation and outline the curriculum of various paramedical courses which provide basic support to the health care delivery in Bangladesh.

One of the greatest challenges before the developing countries has been to develop cost effective health services system according to the needs and requirements of the community. Bangladesh is also committed to the goal of providing Health for All by 2000 A.D. through Primary Health Care. As rightly emphasized by W.H.O., the development of appropriate educational strategies has been considered to be the most important factors towards realization of this ambitious goal.

There is no unique model of training programme for particular health workers in the developing countries. The approach to the problem should be independently explored by each country in accordance with the local characteristics, needs and resources. The key word

The Need for a Rose—(Re-orientation of Surgical Education)

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ABSTRACT

The current status of undergraduate training in surgery is largely unsatisfactory. This article analyses the job requirements of undergraduates and the objectives of surgical training. Lacunae in the existing system are focussed and suggestions are made for ensuring considerable improvement, without the need for major additional resources.

The Government of India has rightly appreciated the need for a reorientation of medical education in this country to make it more relevant to conditions existing here and thus was born the ROME scheme in 1977. Although the primary aim of this scheme was to ensure active involvement of the Medical College in Community Health problems and in direct delivery of Health Care Service to the rural population, the functioning in practice of the scheme has been largely unsatisfactory with the implied reorientation of medical education not forthcoming satisfactorily.

The aim of the current presentation is to point out certain gross deficiencies as noticed by the author in the training of the undergraduate in the discipline of surgery and to suggest remedial measures, within the existing system keeping in mind the specific objectives of the ROME scheme.

Task Analysis

An analysis of the job requirements of a fresh undergraduate on completing his training reveals the need for him to function in one of several roles, viz.

(i) as a doctor working at the PHC,

(ii) in private practice,

(iii) a general duty medical officer in central or state governments, autonomous or private undertakings,

(vi) in taluk or district level hospitals,

(v) as a postgraduate student,

(vi) in teaching institutions and in

(vii) other areas (migration abroad etc.).

Surgical education as at present carried out, prepares him primarily only to function in a transient role as a continuum to further postgraduation and does not lay enough stress on other aspects to enable him to perform satisfactorily in the other roles mentioned earlier. This lacunae continues to exist side by side with the recommendations of the Medical Council of India regarding undergraduate medical education (MCI, 1977), a document which in itself is quite vague.

Rose-I

I / Objectives

The aim of training in surgery is to ensure that the fresh graduate is able to :

(a) diagnose, order relevant and feasible investigations and treat common simple surgical ailments,

(b) recognise and refer appropriately at optimum time those surgical ailments which require management at specialised centres,

(c) recognise the natural anxiety in patients and relatives regarding surgical procedures and counsel them regarding the various implications of surgery,

(d) to recognise, record and appropriately treat where feasible or refer where required, Medico-Legal situations met within day to day practice.

(e) to perform basic and simple surgical procedures commensurate with his training and the facilities available e.g. suturing of wounds, drainage of abscesses, biopsies, minor operations etc.

(f) recognise that surgical intervention is but one aspect and probably a minor one at that in the management of patients and therefore be aware of the indications, contraindications and limitations of surgery,

(g) to provide first aid in appropriate situations, and advise regarding transport of patients to major centres if required,

(h) be aware of the ethical principles involved in surgical management and

(i) be an active participant in national programmes. The list is obviously incomplete and can be improved.

Current Training Programme

Keeping in mind the job requirements and objectives of undergraduate surgical training enunciated above it is obvious that the current system falls far short of the requirement.

Rose-II Present Lacunae

The lacunae in the current system can be listed as follows :

(i) over-emphasis on rarer and more major problems to the detriment of the common surgical ailments seen at the OPD,

(ii) lack of adequate training on the implications of surgery, and on the importance of pre and postoperative management,

(iii) total lack of contact with medico-legal problems during the entire period of surgical training as this aspect is left to the department of forensic medicine,

(iv) total lack of continuous contact, either with the patients or the relatives and therefore an inability to appreciate the anxieties and implications of surgery,

(v) minimal contact if at all with emergency surgical problems as the entire duration of surgical posting is spent in demonstrating 'cold' cases and the students are available with the department for only a limited time,

(vi) minimal contact with actual operative surgery. The last two are left generally to be covered only during the short internship period in surgery and are considered of no consequence to the undergraduate surgical trainee,

(vii) a total ignorance in the undergraduate of the differences in facilities which are likely to exist between teaching institutions and areas where he may actually have to perform as in PHCs etc. This is a very important aspect and is probably partly responsible for the fresh graduate being reluctant to work outside major teaching hospitals.

(viii) complete avoidance of any training in the effective domain with forms a very significant part of the Doctor-Patient relationship in surgery (Anantha-krishnan, 1981).

(ix) no mention of the ethical implications

of surgery—an area where the undergraduate is left in blissful ignorance.

Reasons for the Lacunae

The reasons for the existing state of unsatisfactory affairs is obvious. Surgical training to the undergraduate is at present considered as only the first step in the continuum progressing from undergraduation to internship, to residency, to postgraduation and to senior residency without really preparing him for fulfilling job requirements after graduation, were he to so chose or be forced to do so, keeping in mind the greater and greater difficulty in getting admission to post-graduate courses. Needless to say an eight week pre-registration internship period cannot compensate for the time lost during the entire three clincial years posting in surgery.

Suggestions for Improvement

Keeping in mind the task analysis of the fresh graduate and the objectives of training in surgery it is necessary to completely recast the curriculum of the undergraduate course in surgery. However, this expectation is likely to remain unfulfilled in view of known constraints. The curriculum should be need based with greater emphasis on common problems and practical training rather than theoretical knowledge. It should also ensure familiarity of the trainee with facilities existing at the periphery as opposed to major teaching institutions. Such an exercise is now being undertaken at JIPMER which falls in the jurisdiction of the Central University of Pondicherry.

In order to develop proper attitudes it is necessary that continuous contact is encouraged between patients and their relatives and students. It is necessary, therefore, to allot more responsibility to students, make them more active members of the team and encourage them to actively involve themselves in the diagnosis, investigations, management and follow up of patients allotted to them.

Students must also be encouraged either voluntarily or by compulsion if required to visit the wards and the casualty beyond working hours to enable them to acquire some knowledge regarding emergencies which usually tend to arrive after working hours. In the final year, students allotted to individual units must work full time with that unit for this purpose as is now being done only for the department of obstetrics.

Undergraduates must be encouraged to wash up and thus 'passively' assist operative procedures especially those of a minor nature like drainage of abscesses removal of lipomas, cysts, biopsies, hydroceles, hernias etc. Active involvement in this fashion is more likely to evolve interest than mere observation as onlookers.

The ROME scheme demands that a suitable time table be worked out by medical colleges for posting of undergraduate students to District Hospitals, Taluk Hospitals, subdivisional level hospitals and PHCs for not less than 8 weeks. Undergraduates posted in individual units must therefore be encouraged to visit PHCs and peripheral hospitals in the vans provided with the ROME scheme along with their respective surgical specialists. This will give them an idea of the prevalence of actual surgical problems seen at the periphery as opposed to teaching hospitals and also give them an idea regarding facilities likely to be available at the periphery. Seeing consultants perform minor procedures under these conditions is likely to give them confidence to be able to do so themselves.

As is required for the interns in some institutions, undergraduates also should be required to maintain diaries appropriately formulated to ensure adequate participation on their part in the activities mentioned earlier.

More emphasis is to be paid in training both the undergraduate and the intern in principles of operative surgery. Details regarding this have been discussed elsewhere and will, therefore, require no repetition (Ananthakrishnan, 1984). It is necessary at all points of training to ensure that the undergraduate understands the relevance of the training procedure and the need for his active and useful participation.

Teaching must be more problem oriented rather than subject based and appropriate efforts must be made to ensure this.

In conclusion, it appears that considerable scope exists in improving undergraduate training in the discipline of surgery and much can be achieved in terms of results with negligible or minimal additional resources.

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Survey of Existing Conditions in Dental Departments of Medical Colleges in India

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Dental departments of medical colleges are in a state of evolution and are being rationalised. Much has already been done to align them in their due perspective but a lot yet remains to be fulfilled. The standard regarding the staff members, their qualifications, basic equipments, beds alloted to these departments and teaching schedules differs from place to place. The Medical Council of India (MCI) has prescribed some guidelines, but these are either vague or not followed uniformly. Since the inspecting teams have no dental experts the setup of dental departments is ignored altogether.[1]

Keeping these shortcomings and variations in mind a survey was planned to assess the salient features of the dental departments of all the medical colleges of the country. The heads of dental departments of all 106 medical colleges were posted self-addressed and stamped proformas to be filled and returned to us. Thirty five replies were received in the first instance. The request was repeated in the same way to the remaining 71 medical colleges after a gap of two months. Eighteen more replies were received making a total of 53 replies out of 106 medical colleges i. e. a 50% response, which has been analysed and reproduced below. Out of 53 responses, 50 were from the dental departments of medical colleges and 3 were from dental colleges/dental wings looking after the dental needs of these three medical colleges,

1. *Teaching* :—MCI boolet[2] recommends 15 days posting of three hours a day in the department of dentistry in II MBBS, Ist and 3rd term.

   The number of medical students admitted to the 53 medical colleges ranged from 50 to 200. On analysis of data it was found that no dental teaching was done at one medical college, no theory classes were taken at another two medical colleges while in the rest of the 50 medical colleges both theory classes and clinical demonstrations were taken. The theory lectures of mostly 60 minutes duration ranged between 4 to 30 and these were conducted in 1st Profession at 1 college, in 2nd Profession at 19 colleges and in 3rd Profession at

30 colleges. The clinical demonstration of mostly 3 hours' duration ranged between 10 to 30 and these were conducted in 1st Profession at 5 colleges, in 2nd Profession at 29 colleges and in 3rd Profession at 18 colleges.

2. *Examination in Dentistry* :—MCI booklet[2] recommends to include dental diseases in Surgery paper II.

On analysis of data, no question on dental diseases ever appeared in theory paper of Surgery or any other subject at 22 medical colleges while at 31 medical colleges only one question or a short note appeared.

3. *Medical Interns* :—They were posted in dental departments only at 12 medical colleges.

4. *Teaching Staff* :—MCI booklet recommends,[3] 1 Professor/Associate professor/Reader, 1 Assistant professor/lecturer and 1 Demonstrator for 100 annual admissions of medical students.

Considering only 50 dental departments of medical colleges, the dental departments were headed by Professors at 23 places, Associate Professors/Readers at 18 places Assistant Professors at 2 places, Lecturers at 6 places and a Registrar at 1 place This showed that MCI recommendation was flouted at 9 places. There were 8 dental surgeons/dental assistant surgeons in 7 medical colleges and obviously they carried no teaching designations. There were 36 house-surgeons in 21 medical colleges only.

Though the staff recommendation in dental departments by MCI is bare minimal, yet there were only 25 medical colleges where staff strength was according to its directive.

Some glaring discrepencies were as under :—

One medical college admitting 100 students annually had only one teaching staff member with B. D. S. qualifications and designated as lecturer, while another medical college with 125 admissions was headed by a graduate Registrar. Another two medical colleges admitting 150 students had only two staff members each with lecturers as heads at both the places. Another medical college admitting 50 students annually had only one teacher as a Professor.

5. *Dental Auxillary Staff* :—MCI booklet[4] prescribes four dental technicians and one store keeper-cum-clerk for 100 annual admissions in M. B, B. S. course.

The analysis of 53 dental departments showed the availability of following auxillary dental staff :—

I. **Dental Technicians** :—A total of 67 dental technicians were available at 40 places.

II. **Dental Hygienists** :—A total of 35 dental hygienists were employed at 24 places.

III. **Dental Radiographer** :—One each was available only at four places.

IV. **Sweepers** :—At least one sweeper was available at every place, though he was part-time at many places.

V. **Clerks cum Typists cum Receptionists**:-One each was available at 23 places only.

VI. **Nurses** :—24 Nurses were available at 18 places.

VII. **Pharmacists** :—One each was available at 2 places.

VIII. **Ward Boys/Ayas/M.N A.'s/Attendants/Buscars** :—30 of these were available at 19 places.

IX. **Chairside Assistants** :—37 were available at 14 places.

There was hardly a place where auxillary staff was sufficient either according to the directions of the MCI or according to the desirability.

Some glaring discrepancies were as under :—

One place admitting 100 students annually and with 2 dentists in position had no auxillaries whatsoever. The following places admitting 155 students (with 5 dentists), 70 students (with 4 dentists), 125 students (with 4 dentists) 120 students (with 3 dentists) 145 students (with 2 dentists), 100 students (with 2 dentists) and 100 students (with 2 dentists) had a single auxillary staff in the form of 1 clerk, 1 clerk, 1 chairside assistant, 1 nurse, 1 technician, 1 technician and 1 technician respectively besides the assistance of a sweeper at each place.

6. **Dental Casualty Service** :—No dental casualty services existed at 13 places out of 53. At 34 places, a dentist was called only when needed. Only at the remaining 6 places dental casualty services were available round the clock on 8-hourly staff rotation duty. A dental unit/chair was available only at 7 places of casualty service while dental beds were reserved only at three places in a number of 1, 2 and 2 respectively.

7. **Dental Ward** :—No beds were available for dental department at 5 places, while at other places the bed allotment varied between 2 and 20 with an average of 6 beds at a place. At 22 places, the beds were under the independent charge of heads of dental departments though they did not seem to have sufficient subordinate staff, like registrars/house surgeons/nurses to look after these beds. At other 26 places these dental beds were placed in the wards of Surgery (14 places), E. N. T. (6 places), Medical (2 places), Orthopaedics (1 place), Skin (1 place) and miscellaneous (2 places).

8. **Equipment** :—

a) Dental Chairs and units needed in dental departments were based on the total number of dentists which

was 190 including 35 house surgeons in 50 medical colleges. The number of dental chairs and units was adequate everywhere except at 11 places where these were deficient.

b) **Dental X-Ray Units** :—These were available at 38 places and there were no X-Ray Units at 15 places. At 28 places there was one X-Ray plant each, at 6 places 2 X-Ray plants each and at 4 places 3 X-Ray plants each were available,

c) **Airotors** :—One or more were available at 25 places. At 11 places there was one airotor each, at 6 places 2 each, at 7 places 3 each and at one place 6 of these were available.

d) **Ultrasonic Scalers** :—One or more were available at 19 places. At 13 places there was one each, at 3 places 2 each, at 1 place 3, at another place 4 and still another place 5 were available.

e) **Dental Laboratories** :—Dental laboratories for prosthetic and maxillofacial prosthesis work were available only at 29 places while we had 67 dental technicians at 40 place out of 53 places. This showed that these technically qualified people were being used elsewhere.

f) **Special Equipment** :—Special equipment like casting facility was available at three places while cryosurgery, endobox, diathermy, micromotors, boyle's apparatus and amalgamator was available at only one place each.

9. **Operation Theatre with General Anaesthesia** :—This facility was available at fixed times (mostly once a week) at 34 places while 19 places had no such facility.

10. **Post-Graduation** :—Post-graduation was available at 5 medical colleges. Four medical colleges had the facility of post-graduation in the specialities of Orthodontia, Public Health Dentistry, Operative Dentistry and Oral Surgery—one at each place, while one medical college had post-graduation in two specialities i. e. Prosthetics and Oral Surgery.

11. **Community Dental Clinics** :—Community dental service, either urban or rural, outside the medical college campus was available at 15 places out of 53.

12. **Comments/Suggestions of Head of Dental Departments** :—Most of the heads of dental departments had responded with following comments/suggestions :—

I. **Present State** ;—Detal departments are in a bad shape and a lot of improvement is needed for their growth and development. Medical Council of India and Dental Council of India should be apprised of the situation and requested for remedial measures.

II. **Beds, Casualty and General Anaesthesia Service** :—At least 10 beds under the head of dental department and 2 days a week of general anaesthesia service in the operation theatre should be available for the dental department. Adequate junior dental staff and nursing staff should be provided to look after the admitted patients and also to look after the casualty service. A dental unit chair should be provided in the casualty centre.

III. **Regional Repair Workshop** :—There is difficulty in getting the repairs service of the equipment. Regional workshops are suggested at the dental/medical colleges for this purpose.

IV. **Dental Specialities Staff and Regional Referral Centres** :—Many have complained of such inadequate staff that even the treatment of staff and students of the medical college could not be carried out satisfactorily besides the commitment of teaching and research. Dental departments should be uplifted in such a way that these can have the facilities of all specialities so that these departments can render the specialised dental services rather than the present general dentistry. There should be a minimum of 5 post-graduates, one each in the specialities of Oral Surgery, Periodontia, Prosthetics, Orthodontia and Pedodontia/Operative Dentistry for 50 annual M. B. B. S. admissions. If the number of admissions is more, these specialists can have their own sections with an assistant like registrar/demonstrator and a house surgeon accordingly. Once all specialists are there, these deatal departments can work as regional referral centres for the patients of the area.

V. **Auxillary Staff** :—At least two dental technicians, 2 hygienists, 1 radiographer. 2 receptionists/typists/chit clerks, chairside assistants equal to the number of dentists and 1 whole-time sweeper should be there for 50 MBBS admissions.

VI. **Curriculum** ;—A uniform pattern is needed so that medicos are given adequate knowledge.

VII. **Examination in Dentistry** :—For want of examination in dentistry, attendance in classes is erratic. Surgery paper should carry at least one part with three questions on dental diseases and the head of dental department should be the examiner for this part.

VIII. **Finances** :—There should be suitable annual budget for dental departments for the purchase of equipment, drugs and materials.

IX. **Post-Graduation** :— Post-graduation should be allowed in the speciality where the conditions laid down by the authorities can be fulfilled. so that the teachers in the medical colleges can persue an active interest in their specialities.

X. **Attitude of Authorities :**—Many have complained of the callous attitude of the authorities and they must be made to wake up. The recommendations of the MCI should be mandatory and nothing should be left to the local authorities. The inspection of dental departments should be carried out by dental inspectors and not by medical inspectors who themselves know very little about the dental setup.

XI. **All India Annual Meet :**—All the teachers or at least heads of dental departments must meet at least once a year so that they can discuss about their common interests and problems. An all India body of dental teachers of medical colleges is desired to be formed.

XII. **Social and Preventive Measures :**—Social and Preventive dental measures should be the responsibility of these dental departments. Fluoridation and defluoridation of water programme which is a social health measure should be got carried out by the heads of these departments.

Discussion :—The basic objective of dental departments of medical colleges is teaching of dentistry to MBBS students, research, dental and maxillofacial treatment of both outdoor and indoor patients and help in the prevention of dental disease. All this is possible only if we have sufficient staff, auxillaries, equipment, accomodation, beds, materials, cooperation of concerned authorities and proper guidelines. Owing to the magnitude of dental disease in the country, paucity of dental manpower and urgent need for prevention, it is all the more important that the dental departments of medical colleges be well organized. All clinical specialities have to be developed so that these departments become the centres of referrals. If the graduate medicos must have the working knowledge of dentistry the curriculum should be laid down and students be examined in the subject. Dentistry should not be isolated as an outside subject but should be considered as an integral part of the other body systems. The existing state of these dental departments is at such a low ebb that no justice is being done to any of the objectives of the department. It is high time a committee of experts from these departments is formed by the concerned authorities so that available facilities are reviewed and suitable recommendations are made.

Summary :—Existing conditions in dental departments of 53 medical colleges out of 106 in the country have been surveyed and analysed in respect of teaching facilities, staff, casualty service, dental beds, equipment, operation theatre facilities under G. A., post-graduation and community dental services. There are many deficiencies in almost all the categories. Comments of heads of dental departments have also been reportad. Most of them feel strongly about the need to reorganise these departments.

Acknowledgement :—We are grateful to heads of dental departments in various medical colleges who responded to our questionaire. Our thanks are also due to our Principal, Dr. N. Dube, for all his help, guidance and permission to conduct this study.

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TABLE III

Percentages of Correct Responses in Therapeutic Nutrition Statements

	Graduate N=190	Post-graduate N=67	Diploma Holders N=23
Peptic ulcer	59	60	71
Kidney diseases	47	52	67
Diarrhoea	73	71	75
Anaemia	62	65	77
Fever	64	76	77
Liver Disease	53	47	59
Heart Disease	67	71	80
Diabetes	32	32	45

TABLE IV

Values Obtained on Chi Squere Test

	Graduate and Post-graduate	Graduate and diploma holders	Post-graduate and diploma holders
Peptic Ulcer	n.s	3.16[1]	2.66[2]
Kidney Diseases	n.s	8.14[3]	4.66[4]
Diarrhoea	n.s	n.s	n.s
Anaemia	n.s	5.30[4]	3.50[1]
Fever	3.42[1]	4.04[5]	n.s
Liver Diseases	n.s	n.s	2.88[1]
Heart Diseases	n.s	4.32[4]	2.18[2]
Diabetes	n.s	3.56[1]	3.56[1]

Significant 1 at 0.10% lev l, 2 at 0.20% level,
3 at 0.01% level, 4 at 0.05% level,

Ref IJME, Vol 23, No 1, Jan Apr 1984, pp 23-26

Is Training of Undergraduate Medical Students in Operative Surgery Adequate ?

By

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ABSTRACT

The current procedure for practical training of the undergraduate student in surgery is grossly inadequate. The deficiencies of the existing system have been mentioned. Clear and concise objectives are suggested as also changes in the existing training methodology which would ensure better training and a better utilisation of the available time of without adding to the curriculum eliminating at the same time the impartment knowledge outside the purview of the MBBS doctor.

Introduction

Mark Ravitch of Pittsburg, USA, internationally known surgeon, editor, historian and linguist is quoted as having stated that when an editorial or an article begins with a question (as this one does), the answer is always no (Hardy, 1983). The question raised in this article is very pertinent currently as different universities tend to adopt widely divergent approaches to this problem.

The Medical Council of India in its recommendations on Undergraduate Medical Education merely states that the course of training in surgery including orthopedics should necessarily involve

(a) Practical instruction in minor surgical techniques inculding first aid and

(b) A course of practical instruction in common operative techniques including decompression, bandaging, splintings plaster etc.

The recommendations (MCI, 1977) do mention that to achieve the above aims the candidate should have one month clinical clerkship in the casualty and emergency services besides outpatient and inpatient training in surgery. No definite guidelines are available regarding the content of the course of training in operative surgery of the methods to be adopted in achieving the objectives of training in that field.

Existing system

In the absence of any fixed guidelines and well defined objectives, it is not surprising that there is a wide variation in teaching the so called "operative surgery" to underguaduates. In some universities as in the university of Madras, the subject assumes great importance in view of the marked weightage given to operative surgery in the viva part of the examination in general surgery for the final MBBS. Candidates have to undergo a series of

lectures on operative techniques of "Commonly" performed surgical procedures in the final year of the undergraduate training. The course usually consists of a series of theoretical discussions on the indications, contraindications and procedures for performing various surgical operations, supplemented by a short and variable period of observation of actual operations in the operating rooms. In view of the large numbers of students involved and the limited period available for surgery in the final year, this latter period of observation has necessarily to be extremely curtailed in scope, duration and content. Demonstrations of some of the operative procedures in cadavers is no longer current primarily due to the shortage of cadavers but also due to difficulty of any worthwhile operative surgery demonstration on preserved bodies.

It is not surprising that in view of the above, student compliance is minimal or nil and the course is usually accepted as an unavoidable encumbrance with students taking recourse to memorising a series of operations immediately prior to their examination in order to satisfy the examiners.

The lectures involve large groups of students without in most cases even the facilities of Audio-visual aids. Most of the operations described have not been even seen by the students and the instruments shown are sometimes archaic and those not commonly used.

Framing of objectives

In view of the lacunae, pointed out above, it is necessary that strict and observable guidelines are framed if necesseary by the MCI, so that students, faculty and examiners are in agreement on the objectives and how to achieve them.

It cannot be gainsaid that the aims of the practical training in surgery should include

(a) a knowledge of resuscitative procedures, first aid, splinting, treatment of abscesses, sutures of wounds etc.

(b) a familiarity with principles of surgery especially an ability to decide

(i) What to operate-i.e. the simple procedures which an MBBS graduate can safely be expected to perform in his day to day practice,

(ii) when to operate as a necessary corollary of the above and

(iii) most important of all which patients to refer for surgery elsewhere All these three factors would imply in addition a knowledge of emergency care, again that alone which is within the purview of an MBBS graduate.

The course of training should not include any reference to procedures which would be outside the scope of a graduate doctor practising in the usual environment in the country.

The list therefore should be curtailed to the barest minimum keeping in mind the above requirements. A list of procedures, knowledge of which could be considered absolutely essential for undergraduates is given below :

(a) sutures of wounds, drainage of abscesses ;

(b) tetanus prophylaxis including wound debridement ;

(c) venesection and establishment of a safe and effective I.V. line ;

(d) tracheostomy and emergency care of obstructed airway including principles of airway maintainance in the seriously ill patients ;

(e) emergency treatment and splinting of common fractures ;

(f) treatment of common perianal conditions like fissures and piles ;

(g) recognition of threatened or existing intracranial hematoma and ? burr hole exploration ;

(h) recognition of intraabdominal emergencies and the need for referral to appropriate centres etc ;

(i) minor operative procedures like vasectomy, circumcision, hydrocelectomy ? etc. ;

More complicated procedures like herniorrhaphy, gastrojejunostomy, appendicectomy etc. which are often taught to the undergraduates would really be outside their scope.

A knowledge of the use of common intruments would ofcourse be part of training in the relevant procedures.

Methodology of training

With well defined and clear objectives, the framing of a training schedule becomes very much simpler and necessarily becomes more need oriented. The suggested scheme is elaborated below :

(i) The disproportionate credit given to operative surgery in the final MBBS examination should be dispensed with thus eliminating the need to memorise and repeat little understood procedures.

(ii) Training in "practical" surgery should mainly be in the final year when an adequate theoretical background would already be present.

(iii) There should be no need for formal lectures with their inherent and well recognised disadvantages.

(iv) Although the disadvantages of cadaveric demonstration are well known and have been mentioned earlier there might still be a limited role for recourse to them for demonstrating procedures like, endotracheal intubation, tracheostomy etc.

(v) Finally, the most essential and most important part of practical surgical training would entail a radical change in the schedule of undergraduate posting in surgery.

(a) The students in batches should be posted full time in the various surgical units as is being done currently for obstetrics during the entire period of their final year posting in general surgery. This naturally would include out patient and inpatient training with the respective units, attending minor and major operative surgical sessions and also an exposure to emergencies with the concerned units on their emergency days. This constant exposure for 8 weeks would give an adequate opportunity of familiarising themselves with most of the procedures mentioned earlier on the spot as it were, without need for theoretical classes. Since full time posting is already current in the labour ward its adoption for other disciplines should pose no problems. Since surgical management is a continuous process, constant exposure would ensure optium utilisation of the available period, besides fulfilling the needs of

" essential." practial training. Needless to say, this would also ensure a sound basis for the post final examination, pre-registration internship programme.

To retnrn, therefore, to the title of this article, the answer once again as suggested by Revitch is "no". The training is certainly defective but these deficiencies are largely correctible if definite objectives are framed and minor changes instituted in the training programme.

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What are the financial resources for Health 2000

	Low Income	China 1978 estimates	Lower Middle Income	Upper Middle Income	Higher Income
Number of Countries	39	1	28	28	17
Average annual per capita income (US$)	300	400	300-700	1000—2500	3450
Population in 1976 (million)	1330	930	244	378	79
GNP in 1976 ($ billion)	220	372	170.6	480	270
% GNP allocated for health, public sector	0.77	0.78	0.64	—	—
Average per capita health expenditure	1.2	3.1	4.5	—	—
Total health expenditure $ billion (public sector)	1.7	2.9	1.1	4.8	2.7
Total estimated private health expenditure $ (billion)	6.8	—	4.4	19.2	10.8
Total estimated public+private health expenditure ($ billion)	8.5	Not known	5.5	24.0	13.5
Estimated 'Absolute poor' %	45	—	15	8	5

Source : World Health Forum 1981 Vol. 2 No. 1, Lee M Howard.

Education of Undergraduate Medical Students In Radiology*

By

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Education in Radiology
I
II

ABSTRACT

Knowledge of radiology is essential for practice of medicine, hence it must form an integral part of undergraduate training. The students at this level do not need exposure to the details of specialised radiological techniques. However, training in underlying principles, importance, judicious usage and limitations of radiological procedures is essential. The curriculum content can be rationalised to ensure coverage of appropriate topics. Integration of teaching in radiology with pre-clinical, para-clinical and clinical subjects would be the most effective methods of training. This could be achieved by including discussions and demonstrations of radiographs and slides etc. with the body systems taught in these disciplines The faculty from the department of radiology if and when possible could be directly involved in these teaching sessions. During the clinical period, attachment of small groups of students to the department of radiology would be very useful. The students could observe and participate in the routine procedures being carried out in the department.

*Based on background paper prepared for a meeting of the International commission on Radiological Education held in Barbados in November, 1982.

The graduate in medicine is not expected to be a specialist in radiology but he or she is expected to have some knowledge about the modalities of imaging so that he can practice medicine effectively.

In brief, the educational objectives for education of undergraduate medical students in radiology should be as under:-

1. The graduates should know the physical principles underlying all imaging techniques including radiology, ultrasound, CAT and special procedures including contrast examinations
2. Some understanding of the biological effects of radiation, radiation protection and adverse reactions to contrast media and their management.
3. The importance of the judicious usage of various imaging procedures, when and how to requisition them, supplying of proper clincal history and detailed findings of the physical examinations.
4. He should be able to understand and appreciate the report given by the radiologist and also the inherent limitations of the various procedures.

There is a dearth of trained radiologists in the developing countries due to their migration to affluent countries and the lure of private practice. Moreover, most such countries can not afford to have diagnostic radiologists in small hospitals and primary health centres. Thus very few radiologists are available in these countries for the large population attending Government and Semi-Government hospitals.

Since the modern system of medicine depends a great deal on imaging techniques, it would be worthwhile to delete some topics which are of less practical importance from various subjects and the time thus saved could be effectively utilised for giving more clinical training, more emphasis on behavioural sciences, paediatrics medicine and diagnostic radiology. How to achieve the objectives laid down above ?

Probably the best method would be to integrate radiology with other subjects.

In the pre-clinical years, teaching of anatomy and physiology can be supplemented by appropriate radiographs showing the normal skeletal system, cardio-vascular system, gastrointestinal tract, the vascular system and the bronchial tree etc. Normal movements of the heart can be shown on real time scan and imaging of organs by radionuclides and perfusion studies. These will not only enhance their understanding by visual impact but the students will also realise the relevance of learning these subjects for their clinical work.

In the para-clinical years, especially for subjects like pathology, microbiology radiology would be of help. When pathology of an organ is being taught then along with the gross specimens and the histology slides, X-rays of the same part or organ, normal as well as the radiographs showing specific changes that the particular pathological process causes in the radiographs or changes on ultrasound and nuclear imaging can be shown. This will make the study of pathological processes more interesting as their implication in actual practice can then be appreciated.

Similarly in microbiology, radiological changes caused by bacterial and viral infections

in various body organs and systems can be demonstrated.

In forensic medicine, various types of fractures, effect of trauma on the heart, lungs, soft tissues and perforation of the gut etc. can be shown radiologically, to make the subject come alive for the students.

In order to achieve this goal, very close cooperation is required between the faculty of radiology and pre and para clinical faculties. The problems which can arise are the length of time allotted to radiology out of the tight schedules of the various specialities and the reluctance of the radiology department to spare so much time of the faculty.

In may not be possible to spare a faculty member from radiology department, each and every time a lecture or practical demonstration is arranged. However, simple radiographs can be shown by the teachers of these disciplines themselves supplemented by teachers from radiology department to give a few demonstrations of imaging at the end of teaching of each system before the next part of the curriculum is started.

In the clinical years is India, about 20 lecture demonstrations are given to the final year students. These do serve some purpose but the number of students in a class are so large that not every student can see the lesion or retain his interest. In our experience, showing radiographs to undergraduate students is more effective than projection of slides.

Small batches of students or integration of imaging in various seminars and in integrated teaching will be more benificial than teaching imaging in isolation without correlating with actual patients or without emphasis on the clinical relevance.

The students are also posted in small batches to the radiology department during their clinical posting. This period is found to be useful for students learning because :-

i) They watch and participate in the routine procedures being carried out in the department;

ii) they observe the techniques of special procedures;

iii) they study the x ray films from teaching files of the department;

iv) see the practical applications of radiation protection measures;

v) understand the value and limitations of radiological procedures and other imaging techniques;

vi) attend the clinco-radiological conferences held by the department;

vii) learn interpretation of routine rediographs and gross abnormalities of various structures and organs;

viii) learn the cost effectiveness of various procedures as related to the yield of information.

Here, a great deal depends on the faculty of the radiology department, how much time they can spare out of their routine work, teaching of post-graduate students and research, for under-

graduate teaching. Individual attention is required, if they want the student to develop interest in the fascinating world of radiology.

Ability to recognise and interpret radiological signs and analyse and correlate them with the clinical findings can only be achieved if more time is spent near the viewing boxes by the students supervised by the faculty and students are encouraged to follow-up their cases to get the final diagnosis

In our experience, the response of the students is directly proportional to the enthusiasm of the faculty. Many undergraduate students decide to take up radiology as a speciality after their posting in the radiology department.

Performance Factors of Attempt and Non-Attempt Holding Medical Students — An Indepth Interrogatory Study (Part-I)

By

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Introduction :

The medical science is expanding very fast and the day is not far off when it will pose a challange to the top level amongst planners engaged in the delivery of medical education. Recently, it has been observed that the knowledge in medical science doubles every 7-10 years. It is a bitter truth that the majority of medical teachers are still untrained, unable to impart their full talent, skills and knowledge to their future on-going generation. The medical institutions, in general, are following the tradational way of teaching/training in spite of tremendous adancements made in the educational methods and techniques in the past few years (Srivastava at al[1], 1982) neglecting the interest of the medical students (Saran at al[2], 1982).

The facts that the medical students are selected through a tough competitive examination usually with their past brilliant scholastic performances can not be denied. Majority of these students experience one or more failures during the medical career, However. only a few get through unspotted though all reside in the same socio-educational atmosphers, why is it so ? Have the eminent medical educationists ever thought about it ? The answer at the most of the time would be, no. It not only creates a burden on parents/Governments but also mental set back amongst the medical students.

A drastic change in the selection method of medical teachers, initiation of teachers training programme for medical teachers with some attractive incentives, adoption of recent advancements made in the educational methods/techniques by the medical institutions, teaching by and restricting strictly to the well pre-planned lesson objectives/plans and provision of due place to the interest/mental status of the students during teaching/training may provide some solution. Recently, Saran at al[3,4,5,6], reported the various performance factors of medical students responsible for obtaining different scores in the

Dental Departments of Medical Colleges for Teaching M.B.B.S.

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The prevelence of dental disease is very high in India. Periodontal or gum disease alone afflicts 90% population. With change in life style resulting in modern living the occurence of dental caries has risen from 50-70% in fifties to 60-90% in seventies. The incidence of oral cancer related to typical Indian habits with high figures of 40-50% of all diagnosed cancer as compared to western figures of 1-3% also poses a serious challenge. It can be summed dental disease affects approximately the entire population.

One dentist for 4000 population is the need as pointed out by Bhore Commission in 1945 and one dentist for 80,000 population with a mere 9000 dentists in the country is what we have attained. Since the majority of dentists are concentrated only in cities, this ratio will be still worse if one seas only rural India This number is no doubt far below need and it is no wonder the ailing public seeks relief from unqualified practitioners. It is not practical to reach the target of dentist population ratio at the existing number of dental colleges in foreseable future. It is regretted that Government has not evolved any specific programme for the promotion of dental care. There is no mention of such a programme in the 6th Plan which has the outlay of Rs. 18,000 crores for the health care.

The only solution for India is to launch a massive compaign at community level in preventive dentistry. Despite relatively huge man power of 1,33,000 dentists in USA there is a growing realisation that preventive measures are the only solution to tackle the problem of dental disease in that country The limited dental manpower in India will not be sufficient to treat even a small percentage of the quantum of existing dental disease. Due to this magnitude of dental disease, paucity of dental manpower and urgent need for prevention, it is suggested that medical men be given some dental responsibilities through better dental teaching at the level of undergraduate medical education. May be we can incorporate preventive dentistry with preventive medicine whose infrastructure is much better.

Dental departments of Medical Colleges are in a state of evolution. With better understanding between the Dental Council of India and the Medical Council of India these dental department are much better now than ever before. Since the position of Head of the Dental Department in medical colleges has been upgraded to the level of Professor (in 1976) the prestige of the dental profession has been enhanced. Consequently a sizeable number of dental experts usefully employed. These dental experts are performing a notable role in dental education and research. The

dental departments of medical colleges are being rationalized. Much has already been done to align them in their due perspective but a lot yet remains to be fulfilled. The standard regarding the number of staff members, their qualifications, basic equipments, beds allotted to these departments and teaching schedules from place to place. There are still places where no teaching designations are given to staff and dentistry is not taught to MBBS students. The Medical Council of India has prescribed some guidelines but these are either vague or incomplete or not followed uniformly Since the inspecting teams have no dental experts the set up of dental departments is ignored altogether

The following observations need thoughtful probing and remedial measures at the hands of the authorities concerned :

Basic Objective :

The dental department is primarily concerned with the teaching of dentistry to MBBS students, the treatment of maxillofacial and dental outdoor and indoor patients and conducting research. Teaching dentistry to medical students is to help the medical teachers turn out a basic doctor equipped well with knowledge to treat a patient as a whole including dental ailments. This is specially applicable in remote areas where no dental expert is available. Besides, the medical graduates are expected to give first aid dental treatment in cases of emergencies including maxillofacial injuries and to decide about the cases which need referral to the specialist. Above all, they help the dental profession to spread out dental health education which is so important in the prevention of dental disease.

Recommendation of M. C. I. to be specific :

All recommendations of the Medical Council of India (M. C. I) in respect of dental departments, should be specified for 100 MBBS admissions and should be varied in proportion to the number of admissions. The minimum recommendations should be mandatory and nothing should be left to the discretion.

Teaching : The booklets published by M. C. I. contain no mention of the dental curriculum to be covered during teaching of M. B. B. S. students. The curriculum must be laid down specifying curriculum. The following curriculum is suggested :

(1) Introduction to dentistry and its various branches. Aims of teaching dentistry to M.B.B.S students.

(2) **Norms** : Anatomy and Histology of teeth and gums. Deciduous and parmanent teeth with their numbers and dates of eruption and their functions.

(3) Dental Health education :

(a) Local and systemic ill effects of diseased teeth.

(b) Fundamentals of oral hygiene.

(c) Rules for better dental health.

(4) Common dental diseases such as dental caries, periodontal disease, malocclusion, oral infections, halitosis, abnormal growths and non-healing ulcers due to malposed and sharp teeth and ill fitting dental appliances

(5) (a) Oral menifestations of systemic disease and role of oral diagnostician in the overall diagnosis of systemic disease.

(b) Systemic menifestation of oral disease (focal infection).

(6) Cysts and abscesses with emphasis on 'no fomentation' and 'special drainage techniques' in face.

(7) Tranmatic injuries to teeth, jaws and face and their management. First aid needed regarding breathing and bleeding and the transportation of the patient. Special mention of stiching at face.

(8) Maxillary sinus, oroantral fistula.

(9) Heamorhage from oral cavity including post extraction sockets and bleeding from gums.

(10) Stomatitis and Glossitis.

(11) Impacted teeth.

(12) Trigeminal Neuralgias.
(13) Teeth and jaws during radiotherapy.

(14) Exodontia, indication and contraindications, innervation of jaws and technique of giving blook anaesthesia.
(15) Routine dental clinic emergencies and their management.

The M. C. I. booklet on "Recommendations on undergraduate medical education, April 1977, corrected upto Feb. 1980", P. 17 recommends 15 days posting of 3 hours a day in the department of dentistry in II M.B.B.S., 1st and 3rd term (3rd year). There is no recommendation for any theory class. This is not the oppertune time for teaching the subject and consequently does not serve much purpose.

Dentistry is like a super-speciality to the undergraduate medical student. The student can understand the vast subject in a short time only when he is equipped with paraclinical and some clinical knowledge. Hence dentistry can be taught effectively only in the final year of M.B.B.S. The best time to teach the subject under present circumstances shall be during internship.

Examination in Dentistry :

Examination is a must to make the students serious towards learning the subject. In our examination oriented system, students do not even attend the dental classes leave aside being serious. At least one question should be compulsarily incorporated in General Surgery. The M.C.I. booklet "Recommendations on undergraduate medical education, April, 1977—corrected upto Feb. 1980" does recommend on page 23 to include dental diseases in Surgery Paper II, but it does not happen in practice.

STAFF :

A. **Teaching Posts :**

The M.C.I. booklet "Minimum standard requirements for a medical college for 100 admission annually March, 1973 revised upto December, 1977" page 20, IX, 2, 3, 4, recommends the staffing pattern of departments of Medicine, Surgery and their specialities and Obstetrics and Gynaecology to be organised on the basis of

units, with the strength completement of each unit of 30-50 beds as :

(a) Prof./Associate Prof./Reader.	—1
(b) Asstt. Prof./Lecturer.	—1
(c) Chief Resident/Tutor/ Registrar.	—1
(d) Resident/House Officers.	—3 to 4

It is recommended that the dental department too should be unit based like all other cesciplines. There should be two dental units for 100 admissions and one unit for 50 admissions.

The recommendations of this booklet on "Minimum standard requirements....." for staff in department of dentistry, P. 23 reads as :

Prof./Assoc. Prof./Reader.	—1
Asstt. Prof./Lecturer.	—1
Demonstrator.	—1

The position of house officers of 3 to 4 as is available in other specialities is abolished. This should be restored. They are all the more important if dental beds are to be attended and dental casuality service is to be run. Besides, these fresh dental graduates are helped in getting an over all training.

The qualifications and experience for the various positions and promotions should be exactly the same as in other medical disciplines. M.C.I. booklet regarding "Recommendations on the qualifications required for appointment of persons to the posts of teachers in medical college and attached hospitals for undergraduate and postgraduate teaching (1982)" states under the head General Page I, serial No. 3, that medical teachers in medical colleges except the tutors, residents, registrars and demonstrators must possess the requisite recognised postgraduate qualification in their respective subjects. But under the heading "Qualifications for Dentistry" on p. 25 the qualifications recommended for the post of Lecturer is only B.D.S. This is a gross anomaly and is not in order. With a large number of dental postgraduates available in the country now, no one with mere graduate qualificatlon should be promoted beyond a Registrar or a Demonstrator, as is done in other departments.

B. **Non Teaching Posts :**

The M.C.I. booklet "Minimum standard requirements for a medical college for 100 admissions annually March 197 —revised upto Dec. 1977" recommends on page 23, dental technicians four and store keeper cum clerk one. This is very vague. The ancillary staff bas got to be specific and classified into various categories. Besides a store keeper cum clerk, a sweeper, two dental hygienist, two dental technicians, there got to be as many chair side assistants as the number of dental surgeons sanctioned.

Casuality Dental Services :

The Registrars and house surgeons will perform the casuality dental service round the clock on 8 hourly duty. Besides there should be one dental chair/unit and a dental bed exclusively for dental casuality services.

Developing Dental Specialities :

The effort should be to develop all clinical dental specialities. This can be done only if you reserve one post for each speciality,

the important ones for medical colleges are Oral Surgery, Periodoatia, Prosthetics and Crown and Bridge work and Orthodontia. These four specialists can easily be adjusted in case two dental units are sanctioned.

Inspection :

Inspection of dental department should be done by a Dental man only and he must take note of all mandatory recommendations of M.C.I.

Beds (Dental Ward) :

There should be a separate dental ward with atleast 30 beds. Alternatively such a number of beds should be reserved for dental/ maxillofacial patients in the wards of Surgery, besides providing a bed and a dental chair/unit in the Casuality Deptt. M.C.I. booklet on "Minimum standard requirements for a medical colleges for 100 admissions annually, March 1973 revised upto Dec. 1977" vide page 11 recommends 300 beds for the department of Surgery and its specialities but there is no mention of dental beds, though this booklet vide page 20, IX, 3 recommends a unit of 30 to 50 beds for all units without mentioning Dentistry.

Equipment :

The M.C.I. booklets make no mention of the equipment recommended for dental departments. The number of chairs and units should be the same as the number of working hands including the dental hygienists. The modern equipment such as airotors, dental X-Rays, ultrasonic scalers, labaratory equipment etc. should be provided in adequate numbers.

The list of equipments, instruments and materials needed in the dental department should be those meant for carrying out oral surgery, conservative treatment, periodental treatment, orthodontic treatment and prosthetic treatment particularly related to the fabrication of maxillofacial and surgical prosthesis.

Accomodation :

The M.C.I. booklets make no mention of accomodation desired for dental department it should be sufficient to accomodate :

(1) 8 dental units & chairs.
(2) Patients recovery room with attached toilet.
(3) Waiting room with attached toilet.
(4) Office room for Professor with accomodation for clerical staff.
(5) Office room for Asstt. Prof./Lecturer.
(6) Common staff room.
(7) Store room.
(8) Dental X-Ray room with adjoining dark room.
(9) Dental Laboratory.

Post Graduntion in Dentistry :

Clearout guidelines should be laid down if postgraduation is to be started in a particular speciality of Dentistry. Postgraduation will further help in the growth of the department of dentistry and the profession.

Summary :

The present state of affairs in dental departments of medical colleges for teaching M.B.B.S. has been discussed and remedial measures suggested to streamline these departments.

Management and Social Science Orientation of Rural Health Services in India

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Inspite of tremendous advances in medical technology and phenomenal expansion of health services in our country during the last three decades, we have not been able to meet the ever growing health needs of our people, particularly the weaker sections of our society living in the rural areas. The health and medical care facilities have more often remained underutilised due to a combination of several socio-economic, systemic organisational and management factors. In terms of Alma-Ata declaration, we are committed to provide health to all our population by the year 2000A D . The role of social sciences and management in the achievement of this objective has been emphasised by many committees, working groups as well as the World Health Organisation. It is, therefore, essential that training in social sciences and management is included in the curriculum of medical students, and short duration training courses organised for the various categories of medical personnel currently engaged in the planning and implementation of health services. The training load for these types of training is exceptionally heavy and the need for trainers and teachers in social aspects of health services and health management in indeed great It would be helpful if the University Social Sciences departments are encouraged to take interest in the field of health and family welfare and establish collaborative relationship with the medical colleges and the health services. The institutional and infrastructural facilities available in the country for imparting management training are also utterly inadequate. Available facilities, thus, need to be strengthened and new health management training and research capabilities established.

In terms of Alma-Ata declaration, we are committed to provide health care to all our population by the year 2000. In order to achieve this objective, the resources allocated to the health sector will not only have to be augmented, these will have to be efficiently and effectively utilised. During the last three decades, there has been phenomenal expansion of health services

Role of Specialisation : Medical Students Preferences

By

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With the phenomenal growth that has taken place in medical science, specialisation has become an important feature of medical education. Consequently, there was a sharp increase in the facilities available for training the specialists. Now there is an increasing realisation among the medical educators that primary health care is the need of the day for the large majority of people who belong to the rural areas and that comprehensive health care should be readily available. What do the students think about these issues? How do they view the specialities? What are their preferences? In an effort to understand answers to the above questions I had undertaken a study on the attitudes of medical students. I am presenting before you some of my findings. The study is still in progress and what I am presenting here is a sort of preliminary communication. Here I am focussing on the students preferences about the different specialities and the implication of this for comprehensive health care.

The Sample :

The sample consisted of 533 final year medical students from ten medical colleges. The criteria used for selecting the medical colleges for this study are (1) that they should represent different types of medical colleges in existence and (2) that they should have as wide a geographic distribution as possible. This was achieved by taking into account the following :

a. **Nature of the Institution :**
Whether the college was one where post-graduate education was imparted or not—and the number of admissions undertaken at the undergraduate level.

b. **Management :**
Some colleges are run by State and Central governments, some by missionary and other voluntary organisations and finally some colleges which have started as a private capitation colleges and later taken over by government.

The following colleges have been included in this study. These are listed below according to the place of their location and this has been organised in an alphabetical way.

TABLE—1

Colleges	*No. of Students*
1. Alleppey	36
2. Benaras	38
3. Cuttack	79
4. Delhi (Lady Hardinge)	46
5. Guntur	98
6. Hyderabad (Osmania)	37
7. Ludhiana (C.M.C.)	39
8. Trivandrum	43
9. Wardha	62
10. Warangal	55
Total No. of Students	533

Methods of Data Collection :

The students were administered, in a class room, a questionaire containing several sections. The students were assured that there were no right or wrong answers. They should write whatever they know. To ensure that the students take the questionnaire seriously I explained to the students the purpose of the study and requested them to come out freely with their views. After giving the instructions, myself and my investigator moved among the students and made sure that the students understood the questionnaire. We even kept pens ready to offer those students who said that they forgot their pens or the ink was over. Thus every effort was made to assure that we were interested in the students views. The students also had taken the questionnair seriously and answered it as carefully as they possibly could.

The Questionnaire :

The questionnaire consisted of several sections. One of the sections is with regard to ranking of specialities. 19 specialities were listed. The students were requested to rank them according to their preference. To avoid bias the specialities have been listed according to their alphabetical order. The students were asked to give first rank to the speciality which they liked most and according to their level of preferenee they should rank the others, the least preferred being given the last rank. The actual format is given below :

Below are given the various specialities available for postgraduate work and are taught at the undergraduate level too. They were asked to indicate the order of their preference by putting 1 against the speciality they preferred most of all, 2 against the second most preferred speciality, and so on. The least preferred speciality will get 19.

Speciality	Rank of their preference (1 is most preferred, 19 is least preferred).
Anaesthesiology	
Anatomy	
Biochemistry	
Dermatology	
ENT (Otolarynagology)	
Forensic Medicine	
Gynaecology	
Medicine	
Microbiology	
Opthalmology	
Orthopaedic Surgery	
Paediatrics	
Pathology	
Pharmacology	
Physiology	
Preventive and Social Medicine	
Psychiatry	
Radiology	
Surgery	

Another section deals with rating of specialities of medicine, preventive and social medicine and the speciality they would like to do their postgraduation on certain adjectives. They were asked to name the speciality they would like to do their postgraduation and then rate it. It was made clear to them that the speciality should be what they would like to do and not what they were likely to get admission.

In another section which deals with their future plans one of the options indicated is postgraduation and if the student opts for postgraduation the student was to indicate the speciality.

Thus there were 3 sections in which the speciality in which the students like to do postgraduation comes up in different ways. In the construction of the questionnaire this was done deliberately to establish the reliability of the data.

The data was analysed for the individual colleges first and later the responses were pooled together for the total group. On the ranking of specialities different students gave different type of rankings. These have been tabulated and median values worked out. On the basis of the median values the students preference for each speciality has been worked out first for the individual colleges and later for the total group. Here I am presenting for the total group the specialities according to the ranks worked out by median values.

Medicine	—	1
Surgery	—	2
Paediatrics	—	3
Gynaecology	—	4
Opthalmology	—	5
Orthopaedic Surgery	—	6
Pathology	—	7
E. N. T.	—	8
Dermatology	—	9
Psychiatry	—	10
Anaesthesiology	—	11
Radiology	—	12
PSM	—	13
Pharmacology	—	14
Microbiology	—	15
Physiology	—	16
Biochemistry	—	17
Forensic Medicine	—	18
Anatomy	—	19

For the individual colleges there is a slight variation. In two colleges surgery had been preferred over medicine, while in another college the students showed equal preference for both medicine and surgery. In one college anatomy ranked 13 (which can also be understood as this college happens to be exclusively for girls). By and large the slight changes in the order of preferences among the colleges is of a minor nature.

The most notable feature that has come out is with regard to the speciality of preventive and social medicine. The students rank it almost at the end of the clinical subjects, certainly they prefer this to preclinical or para clinical subjects with the exception of pathology. In a similar study which was conducted a few years ago in one of the medical colleges in New Delhi which I reported in 1971—72 the students then ranked, this subject at almost last i.e. the 18th ranked, 19th being anatomy.

The second section where the student had to name the speciality he would like to do postgraduation and then rate it on certain adjectives and the third section in which the students were requested to indicate their future plans were also analysed. The correlation between the speciality given the first position in the ranks and the speciality which the student named for his postgraduation and

rated it was very high. It is 0.92 likewise, the correlation between the speciality given the first position in the ranks and the speciality indicated in their future plans also is very very high. It is 0.931. This only shows that the students are very clear in their about what they would like to do.

The most interesting feature of this study reveals that general medicine stands out the most preferred speciality and that 99% would like to do their postgraduation in it. A good majority of these would like to try for a firm government job also. Very few students have shown inclination towards superspecialities. The majority of the students will be happy to go for general medicine. This poses a great challenge to the medical educators. How much of the available knowledge with regard to different aspects of medical science (which have made tremendous studies and have become specialities and super specialities) be usefully put together in general medicine. In addition the needs of the country have to be taken into account so that as comprehehsive a health care as possible is given to the vast majority of the people who do not have access the rudiments of health care at the present moment.

Acknowledgement :

I want to express my gratitude and deep appreciation to the Deans and Principals of the Medical Colteges included in this study and the students who had answered the questionnaire.

Role of Specialization In Comprehensive Health Care

By

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PREAMBLE

Deep concern has been repeatedly expressed obout the hiatus between the advances in technology in the recent years and lack of their application to the solution of community health problems. Indeed, it is a paradox of modern times that while rapid strides are being made in the understanding of the disease processes and possible approaches to the management, there is a palpable gap in the delivery of health care even for those diseases where simple and effective remedial measures are readily available. A ready answer is sometimes provided by those who are involved in policy-planning; it is said that a vast majority of the doctors prefer to stay in towns while more than 80% of the country's population lives in the rural areas. There has been a recent appreciation of the fact that our health and man-power plan has been rather distorted. We have produced a much larger number of doctors and have concentrated much less on the training of para-professionals, including nurses and other allied health personnel. This has resulted in a health man-power disequilibrium which has jeopardised the health care delivery system,

While there is truth in most of these surmises, we should also appreciate another trend which has emerged in the last two decades. A larger number of medical graduates are now going in for postgraduate medical education. There are recent estimates indicating that about 70% of the medical graduates of today are enrolling for postgraduate degree and diploma courses in the country. It is, indeed, timely to take cognizance of this trend and give a deep consideration to the role of specialists in comprehensive health care. It is obvious that unless and until this is done in a rational manner, and the objectives and training programmes of postgraduate education are defined in terms of delivery of comprehensive health care, the vast number of specialists that are being produced in the country may not be prepared to play a meaningful role in the existing health care system.

such specialists working in the medical institutions. Finally, the specialists at these institutions should be able to seek realistic solutions through need-based research for the

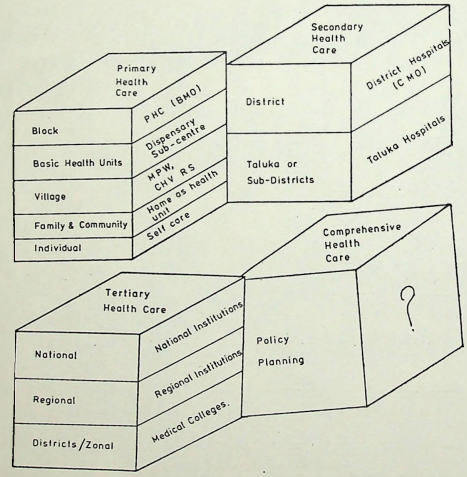

Figure 4

community health problems. *Figure 4* shows the concept of different levels of health care and how these should be interlinked. It is obvious that a better definition of coordination and linkage has still to emerge at the final level of comprehensive health care.

Training of Specialists For Comprehensive Health Care

It is agreed that the specialist has to perform various functions within the health care delivery system, and that there has to be an essential support and interlinkage between the various levels of health care delivery, it becomes imperative that the training of such specialists should be oriented in this direction. In an earlier communication (Bajaj, 1979a), essentials of curriculum planning have already been discussed. It is necessary to define the

objectives of specialised training. Only objectives for training in clinical disciplines will be enunciated.

Broad Objectives

A specialist in any of the clinical subjects should :

1. be able to demonstrate comprehensive understanding of the basic sciences related to the discipline concerned;
2. be able to practise in the broad discipline of the study as an independent specialist;
3. be familiar with the current developments in medical sciences as related to the speciality;
4. be able to render medical care to the individual and the community, integrating preventive, promotive, diagnostic, curative and rehabilitative aspects;
5. be able to plan and conduct educational programmes in the speciality utilizing modern methods for teaching and evaluation; and
6. be able to plan and conduct research.

Instructional Objectives

Instructional objectives shall differ from subject to subject and should be planned keeping in view the needs of the discipline concerned, within the framework of the broad objectives, already defined. The general recommendations which may serve as a prototype, are only being enunciated. A specialist in any of the clinical subjects should be able to

1. demonstrate adequate knowledge of applied aspects of structure and function of human body as related to the practice of the concerned speciality;
2. demonstrate comprehensive knowledge of deranged structure and function of human body, causes thereof, and of principles underlying the use of drugs and therapeutic procedures for restoring the deranged structure and function to normalcy;
3. demonstrate familiarity with such diagnostic skills and laboratory procedures, as are relevant to the diagnosis and evaluation of patients under his care and be able to conduct some of these procedures in case it becomes necessary to do so;
4. demonstrate comprehensive knowledge of theoretical aspects of the speciality concerned, including recent advances;
5. manage adequately routine as well as complicated problems of clinical care in relation to the speciality, at the level of a junior consultant;

6. plan delivery of health care at the community level, including the preventive and promotive aspects, with adequate understanding of epidemiology of common diseases as well as socio-cultural aspects of the community; and

7. demonstrate familiarity with the principles of medical education, including definition of objectives, curriculum construction use of learning aids and learning settings, and methods of evaluation.

Specialization in Family Medicine

While it may be worthwhile to reorientate postgraduate medical education in the existing specialities so as to make it more meaningful for the delivery of comprehensive health care, there is also the additional need for developing new postgraduate courses.

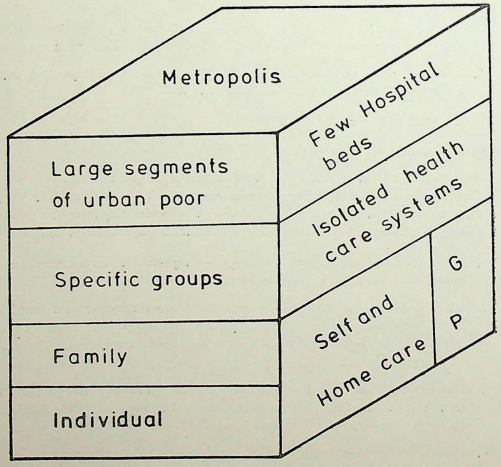

Figure 5

The role of general practitioner (*Figure 5; G. P.*) is well recognized. Family Medicine or General Practice (these should be considered synonimous) is emerging as a speciality in its own right. It is different from Internal Medicine in the sense that a specialist in Internal Medicine provsdes care for adult patients suffering from ailments pertaining to medical specialities. In contrast, a family physician or a general practitioner is involved in providing care for all illnesses irrespective of the type and nature of illness or the age-group of the patient. It is now being increasingly recognized that an additional period of training following graduation is likely to improve the quality of health care, provided by a general practitioner. Furthermore, following a postgraduation in General Practice, a specialist should be treated at par with the other clinical specialists as far as the emoluments and other privileges of service are concerned. Finally, a specialist in General Practice with a post-graduate degree in the subject, may be a most appropriate specialist at a primary health centre as also at the sub district hospital. With the newly emerging operational framework for the delivery of health care in India, taking into consideration the objective of 'Health for all by 2000 A D', there will be increasing job opportunities for such specialists in General Practice or Family Medicine.

Indeed, the Faculty at the A.I.I.M.S has given consideration to this aspect of post-graduate education, although such a course has not yet been initiated at the Institute. Some of the objectives cosidered by the Faculty as most appropriate for a postgraduate course in General Practice leading to the award of M.D. degree in this subject include the development of clinical skills for the diagnosis and management of common diseases prevalent in the community, the ability to provide timely and appropriate management for various medical and surgical emergencies affecting all age-groups, development of the decision-making process regarding referral of a patient for a higher level of clinical care, development of skills for identifying common causes of morbidity in the community and for imparting preventive and promotive measures as well as health education, especially in the areas of maternal and child health, nutrition and family-planning, and finally, the ability and confidence to act as a catalyst of such social changes as would be conducive to the improvement in the mental and physical health of the individuals and the community. Such a specialization is likely to produce a doctor who would be able to interact with other para-professionals and, thus, would constitue an important link in the health care delivery team.

The instructional objectives, curricular contents as well as the learning settings required for specialization in General Practice can be further developed and elaborated. However, the prime need is to recognize the importance and the urgency of developing such a course at least in a few institutions on an experimental basis.

Epilogue :

Figure 6 summarises the role and place of specialization in comprehensive health care. It is obvious that there are urgent twin needs for the re-orienttion of postgraduate medical education in relation to the existing cources in clinical specialities, as well as for the development of a new postgraduate course specifically aimed at specialization in General

in the employ of the Board as paid reviewers. Selection of reviewers could be done on the basis of qualifications and competence, and their tenure could be restricted for a limited period. As in the case of examinations, peer reviewers would not know the names and particulars of the doctors reviewed and vice versa. Substandard performance and deficiencies, with reference to prescribed standards in the hospital guidance manuals, if any, could be notified to the doctor concerned, who is free to challenge them in writing or in person before the Review Board. A critical appraisal of the performance and deficiencies by the Review Board would reveal where the fault lies, whether in the medical education system or in the individual performance of doctors. This revelation, according to Dr. Jacob Fine, would cause a distinct improvement in the quality of medical care given to patients in hospitals and homes over a period of years.

The Peer Review Board's evaluation, observes[7] Dr. Jacob Fine, should be the criterion for allowing a medical practitioner to continue medical practice. The Board's expert opinion can also be used by courts in settling medical suits for malpractices. Evaluation data can be computerised for advantageous utilisation, such as determination of the impact of the review process on the performance of the individual doctor. Criteria for evaluation could themselves be reviewed, and necessary changes introduced whenever necessary. Dexterity and innovations in medical practice would be known during evaluation and may be rewarded suitably.

Dr. Jacob Fine noted[8] that a common objection to medical peer review is that an acceptable method for evaluating a doctor's performance or expertise cannot be evolved. He says that the prevailing argument is that patients and problems posed by diseases are so widely variant that doctors are bound to react differently. But he is firmly of the opinion that such a contention is not valid because the Peer Review Board would lay emphasis on the minimally accepted standards of medical care, making due allowance for local or special circumstances in the treatment given.

It looks that organisation of such a National Medical Peer Review Board in India would be advantageous to the public as well as to the doctors. Details and data regarding the medical care extended to in-patients and out-patients are already available in the records of public hospitals, private hospitals, and nursing homes. Some of the private practitioners maintain records of the patients treated by them, while others do not. It should not be difficult to make proper maintenance of records of patients treated compulsory through an Act.

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'Rehabilitation' - Its Philosophy and Need in Medical Education

By

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"Three decades ago, a great majority of medical profession looked on rehabilitation as an extra curricular adjunct activity of medicine, something dealing with social work and vocational training, but something that had little concern with or hold but few implication with medicine. The trend has been reversed over past 30 years and today majority of physicians, particularly those who have completed their training within recent years, are now familiar with the aims and procedures of rehabilitation and recognise – that medical care cannot be complete until the patient with residual physical disability has been trained to live and work with what he has left." This statement was made in the year 1977, by Dr. Howard. A Rusk, M. D., Professor, and Chairman of Department of Rehabilitation Medicine, University Medical Centre, New-York.

A pretty long time has passed since rehabilitation is included as a specific entity in medical studies in Western countries and the departments of Rehabilitation Medicine led by qualified specialists were established as early as 1946 (Department of Physical Medicine & Rehabilitation, New York). The need for rehabilitation came into sharp focus with the end of World War II which caused a significant number of disabled veterans which was added to the large and ever growing number of civilian disabled by disease or accident. To meet the problem of chronic diseases and disability, there was no solution except to make rehabilitation every doctor's business and with this aim in mind rehabilitation medicine was made compulsory during undergraduate training of doctors in Western World and later on as a specific speciality at the post-graduate level.

But, on the other hand, the situation is quite disappointing in the developing countries like India. The fundamental philosophy and need of rehabilitation is yet not understood. Still there is no training facility for rehabilitation medicine even at undergraduate level, with the result, this branch of medicine is in continuous process of encroachment by different specialities, which-so-ever has got the focal insight of thinking that rehabilitation is imperative for their patients only. This state of confusion and conflict, out of ignorance of some and vested interest of others, is slowly making this speciality in our country as an abstract painting, which a majority may appreciate but few of them understand. It is the high time when the authorities responsible for medical education should plan out the

prospectus of rehabilitation medicine and institute it immediately as a specific subject in the basic training course of medical graduates.

Keeping in view that the need of rehabilitation services will rapidly increase in the near future, on one hand due to rapid development of basic health services and integration of medical care in national health programme and on the other hand, due to increase in number of disabled by rapid increase in industrialisation, urbanisation and life expectancy, even World Health Organisation recommended to the Government of various countries that every faculty of medicine must have a Chair of rehabilitation medicine. It is demand of the day that Govt. should act on this proposal to include it at undergraduate level so that young medicos may opt rehabilitation medicine as their post - graduate speciality, because, for efficient utilisation of manpower, the rehabilitation of disabled should necessarily be left to full time specialists instead of those who have encroached upon this field due to lack of such specialists.

The instillation of philosophy of rehabilitation and its need and practise in a developing country like India must be started from the very begining of clinical training of doctors, because tomorrow these medical graduates will be responsible for the basic health care of the nation. The awareness of disability and the need of eliminating, alleviating or reducing the effect of disability will ultimately reflect on the physical capacity of the population.

According to World Health Organisation Policy and Planning for "Disability Prevention and Rehabilitation," 1975, there are about 400 million disabled in the world, which constitute about 10% total world population. They can be broadly grouped into the blinds, the deaf and the orthopaedically handicapped. They constitute only one group of patients, who need rehabilitation. They need expert multidisciplinary rehabilitation care of various allied rehabilitation specialities also, like occupational therapists, physiotherapists, speech therapists, psychologists, vocational counsellors, etc. This can only be provided in well-equipped rehabilitation centres. But this above mentioned group of disabled is not the only group which requires rehabilitation. The other group of patients requiring rehabilitation consists of cases of lung diseases, traumatic lesions, arthritis, leprosy cancer, metabolic diseases, endocrinal disturbances, cases of chronic illness i.e. patients of all impairments (disease) which may result in some functional loss if not taken proper and timely care, may land up in disability. These are the cases which a doctor has to treat mostly in rural areas and sub-urbs. Due to lack of basic understanding of rehabilitation, in treating this component of total management of patient is alltogether neglected This unintentional neglect of rehabilitation produces functional loss and ultimately disability.

The magnitude of this problem is augmented manifold if we understand that 80% of our patients come from rural areas. By the time these patients reach the centres, where rehabilitation facilities are available, it becomes too late because during that period the basic impairment with health of patients starts manifesting as functional loss or even lead towards disability. The treating doctor cannot be blamed for it because, during the basic training course of a medical student, rehabilitation medicine is the only subject which goes untouched,

In a big country like ours, whose 80% of the population live in rural areas, this aspect of total health care should be started from the very beginning for prevention of disability as well as minimising and treating its sequeles This can only be provided by including rehabilitation medicine in the medical curriculum by teaching our out-going doctors to pay proper attention for rehabilitation of these patients. More so, the patient will also be rehabilitated in his surroundings to live and work with what he has left.

On the other hand, for those cases like, blind, deaf and the orthopaedically handicapped, where specialised rehabilitation care is needed, it is imperative that rehabilitation medicine should be recognised as a speciality in medical curriculum with post—graduate facility.

Though actual statistics are not available, but it is estimated that about 4-5 millions of the blind, 1-1.5 millions of the deaf and 4-5 millions of orthopaedically handicaps exist in India. This amount to a total of 9-11.5 millions of disabled, who need specialised multidisciplinary rehabilitation care. They cannot be deprived of the fundamental rights of human being. For them all tertiary centres, medical colleges and medical rehabilitation centres of the country should have qualified experts in rehabilitation medicine besides other members of the rehabilitation team. These experts must be made responsible for planning and organisation of rehabilitation services for this group of patients.

For the existing practising doctors, a well planned short term refresher course in batches should be started in the medical colleges and rehabilitation centres.

These are probably the only ways of spreading the rehabilitation services to every patient.

Summary:

The aim of rehabilitation is to train the patients to live and work with what he is left. The basic philosophy of rehabilitation medicine in medical profession was well-recognised in western world about three decades back and it was given due importance in the medical curriculum.

The patients, who can be helped by awareness and understanding of rehabilitation medicine, are broadly classified into two groups. Group I includes all the chronic illnesses, either medical or surgical or traumatic, which may produce functional loss and later on disability. For them, there should be inclusion of rehabilitation medicine at undergraduate level, so that out—going medical graduates may treat these patients with the aim of their total rehabilitation in the back of the mind.

Group II includes blind, deaf and orthopaedically handicapped. They need intensive rehabilitation care by specialists. For such patients, post-graduation in rehabilitation medicine should be started. These rehabilitation experts should be sent to various tertiary centres and medical colleges to plan and organise rehabilitation services of national coverage. For existing doctors, there should be provision of refresher courses at all medical colleges. This may help in spreading the rehabilitation services to community level.

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An Evaluation of A Systems Approach To Recall of Anatomical Knowledge

By

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ABSTRACT

A system for facilitating recall of anatomical knowledge, and consequent improvement in examination performance has been conceived. It was hypothesised that the usual channels of learning, leading to more confidence and a better performance in the examination, can be reinforced by increasing motivation, leading to better learning and more confidence. Performance of this system has been evaluated. It has been shown that the system has resulted in a significant improvement as shown by increase in examination scores and significant correlations to confirm this hypothesis. However, it has been observed that the system takes more time and does not prune the superfluous details. Profile of the student characteristics as revealed by the questionnaire is described.

Introduction :

Top level performers of pre-medical examinations, constitute a large majority of intake of medical colleges. After entry into the medical college, the performance of these students in preclinical subjects is not consistent with their past record. This generalisation was aptly confirmed by an analysis of the performance in Anatomy, of the batch of 180 students, admitted to Maulana Azad Medical College, New Delhi, in 1977-78. A probe into the genesis of this academic decline, in form of small group discussions with students and teachers, revealed that learning and recall of the large magnitude of anatomical facts, was the main difficulty with most of the students. Consequently, it was postulated that organisation of anatomical knowledge in a logical and systematic manner can be a considerable help in overcoming this problem.

Therefore, an organised system for recall of anatomical knowledge was conceived. This system was expected to result in a better performance in examination, through better learning and increased self confidence. This system comprised of :

1. Prototype descriptions of different anatomical structures namely an artery, a vein, a muscle, a nerve, a joint, a movement, an anatomical space, a hollow organ, a solid organ, blood and nerve supply and lymphatic drainage of an organ.

2. Procedure for drawing line diagrams, to show only essential features, in support of prototype descriptions.

3. Use of a uniform color scheme in these diagrams for depicting different anatomical structures.

The knowledge of this system was transmitted to students by conducting tutorials of small groups of students. The size of small

DUEL CLINICAL POSTING IN UNDERGRADUATE TRAINING

AN ECONOMICAL, EFFECTIVE AND NEEDBASED APPROACH

by

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Current pattern of undergraduate postings for clinical work in the various clinical departments, has certain drawbacks.

1. Generally students are posted for 3 hours in the wards every morning. He spends ½ an hour in writing notes and 1 to 1½ hours remains engaged in a bedside clinic. Although he is expected to spend remaining one hour in examining patients he wastes it.

2. In paediatrics a student works for about 2 months. Considering the place of paediatrics in general practice the period is inadequate for his training.

3. During vacation half the time is lost. During the remaining half a teacher in a whole time set up has to look after additional clinical duties and therefore does not find enough time to teach. In effect, from the point of view of the student, vacation is wasted although this period is counted in terms.

4. In the operation theatre only a few students can actually see an operation. Others waste their time.

5. Infectious diseases that form the bulk of cases in general practice remains unattended to because student works there for hardly two weeks and gets an opportunity to see only a few diseases.

6. There is no provision for training in Minor operation theatre, Family Planning, Nursing, Blood bank immunisation clinic, O.P.D. laboratory, Occupation and Physiotherapy departments and in the casualty departments.

In order to prevent the waste of time and utilise it for training in paediatrics and infectious diseases and to cover the subjects mentioned under 6 above the following scheme is introduced for clinical postings in Medical College & Hospital, Aurangabad.

A student works at two places every morning, 2½ hours at one place and 1 hour at another. Longer periods are spent in major discipline and shorter periods in the ancialliary discipline, Medicine, Surgery, Obstetrics & Gynaecology. Paediatrics and Opthalmology are considered major disciplines and the remaining ancialliary.

Table No.1

Time: Every day 9 A.M. to 1 P.M.

Dates :

Subject	15.12 to 14.2	15.2 14.4	15.4 14.6	15.6 14.8	15.8 14.10	15.10 15.12 14.12 14.2	15.2 14.4	15.4 14.6	15.6 14.8	15.8 14.10	15.10 15.12 14.12 14.2	15.2 14.4	15.4 14.6	15.6 14.8	15.8 14.10
Medicine	A	B	SUMMER VACATION	A ID	B JD			SUMMER VACATION		A ST	B ST		SUMMER VACATION		A PR	B PR
Surgery	B	A		B DA	A DA					B OR	B OR				B ENT	A ENT
Obstetrics & Gynaecology						A CMO	B CMO	A FN				A OT	B OT PT	B FN		
Paediatrics						B Lab. visit	A Lab. visit	B BI		A BI						
Opthalmology												B SM	A SM			

KEY TO TABLE No. 1

A and B stand for the two batches of students.

ID :—Infectious Diseases.

DA :—Dentistry, Anaesthesia.

ST :—Skin VD & T.B.

OR :—Orthopaedics.

PR :—Psychiatry & Radiology

CMO :—Casualty Medical Officer & Post Mortem.

Lab :—O.P.D. lab.

Visit :—Visits to centres of Public Health interest.

FN :—Family Planning & Nursing.

BI :—Blood Bank, Immunization clinic.

OR :—Minor operation Theatre.

PT :—Occupation & Physiotherapy.

SM :—Social Medicine.

In orthopaedics, skin, tuberculosis, ENT, dentistry, minor operation theatre, O.P.D. laboratory etc. the work is chiefly in the early hours of the morning. A student works in these branches during early hour of the morning and then goes to the major subject by the time the teacher has finished his service ward round or major operations which are little use to future general practitioner. A teaching round or a clinic follows.

It was felt that a single posting of three months is too long ; hence each posting is of two months. It may be noted that even though full summer vacations are given total periods of effective teaching is not reduced (ref. 3 above). No vacation is given in winter.

A New Approach to Teaching of Acute Medicine and Resuscitation Techniques to Undergraduate Students & Para Medical Personnel

by

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INTRODUCTION

Techniques of Acute Medicine or Resuscitation have been widely used in restoring cardiac and respiratory function in acute emergency patients. Teaching of this aspect of medicine to undergraduate students and para medical personnel cannot be over-emphasized.

A new approach in the form of more visual and practical teaching of resuscitation is advocated. It is suggested that the students be trained in three stages :—

Stage I: In the class room, students may be familiarised with physiological aspects by slides and films.

Stage II: Students be made familiar with techniques of resuscitation by actual demonstration on patients in operation theatres, Intensive Care and Post-operative Wards.

Stage III: Final training be undertaken by allowing students to practise resuscitation techniques on manikin type of foam rubber dummies.

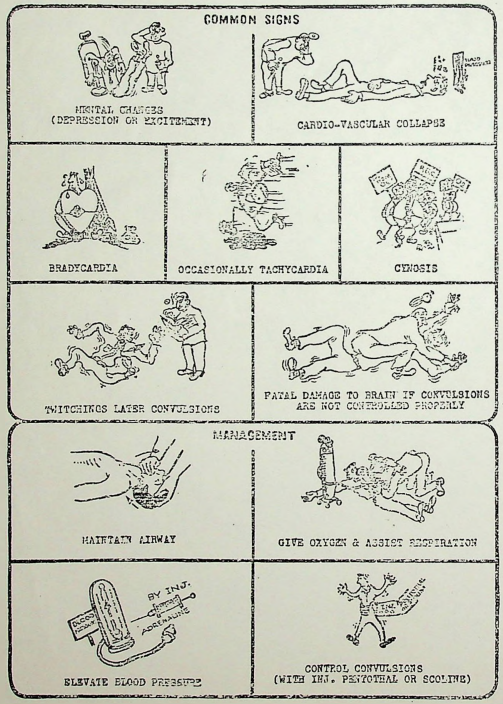
Only full training of medical, dental as well as nursing staff can ensure proper treatment by restoring the circulation of oxygenated blood and solving problems of subsequent management in acute emergency cases like sudden cardiac arrest patients,

Stage I: Teaching in Class Room

Diagnosis of cardiac arrest can be easily taught by stressing that inability to palpate the pulse in any major vessels (Radial or carotid) may be taken as cardinal sign. Other signs of cardiac arrest like dilatation of pupil or absence of respiration can also be stressed by film or slides. Absence of circulation for three minutes can lead to permanent brain damage. This can be easily stressed by describing actual case history with slides of such patients. Students must be made to realise that any wastage of time in running after equipment will be fatal to the patient. Once cardiac arrest has been diagnosed, treatment must start immediately.

We have found that visual form of teaching in the form of slides is the most suitable for class room teaching. Slides used in teaching use of resuscitation techniques in local anaesthetic drug reaction, are shown below (After Cullen, 1961). Role of mouth to mouth respiration in providing adequate amount of air into the alveoti by enough expansion of lungs through clear air way is best taught by showing actual expansion of lungs on slides along changes in colour of the patient.

Role of External Cardiac message in restoring circulation and carrying oxygenated blood to brain and other vital tissues of the body is best demonstrated by showing the recording of pulse and blood pressure after start of massage.



Visual teaching in class room :
Resuscitation of patients having local anaesthetic drug reactions

Stage II: Demonstration of Resuscitation Techniques in operation Theatres and wards

Technique of automatic ventilation is used daily during anaesthesia in major surgery in practically all teaching hospitals. Actual expansion of lungs while giving artificial ventilation either by mouth to mouth (expired air ventilation) or with the air viva bag must be stressed upon students. Actual method of securing a clear air way can be demonstrated in the operation theatres or in post-operative wards. Emphasis should also be given upon putting the patient on a hard surface and if the patient is lying on a soft bed then on any wooden board available in the ward or any hard material which can be placed under the patient's back to carry out effective cardiac massage and to restore cerebral circulation.

It is also very impressive to show actual heart control on E.C.G. Monitors in operation theatres and intensive care wards. Use of Defibrillator and pace-maker can be easily taught to students during their study term in operation theatre and Intensive Care Ward. Actual use of various vaso-pressor drugs and their mode of action is routine in most of the teaching hospitals. Actual demonstration will lead to better appreciation of role of vaso-pressors in resuscitation.

Stage III: Actual practice of Resuscitation Techniques on Manikin Dummies

Students can actually practise the techniques of resuscitation which they have been so far taught on Manikin type of dummy models having foam rubber structures. These dummies are being used to teach mouth to mouth respiration, external cardiac massage, airway maintenance and also technique of I.V. injections. Unless students are made very familiar with actual resuscitation techniques by actual practice on such mankin models, in actual emergency they waste lot of time and effective successful resuscitation is not achieved by them. This leads to disappointment and loss of faith in resuscitation techniques.

If the above schedule of teaching of resuscitation techniques is followed, better appreciation and effective use will automatically result in their most common use.

SUMMARY

(1) Visual teaching of physiological aspects of acute medicine and resuscitation techniques in class room is advocated.

(2) Actual teaching and demonstration of resuscitation techniques in patients in operation theatres, Intensive Care Units and Post Operative Wards is proposed.

(3) Only actual practice of resuscitation techniques on Manikin type of foam rubber dummy models can ensure sufficient confidence in students to use these techniques to effective use during emergency treatment.

Undergraduate Clinical Curriculum—A Reappraisal

By

Dr K. L. Wig*, & Dr J. S. Bajaj†

In planning any course or curriculum for the under-graduate medical education one tends to make a basic assumption that the primary objective of the medical colleges in this country is to impart a certain type of scientific education and practical training to a sufficient number of students which will enable them to provide adequate medical care to the people of our country. It has been repeatedly emphasised that the objectives of medical education have to be re-oriented to the needs of the country. This reorientation should be almost a continuous process. In various world conferences on medical education only broad outlines for the duration of the course, content of the course, methods to impart the necessary teaching, and the aids to learn the necessary techniques have been discussed and outlined. But the major emphasis has always been that the approach to this problem should not be rigid. The flexibility of the approach has been advocated so as to enable the planners to take into account the varying needs of the society which are of fundamental relevance.

Medical education in India has evolved on a pattern which was first instituted by the British medical educationists. Only during the recent years certain distinct voices have been heard which have tried to focus the attention of the medical educationists on the fact that what is eminently suitable for a medical student in Western countries need not be necessarily so for a medical student in India. It is true that in order to keep up with the rapidly advancing frontiers of science and also in order to contribute to the rapid progress of knowledge, medical students of to-day in this country should be educated in an atmosphere of enquiry and research. However, the basic focus has to be on the production of a doctor who will be able to deal with the common medical problems encountered in the general population and will also be able to help in advising the public on the social and preventive aspects of medicine so that proper help to the community is ensured. If during the formative years, the emphasis is placed on research and only a limited contact with the patients is allowed then we are strengthening the concept of a physician as a scholar and investigator rather than a practitioner and a healer. It is true that the acquisition of knowledge and the conduct of research are important characteristics of a good doctor, but it is still more true that a humanitarian and sympathetic relationship with the patients can often achieve much more than what can be achieved by the application of pure knowledge alone.

It has been repeatedly emphasised in various conferences that the primary aim of the various medical colleges should be to produce a basic doctor. Very few have, however, attempted to define what a basic doctor means. The result is that the *status quo* continues and no sustained attempt is being made to devise a curriculum which should aim at producing the basic doctor.

A subgroup of the committee formed by the Central Government to examine the under-graduate medical education, in the light of present day needs and resources, has attempted to define a basic doctor as follows:

(*a*) A basic doctor is one who is well conversant with the day-to-day health problems of the rural and urban communities and who is able to play an effective role in the curative and preventive aspects of regional and national health problems. He should have the competence to judge which case should be referred to a hospital or a specialist. He should be able to give immediate life-saving aid to all acute emergencies. He should have competence in clinical methods, i.e., history taking, physical examination, diagnosis and treatment of common conditions.

(*b*) He should be capable of constant advancement in his knowledge by learning things for himself by having imbibed the proper spirit and learnt the proper techniques for this purpose during his medical course.

One thing which has to be constantly borne in mind is that no curriculum for under-graduate medical education can be static. As the needs and the demands of the contemporary society change so should the orientation in a curriculum to those needs. For example, in countries like the U.K. and the U.S.A. where the life span has been sufficiently prolonged and where the social and cultural environment is such that joint family system is discouraged, care of the old people has assumed importance. This has led to the development of the speciality of geriatrics and due emphasis is being placed on certain aspects of geriatric practice in the under-graduate medical curriculum. For obvious reasons geriatrics is not a major problem, at any rate at the present time, in our country. Therefore, to advocate its inclusion in a clinical curriculum for the medical students in this country would be rather premature and not entirely need-oriented. Examples of this nature can be multiplied. However, there are certain things which are subtle, and less obvious, and, therefore, they go on creeping into the curriculum at the cost of the total learning experience of the medical students.

Education is a living process. It has a much wider horizon than is generally appreciated. It does not mean imparting a lot of factual information to the students who in turn try to reciprocate the effort by faithfully reproducing it in an examination. Education is much more than this; it is the development of an attitude of mind. This attitude, when properly applied to a particular situation, seeks for itself the proper answers. Winslow has outlined this as follows:

'In any teaching institution two processes are involved: training and education. Training is concerned with the cultivation of automatic response to external stimuli. We train a dog to heel or we train a plant to grow in espalier fashion on a wall. We train a child to speak good English. On a higher level, we train a medical student to recognize the eruption of measles or an engineer to apply mathematical formula for determining stress on a beam. Yet education is something more than a training. The word means "to lead out". It implies a widening of vision, a broadening of thought. It is an imaginative and a creative process. You cannot, in any sense, educate a dog or a plant but you can educate a child'.

Winslow's definition, applied to medical education, raises a question which is of fundamental importance and which the educationists must decide. If the major objective is to train medical students to respond to certain stimuli, to co-operate to comply and to accept what they are told, then the procedure be called student training. However, if the primary aim of the Faculty is to provide experiences that will enable the student to understand, to acquire skills, and to develop attitudes that will help him to become an introspective, independent, self-operating learner for a life time, then, *education* is the objective.

After having emphasised that medical education should be need-oriented, and after having defined the type of education to be imparted, it is easier to envisage that what is needed is to impart broad based medical knowledge with appropriate stress in the training on the day-to-day problems that a basic doctor has to face.

The basic doctor, however, must have a proper concept of what the country expects of him. He must know that comprehensive medicine is the prime need of our country. This should be clearly defined and properly understood. In broad terms, it implies the utilization of the available medical knowledge for the *total* care of the patient. It

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expresses the chief concern for the patient, rather than his disease. It pleads for the consideration that the human body should be regarded as a whole, and not as a combination of various organs and tissues. It tries to undo what fragmentation of scientific knowledge has done. It involves the consideration of *all* significant factors that affect the health of a human being. It, therefore, includes the application of preventive measures to individuals and the employment of all practical means for the early detection of disease. Lee (1961) has succintly defined Comprehensive Medicine as 'An attempt to apply all available knowledge—be it of Pathology, Pharmacology, Sociology or Psychology—to the maintenance of health and the diagnosis, treatment and rehabilitations of the sicker or the disabled patient'. Comprehensive Medicine is of course 'good medicine', but all good technical, medical or surgical practice is not necessarily comprehensive.

Some of the important ingredients of this concept which, however, are being denied due recognition at present, are: (1) the considerations of emotional and psychiatric aspects besides the physical factors and (2) a continuing care of the patient by an internist, with or without the help of the specialists, so as to enable the patient to achieve an optimal state of health and well being.

This brings out the relative importance of social sciences in the clinical curriculum. This is not a new concept. As early as 1847, Virchow observed 'Medicine is a social science in its very bone and marrow'. In his famous book: 'Disease, Life and Man', Virchow wrote, 'If Medicine is the science of the healthy as well as the ill human being, what other science is better suited to propose laws as the basis of the social structure in order to make effective those which are inherent in man himself? Once Medicine is established as anthropology and once the interests of the privileged no longer determine the course of public events, the physiologist and the practitioner will be counted among the elder statesman who support the social structure'. The need for community leadership is essential for a physician. This enables him to mobilise effective support for national health programmes, be it family planning or national malaria eradication. The relevance of social and behavioural sciences becomes significant in the development of the trait of community leadership in the future doctor.

How can all this be included in the already overburdened curriculum? You cannot very much increase the duration of the course which is already much longer than any other professional course. The only way is to evolve a new policy and rearrange the time allocation of various subjects, and aim at as much integration of teaching in various subjects as possible. Just addition or subtraction of a few hours here or there will not be the answer to the problem.

An impression has gained ground in almost all the centres in this country and abroad that the number of hours devoted to a particular subject in the medical teaching directly reflect on the importance of the subject and, therefore, on the status of the department and of the faculty members who work in that department. It is apparent that this notion is really not true. A subject may be important for more than one reason; in fact, each medical subject is of considerable importance in its own right. However, all the details of all the subjects cannot be compressed into the medical curriculum which has to be taught in a limited number of years. Therefore, a co-ordinated effort has to be made by all the faculty members of a particular medical school to sit together and evolve a programme suited to the needs of the country and *students*, i.e., the future doctors, and not to the needs of the departments. In other words, the curriculum has to be student-oriented (need-oriented) and not department-oriented. This necessitates a great spirit of accommodation and give and take on the part of all the faculty members and more so on the part of the heads of the various departments.

The duration of the clinical course in the medical colleges in India is three years after the first M.B. examination which comprises of Anatomy, Physiology and Biochemistry. One year of internship after the final M.B. examination can also be included in this which makes it four years. During the

first one and a half years there is a concomitant teaching of para-clinical sciences like, Pathology, Microbiology, Pharmacology and Forensic Medicine which leaves very limited time for training in clinical disciplines and the student devotes his entire time to clinical disciplines only after the second M.B. examination. The social and preventive medicine is taught all along in this type of general scheme. It is obvious that only broad principles, with only some essential details, of the main disciplines, i.e., General Medicine, General Surgery, Pediatrics and Obstetrics and Gynaecology can be taught in this short period of time.

Before considering each clinical subject in some detail, certain general principles can be laid down. The clinical subjects should be presented as far as possible in an integrated manner and their teaching should involve the disease process as a whole and not as a Medical, Surgical or Obstetrical problem. For example, there is hardly any need of arranging three lectures on pyelonephritis—one for 'medical' pyelonephritis; another for 'surgical' pyelonephritis and still another for pyelitis in pregnancy. The essentials for the diagnosis and principle of management can as well be taught in a seminar in which all the specialities participate—a horizontal integration. It will be still more beneficial if the pathologist is also included in this so that there is a concurrent teaching of etiology and pathology as well—a vertical integration. A correlation between the clinical presentation and the changes in the structure and function of various organs can be achieved by effectively combining the clinical teaching with that in applied pathology. The student who is in-charge of a patient in the wards should participate in the microbiological examination of specimens obtained from the patient. Similarly, in the event of the death of the patient, there should be a compulsory attendance at the postmortem examination, in case permission for autopsy has been obtained. This is the type of approach which is being evolved at the AIIMS. The quantum of didactic teaching can thus be diminished appreciably, leaving more time for practical training. The student, moreover, learns the pathological entity as a whole and not in bits here and there.

For this purpose, however, there should be a complete understanding and co-ordination between the various teachers and a uniform policy should be evolved at the commencement of the academic session and the guidelines for various seminars for this type laid down. In case such a teaching method cannot be arranged, then the syllabus should be so planned at the commencement of clinical and academic sessions that the repetition in teaching is avoided as far as possible. If the syllabi of clinical disciplines in the medical colleges are reviewed, many common topics will be found. The irony is that the teacher of one speciality is often completely unmindful of the fact that the same subject is also being taught by another specialist, sometimes with divergent views and different emphasis, to the utter dismay and confusion of the students.

Emphasis in the clinical teaching should be on highlighting the common problems that are met with in any geographic region. Somehow, the interpretation of the words 'geographic region' by a specialist is a narrow one—usually this means the topographic area called the hospital. However, the hospital practice gives an utterly false impression about the relative incidence or the prevalence of any disease. If a gastroenterologist is interested in the problem of ulcerative colitis, many cases of this disorder will be referred to him and are then admitted in his wards. As a result, the student may have seen half a dozen cases of ulcerative colitis during a three month posting in that unit, without coming across a single case of bacillary dysentery! The student has learnt all about the place of hydrocortisone retention enema in the management of ulcerative colitis, without knowing the dose of sulphaguanidine required to manage a case of acute bacillary dysentery. The student thus knows all about the immunological aspects of ulcerative colitis without knowing the principles of the prevention of acute or chronic infections of the gastrointestinal tract.

Recognition of day-to-day problems of the urban and rural areas and especially, emergency situation in clinical practice should be emphasised and principles of emergency management of such conditions should be properly taught.

As regards the teaching of specialities, at the under-graduate level, students should get exposed only to frequently encountered disorders so as to familiarise them with the problems which they are likely to come across during their practice as basic doctors. This point has been well brought out in a study conducted by the medical curriculum committee of the British Medical Association. The committee inspected and analysed the cases seen by a randomly selected general practitioner over the course of one year. The results were revealing; 108 of this practitioner's patients suffered from haemorrhoids whereas only 3 had endocarditis; 64 suffered from threadworms whereas 4 had perforated peptic ulcer; 120 suffered from boils and 2 from rosacea; among 1023 cases of disorders of the nervous system, there were 231 cases of anxiety neurosis. It is certain that any study conducted on these lines in our country in a general practitioner's clinic and a rural health centre will be as revealing and striking. In fact, such type of studies should be undertaken. A study of this nature is bound to bring out the wide gap that exists between what a basic doctor needs to know and what is being taught to him during his under-graduate days. It is apparent that you cannot make an under-graduate a specialist in all specialities. Teaching him the details of various specialities is a waste of effort and time. It is, therefore, imperative that only the general principles rather than the minutiae concerning the specialities should be dealt with. The main objective of training in special subjects is to enable the student to recognize such disorders early and give the necessary immediate treatment if it is an emergency and to make the necessary referral for further evaluation and management to the specialist centres. Rare diseases, details of infrequently used laboratory investigations and operative techniques should not be incorporated in the syllabus.

General Medicine, General Surgery, Paediatrics, Obstetrics and Psychiatry should form the mainstay of the clinical curriculum. Social and Preventive Medicine should be taught by all the specialists, in close collaboration with the staff of that department. Ophthalmology, Otorhinolaryngology, Dermatology and Venereology and other specialities should be taught only to the extent that a basic doctor needs them in his day-to-day practice. The review committee of the A.I.I.M.S. (1964) consisting of eminent educationists of national and international repute made the following observations and recommendations in this context:

> 'The Committee consider that such topics as Otorhinolaryngology, Ophthalmology, Dermatology and Venereology and Tuberculosis should be adequately taught in a series of 12 to 15 lectures and demonstrations'.

In the field of Ophthalmology, for example, an argument put forward for teaching the subject in great detail, is that blindness is very common in India. While this is true, it is also very true that in every discipline and speciality there are some very common and serious disorders. Is not common cold the most common disorder? Is tuberculosis uncommon in this country? Is amoebiasis not extremely common? Can we afford to make the student spend some weeks in learning each of such common disorders? Obviously not. In the field of Ophthalmology, on the other hand, the student should be made familiar with the recognition and management of those disorders which are met with commonly in general practice. Infections of the eye, which in one form or the other are a major cause of blindness, along with malnutrition, must be adequately taught. Glaucoma, as an emergency must be recognized and managed at least for a short while before arranging for immediate referral to a specialist centre. Cataract has to be diagnosed and referred for surgery to an ophthalmic surgeon. First aid for injuries of the eye must be taught. However, it is hardly of any use to spend hours of lecturing on the surgery of squint or even cataract, or the management of errors of refraction, as these have to be undertaken by a specialist. The ocular manifestations of systemic disorders should be taught by the internist, in active collaboration with the ophthalmologist. What is needed is a bed-side clinical approach for the recognition of common as well as serious disorders and the principles of their management. A practising doctor should be able to decide whether the effective management can be done by him or whether the patient needs referral to a specialist. What is mentioned about Ophthalmology is equally applicable to the teaching of Otorhinolaryngology and other specialities.

Paediatrics, rightly, is assuming increasing importance. It is estimated that 40 per cent of the population in India belong to paediatric age group and 42 per cent of the patients attending a general hospital are below the age of 14. Therefore, it has to be treated as one of the most important subjects in the medical curriculum. A sound and adequate knowledge and training in this speciality is essential for any practitioner. In addition to clinical teaching of the common paediatric disorders, emphasis has to be placed in the various portions of the under-graduate curriculum on the teaching of nutrition, growth and development, genetics, immunology and certain social factors affecting the health of the child. The special problems pertaining to the new born and premature infants should form a part of the teaching and training in paediatrics. The causes of the behavioural problems and their management should be taught in active collaboration with the Psychiatrist. Preventive health programmes, immunisation, nutrition school health services and growth and development should be taught in association with the department of preventive and social medicine.

If the theme that the individual patient as a whole should form the unit of study is accepted, then, the importance of the adequate training in psychiatry becomes obvious. The curriculum in psychiatry should be spread over the whole of clinical period. This does not necessarily imply that the teaching of psychiatry should be extended or be given more teaching hours. This only means that there should be a close integration between psychiatry and general medicine and the teachers in psychiatry should associate themselves with the teachers in other clinical subjects. The purpose will be defeated if the psychiatrist utilises the extra time by increasing the number of lectures in his subject. What is necessary is that the psychiatrist should be present and be actively associated in the teaching programme when diseases like peptic ulcer, bronchial asthma, thyrotoxicosis, ulcerative colitis, hypertension etc. are being taught by an internist. The diseases enumerated above have been selected from a cross section of subspecialities, only to emphasise the fact that a close integration is necessary in the teaching programmes. Entities like anxiety neurosis very often come to the general practitioner or the internist and collaboration of a psychiatrist and an internist in this field is also necessary.

The ideal of the total care will not be achieved if the students are not acquainted with the principles of rehabilitation medicine. The care of a myocardial infarction does not become complete by knowing all about the controversy existing about the use of anticoagulants in the management. It extends much beyond the time the patient is discharged from the hospital; this area has to be covered by teaching fundamentals of rehabilitation medicine.

There has been a lot of thinking recently on the content of curriculum and duration of the teaching in Preventive and Social Medicine which should actually be renamed as Community Medicine. This subject used to be taught only 20 years ago as 'Hygiene' and the teaching comprised of about 40 lectures (one hour each)—mainly concerning sanitation and environmental hygiene and control of epidemics. The teaching hours have been increased in this subject which has been rightly given a much wider scope, to about 450 in the total curriculum. In addition three months are reserved in a rural or urban centre during the internship period. The crux of the problem, however, is to know what results have been achieved by this prolonged course in this subject during the last 20 years or so. Is the graduate of today more biased towards the preventive aspects of health problems than his predecessor? Has he a better conception of his duties towards the community and the role that he should play? So far as one can judge one cannot say with any degree of confidence that anything like this is happening. When the student is being imparted so much training in a subject, very often at the cost of cutting down his training in

certain essential subjects like Medicine or Surgery or Paediatrics etc. without achieving the desired aims, the matter requires very deep and serious thinking. We consider it necessary that if the aims with which the curriculum of this subject was increased are to be achieved, there must be very close integration of this subject with other subjects—especially the main clinical disciplines. For example, nutrition, immunisation, growth and development, preventive aspects of many of the infectious diseases, school health services etc. should be taught along with Paediatrics, preventive aspects of communicable diseases and systemic disorders like cardiovascular disorders should be taught along with the physicians in the wards. The clinicians must also change their attitude. They must realise that the teaching of clinical subjects at present is too much hospital-based and too little community-oriented. They must move out frequently to the rural or urban centres and teach clinical medicine there laying special emphasis on the management of such cases and particularly the emergencies, when they present themselves in a rural centre. They may occasionally along with Preventive and Social Medicine teachers and interns visit the homes. They will themselves then learn what the important problems in the community are and how they are to be tackled and what stress is to be laid on the various clinical problems. The obstetrician for example will learn what problems the young graduate has to face, if called upon to deliver a baby in the house. From the point of view of a young graduate, training in domiciliary midwifery is more important than what he learns of this subject in the hospital. Such examples can be multiplied for all clinical disciplines. Just increasing the number of hours in the subject of Preventive and Social Medicine will not bring any dividends unless the teaching methods are overhauled on the above mentioned lines.

An attempt has been made to outline areas of under-graduate clinical curriculum where radical changes are needed. It is bound to provoke differences of opinion. Such differences in medical education have existed since antiquity and have served the purpose of healthy discussion and an evolution of thinking concerning medical education.

'Galen wrote about the nobility conferred on the physician by the study of philosophy. By that he meant that the physician should possess all the necessary knowledge of life and its manifestations, and he estimated that a period of study of at least eleven years was necessary to attain this goal. His contemporary and enemy, Thessaulus, on the other hand, announced that the medicine of the schools was nothing but a fraud and ..... declared that six months was all that was necessary to make an excellent physician'.

—A. Castiglioni (A History of Medicine).

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Status of Anaesthesia Teaching in Undergraduate Curriculum : Consultants' Feedback

By

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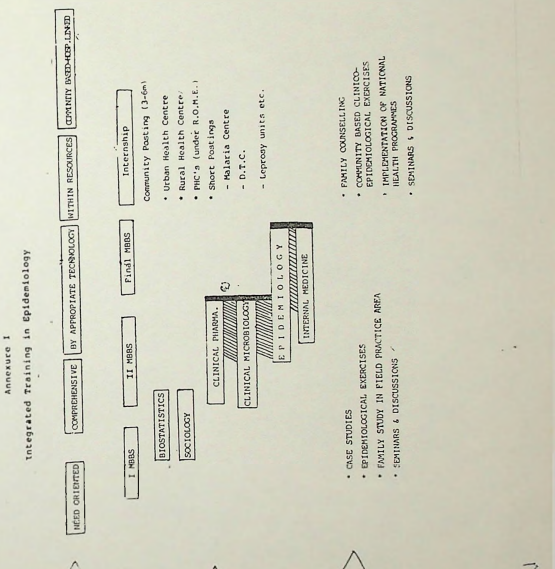
SUMMARY

The status of undergraduate anaesthesia teaching has changed from none at all to varying periods of 2 to 16 weeks in one living memory. This questionnaire study had an overall response rate of 71.92% ; 26.31% being 'spontaneous response rate' and 45.61% 'provoked response rate.' It is recommended that (a) anaesthesia should universally be made an 'examination subject' and (b) the duration of anaesthesia posting in undergraduate curriculum should be increased. 63.41% hospital consultants have favoured 'topic teaching' by holding joint seminars with anaesthetists to improve quality and standard of undergraduate teaching. 36.58% hospital consultants have commented that students' participation must be enhanced to make them learn resuscitation and certain anaesthesia techniques to combat the shortage of qualified anaesthetists in developing nations.

Introduction

On 16th October, 1846 William Thomas Green Morton gave a successful demonstration of clinical anaesthesia by using ether on a patient in Boston, USA (Atkinson et al 1982). That made ether anaesthesia popular all over in a short time. Since then the practice of anaesthesia has improved in its standards, deepend in its content, expanded the horizons of its scope and watered the roots of its scientific foundations. Needless to say that Anaesthesia teaching has also made considerable progress. Nonetheless it is still felt that the undergraduate medical students are not adequately exposed to Anaesthesiology. The attitude of consultants holding teaching responsibilities for undergraduates and the



graduated from 10 years to 34 years ago, with a mean of 16.63 years and mode of 18 years. They have graduated from various universities in Nigeria (58.53%), United Kingdom (17.07%) India (7.31%), West Germany, (4.87%), Italy, Hungary, Canada and Egypt (2.43% each) and one (2.43%) did not state the place. Two veteran Consultant (4.87%) out of 41, said they were not taught anaesthesia in their undergraduate curriculum, whereas rest all ; i.e. 39 (95.12%) were taught. All there 39 recollect that anaesthesia teaching was mainly in the form of diadectic lectures with demonstration of some of the anaesthesia techniques and equipment. The duration of posting has been stated to vary from 2 weeks to 16 weeks. Table 1 shows the duration of anaesthesia posting consultants had and they suggest for future. The suggested increase in duration ranges from 12 weeks to as long as for surgery. Table 2 depicts the responses for the attendence defaulters, end of posting examination consultants had and for the assessment of present students' acquisition of skill and knowledge. Regarding the latter a few (12.19%) did not comment, while others (17.07%) stated : I don't know, 'unable to assess', 'Not applicable.' 12.19% said that the students do not get any opportunity to show their knowledge or skill, 29.26% felt they did not learn satisfactorily, while 29.26% felt they did learn well.

26 out of 41 (63.41%) would like to hold joint seminars in collaboration with anaesthetists to improve the quality of undergraduate teaching. Table 3 lists the suggested topics for such joint seminars.

19.5% (8) have commented that they are happy with the performance of anaesthesia department for functioning smoothly inspite of present shortages and hardships. 36.58 (15) commented that students' participation in the practical aspects of anaesthesia must be improved. Table 4 lists all the comments.

Currently, in our institution obviously the students are not posted with all the other consultants after they have completed their anaesthesia posting.

Discussion

A specially designed questionnaire was sent to our hospital consultant colleagues who have graduated from 10 to 34 years ago from various Universities of different nations in Africa, Asia, Europe and North America. The status of anaesthesia teaching at undergraduate level, during one living memory, has evidently changed from none at all through a varying period of 2, 4 or 6 weeks to a maximum of 16 weeks. The overall response rate of 71.92% to our questionnaire, is not excellent. May be others, who chose not be respond, were either too busy to co-operate, or were not appreciative of the potentials of this kind of a study. 26.31% responded spontaneously and quickly, whereas 45.61% responded after repeated reminders. Obviously, the responses from the later group were delayed. It is considered that the spontaneous response rate', which is normally quick, and provoked response rate,' should be duly recognised in questionnaire studies.

The duration of posting, the content of teaching, the attendance by the students and

Status of Anaesthesia Teaching in Undergraduate Curriculum : Consultants' Feedback

By

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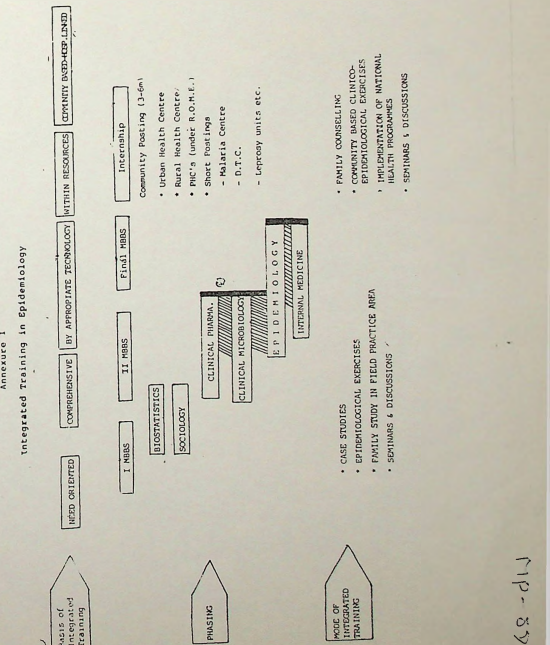
SUMMARY

The status of undergraduate anaesthesia teaching has changed from none at all to varying periods of 2 to 16 weeks in one living memory. This questionnaire study had an overall response rate of 71.92% ; 26.31% being 'spontaneous response rate' and 45.61% 'provoked response rate.' It is recommended that (a) anaesthesia should universally be made an 'examination subject' and (b) the duration of anaesthesia posting in undergraduate curriculum should be increased, 63.41% hospital consultants have favoured 'topic teaching' by holding joint seminars with anaesthetists to improve quality and standard of undergraduate teaching. 36.58% hospital consultants have commented that students' participation must be enhanced to make them learn resuscitation and certain anaesthesia techniques to combat the shortage of qualified anaesthetists in developing nations.

Introduction

On 16th October, 1846 William Thomas Green Morton gave a successful demonstration of clinical anaesthesia by using ether on a patient in Boston, USA (Atkinson et al 1982). That made ether anaesthesia popular all over in a short time. Since then the practice of anaesthesia has improved in its standards, deepend in its content, expanded the horizons of its scope and watered the roots of its scientific foundations. Needless to say that Anaesthesia teaching has also made considerable progress. Nonetheless it is still felt that the undergraduate medical students are not adequately exposed to Anaesthesiology. The attitude of consultants holding teaching responsibilities for undergraduates and the



graduated from 10 years to 34 years ago, with a mean of 16.63 years and mode of 18 years. They have graduated from various universities in Nigeria (58.53%), United Kingdom (17.07%) India (7.31%), West Germany, (4.87%), Italy, Hungary, Canada and Egypt (2.43% each) and one (2.43%) did not state the place. Two veteran Consultant (4.87%) out of 41, said they were not taught anaesthesia in their undergraduate curriculum, whereas rest all ; i.e. 39 (95.12%) were taught. All there 39 recollect that anaesthesia teaching was mainly in the form of diadectic lectures with demonstration of some of the anaesthesia techniques and equipment. The duration of posting has been stated to vary from 2 weeks to 16 weeks. Table 1 shows the duration of anaesthesia posting consultants had and they suggest for future. The suggested increase in duration ranges from 12 weeks to as long as for surgery. Table 2 depicts the responses for the attendence defaulters, end of posting examination consultants had and for the assessment of present students' acquisition of skill and knowledge. Regarding the latter a few (12.19%) did not comment, while others (17.07%) stated : I don't know, 'unable to assess', 'Not applicable.' 12.19% said that the students do not get any opportunity to show their knowledge or skill, 29.26% felt they did not learn satisfactorily, while 29.26% felt they did learn well.

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The duration of posting, the content of teaching, the attendance by the students and

the examination all play important role in achieving a favourable outcome. Students always tend to concentrate more on the 'examination subjects'. For a conscentious teacher it is imperative to give examination to his pupils to evaluate how much have they learnt ? Unless the aim of the teaching is not really to teach and train the students, but merely delivering the lecture and that's all, not giving examination to students make no sense at all. Hence, it is felt that anaesthesia should be made an 'examination subject' at par with other subjects. Even if the attendence is not made compulsory, students by and large would attend the teaching programmes of all the examination subjects'. The content of the teaching is not solely dependent on the duration of posting. Nonetheless the duration of posting can have a linear relationship with the content of the teaching.

All the more when teaching is coupled with training, the duration of posting becomes acutely crucial. It is the duration which would determine the number of chances every student in a class can get for the practical training.

This questionnaire posed a direct question to all the hospital consultants, which was : should the period of anaesthesia posting remain unchanged from what you had during your graduation or should it be changed (increased or decreased) ? Their answers reflect predictable human behaviour in any society. 63.41% of them succumbed to the syndrome of 'Let it be' : they said let it remain the same. Not all of them had a similar duration of anaesthesia posting during their graduation. It ranged from 2 to 16 weeks. 29.26% answered that the duration of anaesthesia posting for undergraduates should be increased. The suggested increase ranged from 12 weeks to as long as surgery has got. None favoured a decrease. 3(7.3%) did not comment on this. In any society a majority of human beings always tend to just follow whatever trend has been set for them by the ancestors. They, somehow, do not feel obliged to give a serious thought to identify the problems, in the face of changed times, and then attempt to solve as well. This attitude can aptly be described as a syndrome of 'Let it be'. It is only a minority of people, in any human society, who are thinkers, who are trend setters, who quite naturally realise the need of the hour. Their opinion should be valued more. With this doctrine it is recommended that the opinion expressed by only 29.26% of respondents, in this study, to increase the duration of anaesthesia posting for undergraduates should be accepted in principle. The actual extent of increase can then be decided by the appropriate authorities responsible for updating undergraduate curriculum.

This may raise'and eye-brow here and there: Where to get the additional time from ? Part of the additional time needed for increasing the duration can be made available by simple adoption of joint seminars. Certain topics like shock, care of unconscious, etc. are dealt with by various departments : such as medicine, surgery, anaesthesia, obstetrics & gynaecology, pathology etc. If such a topic, e.g. shock is covered in a joint seminar to be deliberated by the consultants of all involved departments simultaneously at a time under one roof, it would definitely economise the students' time which otherwise would have been spent on the same topic in every department. Time thus saved can be reallocated to the needy departments. Maddison (1978) advocated that 'topic teaching' provides horizontal integration in effective medical education. Criticising further the existing fragmented approach Maddison quotes one of his residents who discovered while preparing for final graduation examination that he had 21 separate lectures and tutorials on thyrotoxicosis. Joint seminars in 'topic teaching' can eliminate such wastage of time. Another forseeable advantage of joint seminars is an improvement in the quality and standard of undergraduate teaching by gathering a large pool of upto date information by the concerned experts. In the fragmented teaching system someone can play on dubts by presuming that this aspect of the disease should have been covered or would be covered by another department ; and so on and on. Eventually that aspect may be left out altogether. 'Topic teaching' can effectively eliminate this.

Gale et al (1976) reported that improvement in medical education is largely dependent upon the attitudes of clinical teachers towards their own teaching and their students learning. Present study highlights the attitude favouring 'topic teaching' in joint seminars among 63 41% hospital consultants. Such sprouting attitudes should be immediately harnessed lest they die off also quickly.

Questions regarding acquistion of theoretical knowledge and practical skill invited sharply diversent answers. On one extreme the answers were 'I' dont't know', 'Unable to asses', 'Not applicable', 'No opportunity for students to demonstrate these'. The other extreme included satisfaction (29.26%) and dissatisfaction (29.26%). Some left these questions unattempted. Some of the responses 'unable to assess and 'Not applicable' were probably due to the fact that the students are not posted with those Consultants after completing their anaesthesia posting.

(15) 36.58% have commented that undergraduate student' participation in the practical training of resuscitation and some of the anaesthesia techniques must be enhanced. In developing nations were qualified anaesthetists are not available in adequate number the practical training for students becomes very important. Undergraduates. if well trained in regional anaesthesia techniques, can at a later date help a nation improve, to considerable extent, its health care delivery to masses in rural areas.

Acknowledgements

Many thanks are due to our colleagues, without whose co-operation this study could not have been completed. The secretarial assistance provided by Miss M.N. Ofili is highly appreciated.

TABLE 1

Duration of anaesthesia posting in undergraduate curriculum

N=41

	Consulants bad (in weeks)								Consultants suggest for future		
	Nil	2	3	4	6	8	12	16	Let it be same I had	Should be increased	No comment
(No.)	2	6	2	10	10	4	5	2	26	12	3
(%)	4.87	14.63	4.87	24.39	24.39	9.75	12.19	4.87	63.41	29.26	7.31

TABLE 2

Feedback on some aspects of undergraduate anaesthesia teaching in past and at present

No.=42

	Attendence*			Were defaulters asked to repeat ?*			Had end-of posting exam.*			Assessment of knowledge & skill acquired by present students during anaesthesia posting				Joint seminars favoured for future		
	Compulsory	Optional		Yes	No	No defaulterd	Yes	No	No comment	I don't know etc.	No opportunity for students to show	G Poor	Good	Yes	No	No comment
(No.)	34	5		18	18	5	19	20	5	7	5	12	12	26	11	4
(%)	82.92	12.19		43.90	43.90	12.19	46.34	48.78	12.19	17.07	12.19	29.26	29.26	63.41	26.82	9.75

* These columns have N=39 as 2 consultants were not taught anaesthesia when they were undergraduate students.

TABLE 3

Suggested Topics for Holding Joint Seminars with Anaesthetists

Sl. No.	Topics favoured for joint seminars
1.	Shock
2.	Care of unconscious patient.
3.	Airway management including emergency tracheostomy.
4.	Cardio-pulmonary resuscitation.
5.	Management of facial trauma, severely injured, head injury, cleft up and cleft palate, critically ill.
6.	Dental chair emergencies.
7.	Management of emergencies in paediatric surgery.
8.	Facial blocks and problems of ocular surgery.
9.	Drug interactions, management of adverse drug reactions.
10.	Chest radiology.
11.	Obstetric anaesthesia and analgesia.
12.	Effect of anaesthetic agents on various aspects of intermediary metabolism
13.	Community practice and anaesthetic techniques.

TABLE 4

Comments by Hospital Consultants

Comments
1, Anaesthesia department has done very well inspite of shortages and difficulties Keep it up.
2. Anaesthesia teaching should be more practical.
3. Students' participation should be increased.
4. Joint seminars should be held for postgraduate students also.
5. Anaesthesia is the meeting point of all the medical disciplines. Students be given an opportunity to revise and familiarise with the theory and practice of anaesthesia and resusciatation before their final examination. This may be the last chance in their life ;
6. Duration of posting in anaesthesia should be for at least a month for every student.
7. Less no of students be posted with a consultant anaesthetist to make operation theatre teaching more effective.
8. Regional techniques should be emphasised more.

Appendix 1

DEPARTMENT OF ANAESTHESIOLOGY COLLEGE OF MEDICAL SCIENCES
UNIVERSITY OF BENIN, BENIN CITY

Consultants' feed-back on the status of Anaesthesia teaching at Undergraduate Level

Dear Doctor,

We shall be grateful if you could please complete the following questionnaire as frankly and truthfully as possibly you can by filling the blank spaces or ticking the appropriate. Please do not write your name anywhere since the information gathered will be treated as confidential. Thank you.

1. Year and place of your medical graduation ?
2. Year and place of specialisation :
3. Area of your specialisation : Designation :
4. Was anaesthesiology taught during your medical training ? Yes/No.
5. If Yes, please tick the type you had
   (a) theorty classes only, i.e. lectures/seminars/group discussions.
   (b) practical demonstrations in the operation thearter i.e. demonstration of anaesthetic equipment alone/demonstration of conduction of anaesthesia or parts thereof like endotracheal intubation/demonstration of regional anaesthetic techniques like spinal or epidural.
6. How long was your posting in anaesthesia during your training ?
7. Was it compulsory to attend anaesthesia posting ? Yes/No.
8. If Yes (i) were defaulters asked to repeat the posting ?
   (ii) failing to repeat the posting were defaulters detained from appearing in Final Graduation Exam. Yes/No.
9. Was there any end-of posting exam. ? Yes/No.
10. In the light of your specialisation do you think the time devoted to anaesthesia teaching at undergraduate level should
    (a) remain the same as you had ?
    (b) be increased ; (if yes then how much, ?
    (c) be decreased. (if yes then how much, ?
11. Currently are undergraduate students posted to you after they have completed anaesthesia posting ? Yes/No.
12. While teaching the present undergraduates do you feel that certain topics, like shocks, cardio-pulmonary resuscitation care of unconscious patient, drug interaction, etc. have been well covered during their anaesthesia posting :
13. Are the undergraduate students able to demonstrate their ability to perform some basic techniques like setting-up of an intravenous infusion, handling oxygen therapy equipment and suction apparatus, external cardiac compression, etc., which have been taught to them during anaesthesia posting ?
14. Would you have liked to hold seminars for undergraduates in collaboration with anaesthesia department for the benefit of students Yes/No.
    If yes, please specify the topics :
15. Any other comments on the status of anaesthesia teaching at undergraduate level ?

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Place of Ophthalmology in Undergraduate Medical Education in India

BY

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India is a vast country which is developing its resources and in spite of this it is an 'under developed nation.' Due to low standard of environmental sanitation, poor nutrition, diverse social and cultural patterns, illiteracy, superstitions, beliefs and taboos, a large number of diseases both ocular and general in as many diverse forms are seen. There is a high incidence of blindness due to inadequate ophthalmic aid. Ocular diseases as such are posing big public health hazards and problems.

This challenge has to be met with all the resources at our command. Besides the medical care, a proper orientation of medical education is desirable.

The medical care of the community in general should be based towards the needs of the community which, *inter alia*, means that the medical education itself should be orientated according to this need. To amplify, according to this concept, the patterns of medical education should be different in different countries as the relative emphasis on training the undergraduates on vocation basis or through the active process of learning and experiment will vary from country to country, area to area, and from time to time within the same country. It will be influenced by the pressing needs of the community for medical service, by economic resources and by the general state of development of other sciences and humanities in the country. It would, therefore, be perhaps advisable to evolve our own pattern of medical education rather than follow some set pattern evolved by other countries whose problems basically differ from ours. The Health Survey and Planning Committee of the Government of India (1961) lent support to this line of thinking as it states that 'Medical Education should fit in with the needs of a country, and conditions prevailing. For instance, India being more than 80 per cent rural, the training given to a doctor should enable him to carry on his work among the vast masses in the villages'. One has, therefore, to assess the basic needs of the community before evolving a pattern of medical curriculum. This requires nation wide and area wide survey of the community needs of the population, a necessity which is neither realised nor is this lacuna being probed by our medical planners. The differences between what is required and what is being supplied need to be brought out and emphasis on the differences needs to be given in working out the curriculum of a basic doctor. Unless this is done, a curriculum sought to be introduced is likely to be based on inadequate data and theoretical concepts far removed from practicability and truth.

Let us briefly analyse these needs in terms of quantity and quality of the medical personnel in this country. The number of medical graduates on population basis in this country is much lower than the requirement. It is likely that we will have one doctor for 6,000 of the population at the end of the third five-year plan. We will be hopelessly inadequate in the number of the specialists in the so called specialities and this gap is likely to remain for a long time to come. As such, it is obvious that our medical graduates going out in the community will have to have a much broader base and carry a greater load of work both quantitative and qualitative—than their counterparts in the West—if they have to serve the needs of the community. To face the situation, therefore, there are two courses.

1. To make our medical graduates more broad based in a way that they can tackle the fundamentals of various disciplines and render minor services to the community in the diseases prevalent leading to a greater well-being of the population, an object to be cherished by any community; or

2. To leave the community bereft of even basic services in disciplines other than general medicine, general surgery and obstetrics and gynaecology.

This leads us to definition of a basic doctor which would be applicable to this country. We suggest that a basic doctor is 'one who with proper understanding of the fundamentals of medical sciences can apply them to the "care" of the community he is going to serve'. This concept of a basic doctor is dynamic exhibiting a great range of flexibility. Thus the training and the proficiency of a basic doctor in various branches of the medical sciences will differ in this country due to the needs of the community which vary because of the social, cultural and environmental factors and the resources available.

We can have an idea of the basic data for the country in ophthalmology when we know that the blind and visually handicapped people constitute 3.75 per cent of the population. The problems of ophthalmology and their remedies have been spotlighted by the Mudaliar Committee as well. They say:

'The incidence of eye diseases in the country is considerably high as compared to the incidence of similar diseases in foreign countries. In some areas the incidence is as high as 10 per cent of the total population'. Trachoma, which is widely prevalent in North India, has probably not been computed in the assessment of the problem as its prevalence rate ranges between 35-78 per cent.

Apart from these changes probably due to malnutrition and refractive errors have not been taken into account. This high incidence of eye disease has resulted in an appalling increase in the figures of blindness.

On a rough estimate the figures of blindness in India are 2.5 per thousand of population. The figure does not include partially blind population. Thus about one million people are totally blind, at least double the number are economically blind and show ocular morbidity. These figures exclude cases of cataract which can be cured by an operation.* Recent World Health Organisation figures worked out in conjunction with Trachoma Control Pilot Project place the blind population in the neighbourhood of three million. These figures do not include economically blind or visually handicapped. Comparing these figures of 2,500 blind persons per million population with the data in some of the countries of the west which are highly industrialised, the inadequacy of ophthalmic services in this country becomes evident. With the exception of Egypt, India has the highest proportion of blind population. In view of this the Mudaliar Committee says that: 'Prevention of blindness is thus a problem of great magnitude in this country'. This can be achieved in the following ways:

1. Preventive and Social Medicine personnel should be properly instructed with regard to the incidence of these diseases and measures necessary for preventing them so that they can carry out mass propaganda regarding the incidence and hygienic measures necessary for the prevention of the same.

2. An intensive ophthalmic service should be developed throughout the country, and a separate outpatient section may be utilised for certain departments like eye.

There is a dearth of ophthalmic specialists who can take adequate care of these patients. At present almost 2,700 eye practitioners are available in the country which works out to one eye doctor for 1,70,000 of population, or working out doctor patient ratio, there is one eye doctor for every 17,000 patients as about 10 per cent people are affected by eye diseases. Almost a similar number of other medical men, not trained ophthalmoiogists, are working in this field. Thus the inadequacy of ophthalmic aid is glaring. The state of affairs is being exploited by quacks, and even by foreign doctors who come here with the pretension of providing ophthalmic relief while in effect they use this area as training and practice ground for their young and inefficient graduates. All these contribute towards an increase in the rate of blindness. It will be desirable to achieve a

target of one eye doctor for every 10,000 population even which is considered inadequate in countries like U.K., U.S.A., Japan, etc., where eye diseases are not as prevalent as in India.

In spite of the best efforts of the country, it seems very difficult to provide an adequate number of specialists and semi-specialists in the subject. It seems inescapable that the general practitioner will have to shoulder a considerable load of this work for a long time to come. In view of this, the Mudaliar Committee 'views with grave concern the tendency of some of the universities and Indian Medical Council to reduce the period of training at the undergraduate level in this course and in some others the tendency to abolish the assessment of candidates in ophthalmology. If this attitude is encouraged the ophthalmic services even for minor ailments will become hopelessly inadequate. This will adversely affect ocular morbidity and blindness, thereby increasing the size of the problem'.

The main causes of blindness are:

1. Treatment and operation of eye patients by quacks which is possible due to lack of trained ophthalmic personnel, illiteracy, economic backwardness and superstitions.
2. Inadequately trained basic medical doctor even for minor eye surgery. These basic doctors are usually in charge of district hospitals, tehsil hospitals, rural dispensaries, and primary health centres. In spite of their inadequate training and lack of knowledge these personnel are actively engaged in the minor and major surgical treatment of eye ailments. They mishandle such operations resulting in blindness. The public who are unaware of their professional incompetence in eye surgery gets a false sense of security in the hands of these doctors leading to deterioration of ocular condition and blindness.
3. A general lack of screening procedures of the population especially:
   (*a*) Lack of adequate school medical service where children can be seen, screened and treated in time.
   (*b*) Screening for glaucoma and malignant diseases. Screening for glaucoma is important because of high incidence of cataract in this country which presents with similar symptoms.
4. A large number of ocular diseases which are responsible for blindness are:
   (*a*) Purulent Ophthalmia,
   (*b*) Small-Pox,
   (*c*) Trachoma,
   (*d*) Corneal Ulcers,
   (*e*) Complications of trachoma which are many and varied,
   (*f*) Pterygium,
   (*g*) Glaucoma,
   (*h*) Iridicyclitis,
   (*i*) Malnutrition,
   (*j*) Genetic disorders,
   (*k*) Myopia, and
   (*l*) Detachment of retina.
5. Involvement of the eye in large number of general diseases to which the practitioners and teachers of general disciplines are more often than not unmindful. These disorders then get neglected and inadequately treated. Common examples are Small Pox, Typhoid, Tuberculosis, Meningitis, Central Nervous System disorders, Head injuries, Industrial hazards, Hypertensive states, Liver disorders, haemorrhagic diseases, infections of nose and throat, metabolic disorders (diabetes and thyroid) kidney disorders, etc.

Apart from the diseases causing blindness, there are many others which are quite prevalent as lid inflammations, stye, chalazion and blepheritis, conjunctivitis of various types, corneal ulcers, pterygium, dacryocystitis, entropion, ectropion, etc., which could and should be handled by a basic doctor.

We have intentionally not mentioned ocular conditions associated with systemic diseases in which an ophthalmologist is called for consultation and which should be primarily seen by the internist. In this country there is a woeful lack of this because of the absence of orientation of medical personnel in this section. It is a sad experience to see general practitioners treating cases of Small-Pox, Measles, Typhoid, Diphtheria, etc., in which simple ocular lesions like corneal ulcer, iritis, membranous conjunctivitis, optic neuritis, etc., have not even been thought of leading to permanent blindness of the patient. We have also not mentioned the diseases of pure specialised interest.

While conducting various eye relief camps in villages we found that anterior staphyloma was common and we assessed them to be due to past performation of corneal ulcer which remained either undiagnosed and untreated or maltreated. Phthisis bulbi was not uncommonly seen which was believed to be due to undiagnosed and untreated iridocyclitis or purulent conjunctivitis with corneal complications that were inadequately attended to. Some cases of phthisis bulbi were seen after small-pox which were under the care of medical specialists because they remained unmindful of ocular lesions. Blindness due to couching is not uncommon even today. This is due to the fact that the public is illiterate and the general practitioners are unable to appreciate the dangers of this procedure. These causes of blindness can only be eradicated if our general practitioners i.e., Medical Graduates are properly orientated to the problems of this discipline. Blindness from acute glaucomas is common as it is often diagnosed and treated as conjunctivitis. Absolute glaucoma secondary to chronic simple glaucoma is quite a common sight in our villages because our village doctors are unware that cataract and glaucoma can coexist. They usually diagnose these cases as immature senile cataracts rather than chronic simple glaucomas and ask the patients to wait till the cataract matures and it always turns into absolute glaucoma. These are only a few instances to spot-light the inadequacy of ophthalmic training.

Another group of people may include visually handicapped though not economically blind who develop amblyopia since childhood. These persons in their adult life face rejections at the hands of various medical boards—thus sometimes services of many brilliant young men are lost to the community and in return frustrated young individuals are created. We may also correct the misconceptions of some medicos that ophthalmology is a speciality of surgery; it is a composite discipline consisting both of medicine and surgery, more of medicine than of surgery.

The discipline of ophthalmology has long since developed an independent and self-sufficient status all over the world. A general surgeon has hardly any orientation of this discipline as it has not formed a part of his training programme. He is as such not fully conversant with the trends and progress in the diagnosis, management and treatment of the diseases relating to these fields. The teaching of general surgery as such does not cover the teaching of Ophthalmology. Due to lack of orientation of the general surgeon in ophthalmology it is difficult for him to teach the subject and more so to assess the candidate. Quite unlike the Western countries the ophthalmic problems in this country are of much greater magnitude. The diseases met with as stated earlier could and should be handled by a basic doctor.

Let us briefly recapitulate the recommendations of the Indian Medical Council in this matter. A decade ago the Indian Medical Council recommended the merger of ophthalmology with surgery at undergraduate level. In spite of its best efforts the Indian Medical Council has failed to get this implemented by a large majority of the universities which considered these at length from time to time and were of the opinion that this procedure is not only undesirable but positively harmful. Some of the colleges and universities which implemented these recommendations, have after bitter experience returned to or are gradually returning to the system of assessing it separately.

The Indian Medical Council now have moved a step towards the implementation of this recommendation of the Medical Education Conference by requesting the colleges under its jurisdiction to institute a compulsory home examination in Ophthalmology. Candidates failing in this examination cannot take the final examination. This is certainly worse than the separate assessment at final examination as it gives a veto to the discipline of ophthalmology to the detriment of the student.

At the Medical Education Conference, the conference held the view that ophthalmic

training should be at least for 13 weeks during the clinical course and that it should preferably be assessed separately.

As far as under-graduate curriculum for teaching Ophthalmology is concerned, it should be taught and assessed as a separate discipline which will be in keeping with the existing practice in this country and the recommendations of the Mudaliar Committee which states as under:

'The committee considers that at the under-graduate level the student should be adequately trained in the subject of ophthalmology and should be assessed separately with regard to his fitness in the subject. The combination of this subject with surgery for assessment must be deprecated. It is felt that the student should be given at least 50 lecture-demonstrations and should be posted to the wards and the out-patient department for a period not less than 13 weeks'. Great stress must be laid on small procedures like perimetery and fundus examination and small surgical procedures like scraping, syringing and some minor operations.

In conclusion we wish to draw the attention of the medical educationists to realise the need and desirability of teaching and assessing Ophthalmology as a separate subject.

Emphasis on Other Specialities :

ENDOCRINOLOGY

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The teaching of the subject of Endocrinology has had scant attention in this country till very recently. About 30 years ago students of Medicine could hardly see cases of endocrinopathies. The physician saw only a few individuals whom they thought had endocrine disorders. A great satisfaction was felt by the students if a teacher could demonstrate a case of acromegaly to them. But the disease when diagnosed was far advanced when nothing could be done for the patient. He was only a scientific curiosity to students.

But with the modern development of radioactive substances, X-ray irradiations, glandular extract therapies and radical surgery much can be done to help these unfortunate victims to arrest the onward march of endocrinopathies.

The diagnostic facilities have also increased. The biochemical changes which result from the various endocrinopathies are better understood and with the additional aid of skiagraphy, diagnosis can be made with a fair degree of certainty quite early.

It should be remembered, that endocrinopathies may start in the intrauterine life or may occur after birth or at varying intervals after birth. There is no doubt that the development of the foetus *in utero* is much influenced by the maternal biochemistry of the blood, her nutritional state during gestation or by the diseases which she suffers from during the period of gestation. They all may have an important bearing on the endocrine glands of foetus as on any other organ of the body. In the intrauterine life the developing foetus is very labile and can be influenced even by the minor alterations on the maternal side, psychological or somatic.

It is further necessary to realise that if the serious consequences of endocrinopathies have to be prevented the disease has to be detected promptly and proper and adequate treatment started. Even in a suspected case of endocrinopathy the clinical examination and investigation have to be carried out in a great detail because for diagnosis, especially in early stages, in no other disease detailed clinical examination and investigations – haematological biochemical and radiological - are so essential.

Endocrinology pervades and permeates through the whole realm of internal medicine and so the study of endocrine glands - both physiological and pathological – is gaining

considerable importance. It is essential therefore that the medical curriculum be so revised as to include the subject of endocrinology in the teaching programme of undergraduate student. In the preclinical period stress should be laid on teaching of physiology and about the biochemical changes which can result from the various endocrinopathies. It needs to be impressed that a significant disturbance can result in the body economy by the disorder of one of the endocrine glands. The endocrine glands work in harmony with each other. If one is disordered it might cause serious disturbances in other glands.

The rapid advancement of biochemistry and biochemical research has added much to our knowledge of endocrinopathies.

In the three clinical years (III, IV and V years) atleast 21 lectures be devoted to this subject, 7 lectures each year. They should preferably be clinical demonstrations so that the student appreciates the somatic changes which may occur due to endocrinopathies. The biochemical and the haematological changes resulting from these disorders may also be shown at the same time along with the radiological findings. They must be shown how the chemical structures of the hormones can be altered to enhance its activity manifold or to weed out the undesirable aspects of its action. On the therapeutic side they shou'd be taught the proper use of hormones because insufficient and inadequate doses may do no good and overdosing may cause serious harm. Further, the delay in starting the treatment e.g. in the case of cretin, may hamper the mental development of the child.

Diseases of the Endocrine glands which should be included in the teaching programme of the undergraduate students are :

1. Hormonal disturbances - Mechanism of Endocrinopathies due to :
   1. Increased or decreased liberation of normal hormones.
   2. Secretion of abnormal hormones.
   3. Aberration in hormone conjugation and degradation.
   4. Inherent abnormality in local tissue responsiveness.
   5. Continued rather than cyliela elaboration of hormones.
2. Pituitary Gland :

   Disease of anterior and intermediate lobe :

   I. Decreased ant. pituitary secretion :
      1. Panhypo-pituitarism.
      2. Post pubertal Hypopituitarism – Simmonds disease Sheehan's syndrome
      3. Frohlich's syndrome.
      4. Laurence Moon Beidl. syndrome.
      5. Tumours of Pituitary gland.

   II. Increased secretion of hormones of anterior pituitary :
      1. Growth hormone Increased secretion :
         (a) Giantism.
         (b) Acromegaly.
      2. Basophil adenoma-Cushing syndrome.

   III. Intermediate lobe disease of Pit. gland-Melanocyte stimulating hormone.

   IV. Neurohypophyseal syndrome.

   V. Diabetes Insipidus.

   VI. Excess of Anti-diuretic Hormone – Oedema.

3. Diseases of Thyroid gland :
   A. Hypothyroidism
      1. Cretinism.
      2. Myxoedema.
   B. Hyperthyroidism
      1. Parenchymatous type.
      2. Nodular type
      3. Thyrotoxic heart disease.
      4. Thyrotoxic Myopathy.
      5. Thyrotoxic bone disease.
   C. Thyroiditis.
   D. Tumours of the thyroid gland.
4. Diseases of the Parathyroid Glands :
   A. Hypoparathyroidism.
   B. Pseudohypoparathyroidism.
   C. Hyperparathyroidism
      1. Primary Hyperfunction.
      2. Secondary Hyperparathyroidism.
5. Diseases of the Adrenals :

   I. A. Hypofunction of the adrenal cortex :

      I. Primary adrenal insufficiency :

      (a) Anatomic destruction of gland :
         1. Metastatic invasion or infection.
         2. Haemorrhage.
         3. Idiopathic atrophy.
         4. Surgical removal.

      (b) Metabolic failure in hormone production :
         1. Congenital.
         2. Secondary adrenal insufficiency.
         3. Atrophy of the gland due to lack of trophic hormone :

            (i) Hypopituitarism due to pituitary disease.

(ii) Suppression of hypothalamic pituitary axis.

(c) Addison's disease :

1. Acute adreno-cortical insufficiency.
2. Adrenal crisis.
3. Adrenal haemorrhage.
4. Adrenal insufficiency.

B. Hyperfunction of adrenal cortex :

1. Cushing syndrome.
2. Hyper aldosteronism.
3. Secondary aldosteronism.
4. Adrenal virilism.
5. Aldosterone and Oedema.
6. Use of adrenal steroids in clinical practice.

II. Diseases of Adrenal Medulla :

1. Phaeochromocytoma.
2. Non-functioning tumours of the medulla.

6. Sex glands – Testes and Ovaries:

1. Male Hypogonadism
2. Sex hormones in treatment of carcinoma.
3. Female sex Endocrinology :
   (i) Gonadotrophic Hormone.
   (ii) Ovarian Hormones
   (iii) Disorders of Menstrual functions.
   (iv) Sterility.
   (v) Recurrent abortions.
   (vi) Lactational disorders.
   (vii) The menopause.
   (viii) Post-menopausal disturbance.

7. Diseases of the Pineal and Thymus glands.

Integration of Teaching of Medicine with other Clinical Disciplines

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Till the early part of the nineteenth century clinical "Sciences" in most European Universities were taught as Physics; it later on became clinical medicine which included all the clinical disciplines. As a relic of the old days, some universities in the West still have a professor of physics. In the second half of the nineteenth century, surgery grew up to be a respectable profession. Interestingly, it was the physicians who brought about the separation of surgery from medicine. A notable exception was Sri Clifford Allbut who vehemently opposed the move.

Specialities grew in Europe and America after the second world war. This specialization has led to a reaction and now one hears more about integration of teaching of Anatomy and Physiology as well as the various clinical disciplines as one discipline for the undergraduates.

It is my firm belief that undergraduate teaching should be integrated as one new discipline to give students a proper perspective of medicine as a whole. In England, there has been recently a movement led by Sir Charles Snow for integration of the teaching of humanities and social and biological sciences to give complete education to the modern man. In U. S. A. the Massachussetts Institute of Technology has over 100 professors of humanities and social sciences. Thus, the world is witnessing a move for integrated education. We, as medical educators, should give integrated education in the clinical discipline.

I therefore suggest that the teaching of all clinical disciplines should be integrated for the undergraduate student. After all, he is to be instructed in the principles of diagnosis and treatment, rather than minute details of obscure or experimental drugs, or details of technique of operations, or the minutiae of Biochemistry and Atomic Physics.

With creation of chairs in various specialities, which is extremely desirable to give our patients the best treatment, our post-graduates, the best teaching in specialities, our bright

Differential Perception of Disease Etiology And Utilization of Health Services

By

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ABSTRACT

While more than 67 per cent of India's population lives in the rural areas, three-fourths of trained doctors work in the urban areas. Also, while three-fourths of the incidence of commonly prevalent diseases is preventible, three-fourths of the health budget is spent on providing curative services. India has yet to produce a 'basic doctor' who could adequately meet her requirements. Numerous studies on the delivery of health care services have revealed that nearly seventy per cent of the healh care needs of the rural people are met by the indigenous medical practitioners. Despite this the medical sociologists have not yet paid serious attention to studying these aspects in different regions. The present study was undertaken to explore people's preception about etiology of selected diseases as well as their pattern of utilization of health services in Haryana. The findings reveals that respondents belonging to higher or non-scheduled castes showed greater recognition of physical causes. Those belonging to lower classes and scheduled castes tended to recognise supernatural causes a great deal more. Similar pattern emerged in relation to their racognition of apparent symptoms of these diseases as well as in relation to their seeking medical attention. An important finding of this study was that a substantial number of respondents belonging to the lower classes never utilized the services provided at the health centres. Thus social inequality seemed to have played an important role in the differential utilization of governmental health services. The members of the lower classes remained deficient not only in terms of possessing adequate knowledge about disease etiology but also about seeking therapeutic help in time. Their life style was indicative of social inequality. In order to remedy this situation, the study recommended implementation of the newly proffered alternative model of health care services.

The popultion of India continues to rise at the enormous rate of about thirteen million a years According to 1981 census, India already has about six hundred and eighty four million people- nearly fifteen per cent of the total world population-to carve out an

existence in about 2.5 per cent of total land area of the world. Thus every year more than two times the population of the Union Territory of the entire population of Australia is being added to our country's population. One would be justified to think that if the present rate of growth continues, in a couple of decades, our population would be more than one thousand million. This is a prospect which further complicates the problem of delivery of health care services in our country, particularly in the rural areas. Even today, while more than seventy six percent of our population lives in the rural areas, three-fourths of our doctors, trained in cosmopolitan medicine work in the urban areas. Moreover, while three-fourths of the incidence of diseases is preventible three-fourths of the health budget is still being spent on providing curative health sevrices. Besides, it is a matter of common knowledge that most doctors posted in the rural areas still spend a major part of their time on curative medicine rather than on preventive medicine. The country has yet to produce a 'basic doc or' who could adequately meet our requirements. The newly started 'Community Health Volunteers' Scheme' (presently re-designated as Guides), has yet to prove its worth in the Indian cultural setting. Very few evaluative studies [1,2] have dealt with the barriers in its implementation in different parts of the country. However, numerous earlier studies [5-8] done on the delivery of health care sereices in India have highlighted that nearly seventy per cent of the health care needs of the rural people are met by different types of practitioners of indigenous systems of medicine who, as yet do not from an integral part of the centrally-sponsored health care system. A couple of years back, Boards of Indigenous Medicine in different States, had registered as many as 2,57,000 practitioners, of which about 93,000 had at least 4 years of formal training [9] There has been a great deal of talk about intergration of modern and indigenous systems of medicine but no concrete workable proposal has emerged so far. The result is that the existing health centres have failed to cope with the heavy load of sickness, the bulk of which is taken care of by these practitioners, howsoever dubious some of their practices may have been. A couple of decades back McPhail [10] did a pretty detailed study of the working of primary health centres in Uttar Pradesh and his findings were revealing in the sense that he pointed out that the effective area of coverage of an average primary health centre in the State did not exceed a radius of three to four kilometers. This situation has not changed even today.

Despite an apparent need to explore these aspects in much more details, not many medical sociologists have cared to undertake systematic studies of the pattern of utilization of health care services in different parts of the country, particularly in the rural areas. A recent study done in a Metropolitan city has highlighted the wide gap among different sections of the population in the utilization of available health services.[11] It emphasised the need to undertake similar studies in other areas. Durning 1976-80, we did a study of differential utilization of health services by different classes and castes in three villages of Haryana. These villages were located in Ambala District and were at a distance of six to eight kilometers from the main health centre in the community development. Block

However, they were all multi-caste villages and were roughly comparable in terms of eneral demographic and socio-economic gharacteristics. The main objectives of this estuy were: (i) to explore people's perception about etiology of selected diseases; (ii) to understand the extent to which they could recognise different symptoms of these diseases; (iii) to understand the pattern of utilization of health services in relation to class and caste; and (iv) to identify factors affecting utilization of health services provided under the centrally-sponsored health care system. The present paper presents certain selected findings of this study. The paper is divided into five parts; part one deals with methodology; part two with people's perception about etiology of selected disease; part three with their recognition of disease sysmtoms; part four with differential level of utilization of health services, and part five presents the broad conclusions the study while offering certain recommendations.

PART ONE

Methodology

While selecting the villages for our detailed investigations we were particular to select only those villages that were not closely located to the primary health centre. This was done with a view to assess the outreach of health centre services in these villages. The selected villages had a total population of 4,826 i.e., about five per cent of the total population of the Development Block. The interviews were carried out with 480 heads of households who represented about 95 per cent of the total households in these villages. Enough care was taken to conduct interviews at a place and time convenient to the respondents. For conducting interviews, specially prepared semi-structured interview schedule was used. This was thoroughly pretested before actual collection of data. On the basics of Prasad's [12] classification (which was slightly modified by us as we combined Class IV and Class V), the respondents were classified into four classes. Hower, we also attempted data anlysis on the basis of caste.

PART TWO

People's descreption about etiology of selected diseases

It is by now well accepted that most societies lay dowe their own cultural guidelines as to what should be considered as disease, who should be approached for the purpose of diagnosis and treatment and whether such a state of affairs should be shared with persons outside one's immediate family circle.[13] In the Indian context, certain earlier studies by Marriott,[14] Carstairs[15] and Gould [16] have indicated that the Western system of medicine has failed to fit fully into the cultral climate of north India. Certain recent studies [17-21] have pinpointed the wide gap that exists between the provision of health services and their actual utilization by those who needed them most. Surprisingly, after years of providing health services as well as imparting health education to the rural masses, one sees a little change in their perception of etiology of commonly prevalent diseases. This would indeed be enormously apparent from the findings of our present study. Table I reveals how a substantial percentage of our respondents attribute such diseases as marasmus, chicken pox and measles to supernatural causes. (Marasmus to spirit-intrusion (66.7%); Chicken pox and

measles to warth of goddess (52.9%). Even such ailments as cough and cold, typhoid, skin infections, whooping cough and hookworm infestations are attributed to supernatural causes by a sizeable number of our respondents. (Cough and Cold (23.5%) Typhoid (22.3%) whooping cough (17.8%) and hookworm infestation (16 2%). In fact, there was hardly a disease which was not attributed by some respondents to supernatural causes. Elsewhere we have dealt with these aspects in sufficient details.[22-23] Incidentally, whooping cough and hookworm infestations were the two diseases which were also attributed to some 'unknown causes' by a substantial number of our respondents. (whooping cough (40.7%) ; hookworm infestations (35.4%)

When we looked at their perception of etiology of these diseases in relation to the classes they represented, we found certain interesting correlations For instance, we found a relatively higher recognition of physical causes in relation to such diseases as cough and cold, diarrhoea, pneumonia, and skin infections among the representing Class I and Class II as compared to those representing Class III and Class IV, who tended to attribute these diseases more to supernatural causes. In particular, diseases like Chicken pox and measles and also marasmus were largely attributed to supernatural causes. (Chicken pox and measles (Class III 60 % & Class IV: 74.1%); Marasmus (Class III: 73 5% and Class IV: 86.6%). Table . Similarly, we looked into the relationship of caste with their perception about the etiology of these diseases, we found that a much higher percentage of respondents representing non-scheduled castes recognized physical causes of these diseases as compared to their scheduled caste counterparts. (Table 3). Thus on the basis of these findings we are in a position to conclude that 'the higher the social class or caste status, the greater the possibility of recogition of physical or natural causes of these diseases'. This would only emphasise the need to accelerate the pace of all developmental programmes that are aimed at bringing about a positive change in the knowledge and attitudes of the rural masses. We shall now deal with another important aspect, namely, recognition of symptoms that can prompt them to seek medical treatment.

PART THREE

Recognition of symptoms requiring Medical Intertention

There are no studies in Inida that give us worthwhile information on differen ial recognition of symptoms of different diseases by different classes or caste groups. In this regard, a study done by Koos[24] in a developed country had proffered some interesting findings. He gave people a list of symptoms and asked which ones should be brought to the attention of a physician. The answer obtained by him widely varied, depending upon the social class of the person. To give just one example, 57 per cent of the upper class people metioned that 'loss of appetite' was a medical problem needing medical attention; 50 per cent of the middle class said, it needed medical attention; but only 20 per cent of the lower class (poor or working people) said 'loss of appetite' deserved medical attention Similarly, while 77 per cent of the upper class mentioned that 'continued coughing' was a symtom needing medical attention, only 23 per cent of the lower class people thought it so. Thus he demonstrated how social class influenced recognition of

symptoms in a specific cultural setting.

In our study, we made an attempt to ask our respondents whether or not they considered certain apparent symptoms, which were read out, as indicative of the occurrence of a specified disease. We had listed all symptoms disease-wise and our focus was on childhood diseases. Our findings revealed that in this part of the world too, a comparatively higher percentage of respondents belonging to Class I and Class II recognized apparent symptoms of diseases under investigation' barring, of course, chicken pox, measles and marasmus, the symptoms of which were recognised, slightly more, by those belonging to Class III and Class IV (Table 4). We hardly need to point out that those belonging to lower classes tend to suffer more from these ailments. Thus when they respond, to such questions, they relate them to their individual experiences. Obviously, a family's actual disease experience has a lot to do with its familiarity with the symptoms.

We also made an effort to investigate as to recognition of what symptoms would prompt them to seek medical attention. Our findin.s in this regard revealed that when they perceived certain symptoms critically incapicitating', they hasten to seek medical attention. These symptoms included 'high fever', persistent vomiting', 'stiffness of body, 'cramps of neck and jaw', 'shortness of breath', and 'swelling of ankles', Surprisingly, an alarming symptom like 'blood in the stools' was recognised by only 3.3 per cent of the respondents representing Class IV as worthy of seeking prompt medical attention. This would indicate the extent to which they put up with such maladies in their poverty environment. (Table 5). Even one's caste status seemed to do a lot with one's recognition of symptom of certain diseases requiring prompt medical attention. For instance, our findings would show that respondents belonging to non-scheduled castes consistently expressed greater need for medical attention in the case of practically all listed symptoms with the exclusion of a specific symtom 'stiffness of body.' (Table 6). All this is indicative of glaring backwardness of scheduled castes even in regard to their perception of disease etiology and seeking therapeutic help.

PART FOUR

Diffarential utilization of health services

Normally one would assume that the very fact that the scheduled caste people suffer more from commonly prevalent diseases they would tend to make much greater use of the governmental health services as offered under the centrally-sponsored system of health care. But this is certainly not true of most situations. As would be evident from (Table 7), a substantial number of our respondents belonging to Class III and Class IV mentioned that despite years of living in the same environment or surroundings, they never made use of the services offered by the local health centres. This is not to say that they did not suffer that much In fact, they suffered more than their other counterparts but for the purpose of seeking of therapy, they relied more on the services of locally available registered indigenous medicine practitioners.

We were also interested in finding out as to what factors affected their utilization of governmental health services which were

provided free of cost. After a great deal of probing we, learnt of five specific barriers in the proper utilization of these health services The indentified barriers were: (i) standing for a long time in the queue; (ii) prescribed medicines not given; (iii) medicines given only for a day; (iv) medicines not effective; and (v) staff uncooperative. All of these factors continue to persist in the wake of numerous developments in the field of delivery of health care for the rural masses. Incidentallay, a greater number of respondents belonging to Class IV seemed concerned about squandering their time while standing long hours in big queues (78.8%) at the health centres and, at the same time, not even getting the prescribed medicine (65.4%). Even lack of cooperation on the part of the health centre staff seemed to have added to their resistance. (Table 8).

PART FIVE

Conclusions and recomendations

It would be apparent from our findings that social inequality plays an important role in the utilizaition of health serives. There is little doubt that the members of the lower classes and scheduled castes remain deficient not only in terms of possessing adequate knowlegde about disease etiology but also about seeking therapeutic help in time. Thus they are placed in an exceedingly disadvantageous position. Even their counterparts belonging to higher classes or non-scheduled castes seemed to have drawn greater benefit from the governmental health services. Thus the lower social class or scheduled caste status itself acted as a barrier in the proper utilization of health services. The very life style of these people—poor housing, poor income, poor purchasing power, undernutrition and consequent sickness - is indicative of social inequality. This is not to say that social inequality is a peculiar problem of these people On the contrary, there is hardly a society which can be considered as completely free from the problem of social in quality.

In sociological literature, one finds a great deal of overlapping in the use of such terms as social inequality, stratification and class. Yet it has been stated fairly clearly that the problem of social inequality has two aspect, a distributive, and a relational aspect The first refers to the ways in which different factors such as income, wealth, occupation, education, power, skill etc., are distributed in the population. The second refers to the ways in which individuals differentiated by these criteria are related to each other within a system of groups and categories. Now even when we look at the way our health services are presently organized, we find a certain "dualism", for, on the one hand, there are hospital-oriented services run by specialists and super-specialists who follow sphisticated Western technology, on the other hand, we find the primary health centre network, primarily looked after by ill-trained and ill-equipped paramedical workers who even lack supportive supervision by their equally inadequately trained supervisors. One consequence of this situation is that the poor whose medical needs are the greatest are put to maximum deprivation in terms of provision of health services as well as their utilization. It would not be an exaggeration to state that the present pattern of medical education, the nature of technology used, the pattern of expenditure, and even nature of research being conducted in the health sector

indicates one thing and that is that the governmental health service is still top-down, elite-oriented, doctor dependent, urban-biased and centralized with over-emphasis on curative aspects rather than on preventive aspects. In order to remedy this situation, a study group jointly sponsored by the Indian Council of Social Science Research and the Indian Council of Medical Research (1981) has proffered an alternative model of health care services. This alternative model is claimed to be strongly rooted in the community, provides adequate, efficient and equitable referral services, integrates promotive preventive and curative aspects, and combines the valuable elements in our culture and tradition with the best elements of the Westrn system. It is also claimed to be more economic and cost-effective. Thus one has simply to wait and see whether the suggestive alternative model of health care services really succeeds in bringing about a positive change in the life styles of the poor, praticularly those belonging to lower classes and scheduled castes, who have suffered all these years. By way of offering our recommendation, we may whole-heartedly support implementation of the alternative model and piously hope that it will not meet the fate of its predecessors.

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TABLE - I

Peoples' Perception About Etiology of Selected Diseases

Diseases	Physical Causes	Supernatural Causes	Physical and Supernatural Causes	Unkonwn Causes	TOTAL
Cough and cold	70 3	23.5	2 3	3.9	100.0
Chicken Pox and Measles	15.2	52 9	25.6	6.3	100.0
Diarrhoea	68 8	14.1	13.9	3.2	100 0
Typhoid	55.2	22 3	17.7	4.8	100.0
Tetanus Neonatorum	50.4	7.7	14.8	27.1	100.0
Pneumonia	61.1	13.3	9.3	16.3	100.0
Marasmus	7.3	66.7	11.9	14.1	100.0
Hookworm Infestation	37.5	16.2	10.9	35.4	100.0
Skin Infection	54.2	18.8	13.1	13.9	100.0
Whooping cough	25 0	17.8	16.5	40.7	100.0

Total Number of Respondents — 480

TABLE - II

Class and Perception of Etiology of Selected Diseases

Diseases	Class I No: 100					Class II N: 110					Class III No: 150					Class IV No: 120				
	Phy	Sup	Both	DNK	Total	Phy	Sup	Both	DNK	Total	Phy	Sup	Both	DNK	Total	Phy	Sup	Both	DNK	Total
1 Cough and cold	95.0	3.0	2.0	0.0	100.0	83.7	13.6	0.0	2.7	100.0	65.4	28.0	2.6	4.0	100.0	47.6	46.7	5.8	9.9	100.0
2 Chicken Pox and Measles	58.0	27.0	13.0	2.0	100.0	33.6	43.7	18.2	4.5	100.0	10.6	60.0	21.4	8.0	100.0	10.0	74.1	6.7	9.2	100.0
3 Diarrhoea	93.0	3.0	4.0	0.0	100.0	79.1	1.8	7.3	1.8	100.0	66.7	13.5	7.2	1.6	100.0	41.7	26.7	24.1	7.5	100.0
4 Typhoid	69.0	16.0	11.0	4.0	100.0	58.1	19.1	16.4	6.4	100.0	50.0	26.6	16.6	9.8	100.0	47.5	25.0	25.9	1.6	100.0
5 Tetanus Neonatorum	68.0	0.0	17.0	15.0	100.0	56.3	5.5	15.5	22.7	100.0	43.0	8.6	18.6	29.5	100.0	39.1	15.0	7.6	38.3	100.00
6 Pneumonia	78.0	4.0	7.0	11.0	100.0	63.6	20.0	10.9	5.5	100.0	63.3	13.3	7.4	16.0	100.0	16.0	41.6	12.5	30.9	100.0
7 Mesasmus	28.0	42.0	3.0	3.0	100.0	6.4	56.3	7.5	12.8	100.0	0.0	73.5	13.0	13.5	100.0	0.0	86.6	2.8	10.6	100.0
8 Hook Worm Infections	62.0	5.0	2.0	31.0	100.0	50.0	5.4	3.7	40.9	100.0	26.7	17.3	16.0	40.0	100.0	19.2	34.1	18.4	28.3	100.0
9 Skin Infections	75.0	8.0	7.0	10.0	100.0	61.8	10.9	10.0	17.3	100.0	56.6	20.0	13.4	10.0	100.0	26.6	33.3	20.9	19.2	100.0
10 Whooping Cough	54.0	0.0	18.0	28.0	100.0	36.3	7.2	23.7	31.8	100.0	13.3	20.0	19.3	43.4	100.0	0.0	39.1	13.3	47.6	100.0

TABLE III

Caste and Perception about Etiology of Selected Diseases

No.	Diseases	Non Scheduled Caste No.- 275					Scheduled Caste No. -205				
		Phy	Sup	Both	DNK	Total	Phy	Sup.	Both	DNK	Total
1	Cough and cold	83.6	10.1	1.8	1.5	100.0	52.1	41.4	2.9	5.6	100.0
2	Chicken Pox and Measles	23.6	32.6	40.0	3.4	100.0	3.9	80.4	6.3	10.4	100.0
3	Diarrhoea	83.6	8.0	8.4	0.0	100.0	48.8	22.4	21.5	6.3	100.0
4	Typhoid	69.1	9.8	14.2	2.9	100.0	36.6	39.2	21.9	6.3	100.0
5	Tetanus Neonatorum	70.9	2.5	18.2	8.4	100.0	22.9	7.2	10.3	47.3	100.0
6	Pneumonia	76.3	8.4	9.8	5.5	100.0	40.5	20.0	8.7	30.8	100.0
7	Marasmus	9.8	58.2	14.5	17.5	100.0	3.9	78.1	8.5	9.5	100.0
8	Hook Worm Infection	43.6	17.1	14.2	23.1	100.0	29.6	20.9	5.8	51.7	100.0
9	Skin Infections	58.6	5.7	12.7	20.0	100.0	48.6	36.5	13.6	5.3	100.0
10	Whooping Cough	34.5	7.5	23.5	30.5	100.0	12.2	31.7	6.8	49.3	100.0

TABLE — IV

Class and Recognition of Symptoms of Selected Diseases

Diseases		Symptoms	Class I No. 110	Class II No. 100	Class III No. 150	Class IV No. 120
1 Cough and Cold	1	Running nose	87.0	63.6	54.5	50.0
	2	Redness of eye	42.0	40.9	10.9	3.3
	3	Fever	33.0	29.1	10.0	8.3
	4	Nasal Blockage	55.0	25.4	20.0	16.6
2 Chicken Pox and Measles	1	Rash on the body	65.0	68.1	72.7	83.3
	2	Body-ache	30.0	46.3	50.0	56.6
	3	High Fever	60.0	68.1	73.3	87.5
	4	Redness of eye	25 0	29.1	36.3	41.6
3 Diarrhoea	1	Sunken Eyes	28.0	20.0	12.0	10.0
	2	Dry Mouth	38 0	25.4	13.3	8.3
	3	Loose watery motion	85.0	77.2	72.7	56.6
	4	Urine Frequency less	42.0	36 3	16.3	12.5
4 Typhoid	1	High Fever	51.0	40.0	20.0	8.3
	2	Vomiting	52.0	46.0	20.0	6.6
	3	Weakness	28.0	13.6	10.9	5.0
	4	Loose Motion	25.0	10.0	3.3	—
5 Tetanus Neonatorum	1	Body-ache	42.0	25.4	16.3	6.3
	2	Stiffness of body	65.0	51.8	43.6	30.0
	3	High Fever	15.0	10.2	6.6	—
	4	Cramps in Nack and Jaw	65.0	61.8	59.1	56.6

Diseases	Symptoms	Class I No. 110	Class II No. 100	Class III No. 150	Clars IV No. 120
6 Whooping Cough	1 Dry cough	52.0	40.9	22.7	16.6
	2 Fever	45.0	25.4	6.6	—
	3 Thick Sputum	26.0	10.9	—	—
	4 Shortness of Breath	65 0	52.7	43.6	30 0
7 Marasmus	1 Loss of weight	62.0	59 1	73.3	87.5
	2 Size of Head Increased	15.0	22.7	54.5	70.8
	3 Weakness	35.0	36.3	72.7	75.0
	4 Bones of Chest Prominent	5.0	13.6	46.6	56.6
8 Pneumonia	1 High Fever	72.0	59.1	43.6	37.5
	2 Cold/cough	58.0	45.5	29 1	20 8
	3 Breathing Problems	32.0	22.7	13 3	8 3
	4 Bubbling sound in the chest	51.0	40.9	10.0	—
9 Skin Infections	1 Itching	68.0	59.1	46.6	37.5
	2 Irritability	48.0	36.3	25.4	8 3
	3 Redness on body	32.0	25 4	10.0	—
	4 Fatches on skin	51.0	45.5	13.3	—
10 Hookwork Infections	1 Pale Complexion	72.0	56.3	40.0	37.5
	2 Weakness	18.0	13.6	—	—
	3 Swelling of Ankle	25.0	12.2	—	—
	4 Blood in stool	20.0	13.6	8 3	3.3

TABLE 5

Need for Medical Attention in Relation to Class and Recognition of Symptoms

No.	Symptoms Needing Medical Attention	Class I No. 100	Class II No. 110	Class III No. 150	Class IV No. 120
1	High Fever	75 0	68 1	66 6	62.5
2	Persistent coughing	40.0	25.4	16.6	6 6
3	Persistent Body-ache	45 0	36.3	25-3	12.5
4	Redness in the Eye and watery discharge	18.0	13.6	5.3	2.5
5	Appearance of Rash on the Body	75 0	66.3	63.3	54.1
6	Persistent Vomiting	87.0	77.2	70.0	66.6
7	Cramps of Neck & Jaw	88.0	80.0	63.3	56.6
8	Thick Sputum	35.0	22.7	12.0	0.0
9	Shortness of Breath	42.0	26.6	10.0	6.6
10	Irritibility	38.0	30.0	18.0	8.3
11	Patches on the skin	75.0	59.1	36.6	16.2
12	Paleness of the face	65.0	46.3	32.0	10.0
13	Swelling of Ankle	55.0	30.0	16.0	12.5
14	Stiffness of body	78.0	56.3	53.3	51.6
15	Loss of weight	45.0	31.7	18.0	12.5
16	Blood in the stools	40.0	22.7	12.0	3.3

TABLE 6

Need for Medical Attention in Relation to Caste and Recognition of Symptoms

No.	Symptoms Needing Medical Attention	Scheduled Caste No. = 275	Non-Scheduled Caste No. = 205
1	High Fever	72.7	60.9
2	Persistent coughing	25.4	17.5
3	Persistent Body-ache	38.1	16.1
4	Redness in the Eye and watery discharge	12.7	4.3
5	Appearance of Rash on the Body	74.5	50.2
6	Persistent Vomiting	76.0	72.1
7	Cramps of Neck & Jaw	79.2	62.4
8	Thick Sputum	21.1	9.7
9	Shortness of Breath	23.6	19.5
10	Irritiability	25.4	14.1
11	Patches on the skin	65.4	21.9
12	Paleness of the face	54.5	12.6
13	Swelling of Ankle	34.5	19.1
14	Stiffness of body	55 2	63.4
15	Loss of weight	32.7	15.6
16	Blood in the stools	23.6	10.7

TABLE—7

Class-Wise Differential Utilization of Health Services

Utilization of Health Services	Social Class I No. %	Class II No. %	Class III No. %	Class IV No. %	Total No. %
Always	28 (28.0	26 (23.6)	27 (18.0)	16 (13.3)	97 (20.2
Sometimes	57 (57.0)	64 (58.2)	58 (38.6)	29 (24.2)	208 (43.3)
Never	15 (15.0)	20 (18.2)	65 (43.4)	75 (62.5)	175 (36.5)
Total	100 (20.8)	110 (22.9)	150 (31.3)	120 (25.0)	480 (100.0)

TABLE—8

Factors Affecting Utilization of Governmental Health Services

	Reasons	Class I No. = 72	Class I No. = 84	Class III No. = 123	Class IV No. = 104
1	Standing for long time in the queue	24 (30.0)	20 (23.8)	78 (63.4)	82 (78.8)
2	Medicines are prescribed but not given	25 (34.7)	34 (40.0)	58 (47.1)	68 (65.4)
3	Medicines given only for one or two days	45 (62.5)	50 (59.5)	70 (58.5)	62 (57.6)
4	Prescribed medicine not effective	50 (69.5)	54 (64.2)	35 (28.4)	25 (24.3)
5	Staff Uncooperative	12 (16.4)	30 (35.7)	52 (42.2)	62 (57.6)

6. should be sustained by integrated, functional and mutually supportive referral systems, leading to the progressive improvement of comprehensive health care for all, and giving priority to those most in need ;

7. relies, at local and referral levels, on health workers, including physicians, nurses, midwives, auxiliaries and community workers as applicable, as well as traditional practitioners as needed, suitably trained socially and technically to work as a health team and to respond to the expressed health needs of the community.

VIII. All governments should formulate national policies, strategies and plans of action to launch and sustain primary health care as part of a comprehensive national health system and in co-ordination with other sectors. To this end, it will be necessary to exercise political will, to mobilize the country's resources and to use available external resources rationally.

XI. All countries should cooperate in a spirit of partnership and service to ensure primary health care for all people since the attainment of health by people in any one country directly concerns and benefits every other country. In this context the joint WHO/UNICEF report on primary health care constitutes a solid basis for the further development and operation of primary health care throughout the world.

X. An acceptable level of health for all people of the world by the year 2000 can be attained through a fuller and better use of the world's resources, a considerable part of which is now spent on armaments and military conflicts. A genuine policy of independence, peace, *detente* and disarmament could well be devoted to peaceful aims and in particular to the acceleration of social and economic development of which primary health care as an essential part, should be allotted its proper share.

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Education Beyond The Classroom
An Experiment in Medical Education.
Health Surveys in Ladakh in Summer of 1977

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Summary

A dramatic impact was made on the orientation of Indian and American students in a medical expedition organized as a formal course on Health Care in the Himalayas. In addition to intensive learning the students were able to collect data that provide the first information on villages in ladakh on which little health information had previously been available. Two clinical conditions which especially merit more detailed research are the high prevalence of adult anemia and systemic arterial hypertension in villages near Leh.

Despite increasing attention in recent years to community medicine, medical education in India has remained conventional and didactic rather than experimental and innovative. Medical instruction still presents the large medical college hospital as the desired norm of health care so that graduates will really be only suitable to practice medicine in hospitals. Their preparation proves to be inadequate if they have to work without these facilities. Because this is all they know they enter practice believing that inferior health care is being given to the masses of India's population if such medical facilities cannot be made available for all the common problems of some 80% of the people.

This paper describes a course that was designed to expose medical students to the reality of medical needs in some of the most remote valleys and difficult medical situations in India. A medical expedition to ladakh was designed as a formal course of medical instruction. The emphasis was both on understanding the health situation in these remote valleys and also on developing appropriate ways of thinking about the delivery of health services to people in isolated medical situations.

This course on Health Care in the Himalayas was developed jointly by four institutions : All India Institute of Medical Sciences, New Delhi, The Srinagar Medical College, Srinagar, and from the U. S. A , The Woodlands Institute of West Virginia, and the Johns Hopkins University, Department of International Health. The expedition included 29 medical students and house officers—12 from India and 17 from U. S. A. and 4 faculty members.

Ladakh is the largest district in India and one of the most isolated. The geography is extreme, with precipitous mountain passes, vast areas of rocky soil, inadequate wood and water for tolerable habitation, and harsh climatic conditions. The average altitude for settlements is 11,000 feet. The district has two major divisons. Villages around Kargil are primarily Balti and Muslim. Villages around Leh are mainly Buddhist and are strongly influenced by Tibetan culture. Modern health facilities are few and have hardly reached the main towns let alone the villages. Our expedition did surveys in 6 villages in the valley north of Leh and 2 villages south of Kargil.

It must be stressed that this medical expedition was a formal programme of medical education. Its primary focus was to study the health condi ions of the village people. In actuality the greatest impact on the students, resulted as specific findings on health conditions in Ladakh were uncovered and discussed. This lead to detailed discussion of comparative patterns of health care, as the needs of these remote Himalayan villages were juxtaposed with the more familiar health needs of urban India and North America.

Medical conditions in the remote areas were entirely new to American students and very different even for the Indian students. The support facilities that students took for granted were not present while care patterns that they did not expect were available. Obviously facilities such as hospitals, consultation options, laboratory facilities, and technological aids were totally non-existent outside of Kargil and Leh and were minimal even there. More difficult to adjust to was the absence of indirect supporting services—sanitation, education and health consciousness, rapid transportation, privacy, and electricity, An unexpected attitude was that local inhabitants were often not as concerned about their illnesses and health as were urban patients we were accustomed to treating. This acceptance of ill health caused many people to feel that they were healthy when we would have defined them as sick. Morbidity is, after all, a matter of perception.

Obviously, the diseases encountered were different from those in the U. S. A. but also produced some surprises for the Indian students. This was exciting. Because of our limited field facilities accepted diagnostic procedures and treatment routines had to be simplified in dealing with these new diseases. This caused much discussion about the quality of health care and the ethics both of simplified expedition procedures and of resource intensive hospital procedures.

The totally different ecological and anthropological conditions encountered emphasized the importance of a holistic understanding of medicine. Within a hospital's walls the doctor is in control. But in the village and home our relationship with patients and their families thrust us into an awareness of dependence upon family priorities, cultural requirements, environmental consequences, political determinants, economic constraints and tradition. Understanding the whole picture was impossible since information was less available than in more developed parts of India or the U.S.A. However, because the situation was so different from the pictures we were used to, the Ladakh experiences revealed new dimensions to the health picture that expedition members had not seen before and this influenced their perceptions as they returned to more familiar conditions.

During the survey activities students rotated through three programes : a household survey of morbidity and health care practices, a survey of village leaders and indigenous practitioners to define attitudes toward health, disease, and treatment, and an expedition clinic where we treated patients. These three different investigative approaches revealed very differcnt understanding of the health of Ladakh District.

In addition, there was a regular programme of seminars every day that covered both clinical subjects and issues of health care. These provided oppotunity for intensive discussion of the often unsettling experiences that students had as they found that many of their preconceptions of the doctor's role and contribution did not fit the basic realities of massive need. The faculty members from India and the U. S. had to be constantly available for personal counselling to guide students through the difficult adjustments in their personal values and ethical orientation that were both traumatic and eventually extremely enlightening. The exchanges between students were especially instructive and produced mutual learning and friendships.

METHODOLOGY OF DATA GATHERING :

1. Household Surveys

Our major data collection effort was to conduct household surveys in selected villages The data were then corroberated by clinical findings. As detailed maps and census information were not available, we used rough area sampling by dividing sketch maps of the villages into sectors equal to the number of the field teams. Each team then randomly moved from house to house in their sector. An effort was made to survey between 20 and 25 houses or roughly 10% sample that had been calculated as being necessary to give representative data.

Survey teams generally consisted of an interpreter familiar with local language and culture, a clinical year student to conduct the clinical examination and a basic sciences student for the general demographic, ecological and anthropological information. Survey forms were extremely simple (see appendix).

2. Special Studies :

Separate teams carried out the following special investigations.

(a) **Anemia** : during the clinical surveys, a high prevalence of anemia with spooning of the finger nails was observed. Records were reviewed to get an estimate of prevalence. Blood smears were examined whenever people agreed for a finger prick.

An intensive effort was made to find hookworm. Stool specimens were collected from patients having anemia in special household visits and also from school children. In the Leh area most of the households have a latrine called chagra which is really a room filled from a hole in the house roof. Once or twice a year the compost is collected and spread on

fields. By removing part of the wall of the chagra, we collected the most recent stools for hookworm analysis from families with a great deal of anemia.

(b) **Hypertension**: most clinicians in Ladakh spoke of a high incidence of hypertension and thought it was probably associated with high salt intake resulting from their strong tradition of drinking upto 50 cups a day of salted buttered tea. A senior medical student went from house to house to get blood pressures from a sample of adults Recordings were made resting and sitting. A diastolic pressure over 90 mm kg was considered diagnostic of hypertension.

(c) **Nutritional Surveys of Children**: a nutrition team (two Indian students and one American student) conducted a house to house survey. Data were collected regarding a child's age, order of birth, age when breast feeding was stopped and age when supplementary weaning food was first introduced. Each child (under 5 years) was examined clinically for any signs of nutritional deficiencies, and the mid-arm circumference and body weight were recorded. The degree of malnutrition was assessed in two ways, first, each child's age and weight were plotted on a standardized growth chart using Harvard Standards weight-for-age tables (Jelliffe, 1966). Group I (mild malnutrition) was defined to be when body weight was below 70% to 90% of expected body weight. Group II (moderate malnutrition) was between 60% to 70%. Group III (severe) was when it was below 60% of expected weight.

A second technique was by means of mid-arm circumferences according to UNICEF standards (1975). Measurements ranging between 9.9 and 12.5 cms were taken to be severe malnutrition; 12.5 to 13.5 cm. indicated a risk of malnutrition, and 13.5 to 16 cms indicated adequately nourished.

(d) **Anthropological Observations**: a separate team made a particular effort to identify all indigenous practitioners, especially Amchis. In addition, some Lamas and oracle healers were identified. In-depth interviews were conducted to study their preparations and practices.

(e) **Availability of Medicines**: Surveys of all shops and other possible sources of western and indigenous medicines were carried out. Attempts were made to determine patterns of use and cost.

Results of Household Surveys:

1. **Eye Diseases**: From households in six villages in the Leh area a total of 250 persons were examined. The following cases were seen: active trachoma in 3, cataract in 9, pterygium in 7, conjuctivitis in 7, squint in 4, and phisis bulbi in 1 (total of 31 cases).

2. **Chronic Pulmonary Diseases**: From six villages near Leh, 422 individuals were examined. Chronic bronchitis with emphysema was found in 24, a prevalence rate of almost 6%. Of these 62% gave a history of smoking, however no information was obtained about usual smoking patterns in the communities.

3. **Rheumatic Heart Disease**: Among the 422 persons examined 2 were found with heart murmurs, which were presumably results of rheumatic heart disease

4. **Otitis Media**: Significantly different rates of otitis media were observed among the children of six villages.

Gund	14%
Khalsi	10%
Thiksey	8%
Shey	7%
Chuchod	8%
Stok	6%

5. **Poliomyelitis Residuals**: Careful screening of over 400 patients with detailed examination was done on all cases of neurological residual damage to get evidence on whether poliomyelitis immunization is indicated in a remote population such as this, No case of residual paralysis from poliomyelitis was seen but six other chronic neurological conditions were found including two cases of stroke

Demographic and Ecological Information:

1. **Infant Mortality Rate**: An estimated infant mortality was calculated from the pregnancy histories of mothers interviewed in household surveys in five villages near Leh. A total of 448 births had occured to 99 mothers, with an average of 3.5 live births per woman. Of these, 76 children died before one year of age. The infant mortality rate was therefore 170 per 1000 live births. This is considerably above the All-India figure of 120 per 1000 live births, but it differs in methodology since it represents the lifetime experience of present mothers and not current levels.

2. **Family Planning**: Questions were asked in all household surveys about family planning. Twenty percent of women in Leh villages said they knew about family planning but only 4% said they were using a method. Women reported that their family size was four to five children. Prolonged lactation of about two years may have been related to relatively long inter-pregnancy intervals.

Special Studies:

1. **Anemia and Hookworm**: Special surveys were done of non-clinic patients to look for clinical signs of anemia, including spooning of finger nails.

(a) **Anemia** Table I.

In all villages the distribution between males and females was about equal.

(b) **Stool Survey**: Table II.

No case with hookworm infestation was detected amongst 38 stool samples which were carefully examined.

(c) **Blood Examination**: Peripheral smear examination revealed microcytic and hypochromic anemia in most of (28) subjects examined with anemia.

(d) **Diets**: No major nutritional deficiencies were apparent. Abundent use of especially crude barley called Sattoo, was the dominant feature of diets.

2. **Hypertension**: Table III.

Forty-six persons had casual recordings of blood pressure taken in household surveys in Thiksey and Chuchod villages. Cases of hypertension (Diastolic pressure >90 mmHg) were found in 13 or 28%. The average age of patients was 44 years with a markedly higher prevalence among Buddhist 50% as compared with Muslims 21%.

3. **Nutritional Status of Children.**

Four villages in the Leh area having 49 children were surveyed for malnutrition.

Weight-for-Age: 36% Normal
33% Grade I Malnutrition
22% Grade II Malnutrition
9% Grade III Malnutrition

Arm Circum- : 36% Normal
ference : 41% Risk of Malnutrition
23% Malnourished

The x^2 association between the two measurements was positive with $p = <0,01$. No relationship between weaning practices and nutritional status was found. Weaning tended to start at one year of age and was completed by two years. Weaning food was mainly crude barley flour—Sattoo.

4. **Anthropological Data**

(a) Preference for Practitioners : Table IV

Amchis practice very simple medical care. They rely heavily on herbal medicines which are inexpensive. Many of them use cautery to treat any kind of pain. They are readily accessible and greatly respected particularly in the Buddhist communities.

Discussion :

The villages of Ladakh have had no previous studies of their health problems. These health surveys were initially planned as an educational exercise for a group of Indian and American medical students. For all of the students it was their first exposure to such a field survey. It was rather surprising that even though the conditions were extremely rigorous the data collected by these relatively inexperienced and uninitiated students under guidance still yielded information which seemed to have importance in defining health problems in an area about which little is known.

Two major clinical problems of high prevalence noted in the villages of Leh were anemia and hypertension. More than a quarter of persons examined in these villages had [illegible] deficiency anemia. Pallor and spooning of the finger nails was especially marked in young adults including males. The lack of the clinical symptoms was very surprising because the average altitude of the villages was over 11 000 feet. Such a prevalence of iron deficiency anemia in villages in the plains of India is generally considered to be due to hookworm infestation But in these villages intensive efforts to identify hookworm ova were all negative and local physicians working there also have not been able to find hookworm in Leh or Kargil hospitals in spite of continuous search. Dietary conditions are generally fair.

To define the etiology of anemia in these villages several hypotheses need to be tested, especially the possibility that some nutritional factor is interfering with iron absorption. The local consumption of heavily salted and buttered tea is remarkable. Disler et al (1975) reported that when tea was taken with meals the absorption of iron from biosynthetically labelled rice or bread was reduced from about 12% to 2% The concentration of phytates and phosphates in food is also known to reduce iron absorption. Nutritional anemia and tea consumption are both common in India but their relationship has not been studied. Evidence from a WHO collaborative study (Sood et al, 1975) on nutritional anemia showed that pregnant women receiving large doses of iron do not show the expected rise in hemoglobin.

The second observation of significance and potential research interest is that in the same predominantly Buddhist villages a high prevalence of hypertension was found. The hypothesis which needs to be tested here specifically is that this may be related to an extremely high daily salt intake from 50 or more cups of heavily salted and buttered tea.

Reports from Northern Japan (Sasaki, 1964) indicate that a population with an extremely high prevalence of hypertension was found to have a very high salt intake (mean sodium chloride excretion $\pm$ 27 gms per day as compared to Southern Japan (mean sodium excretion $\pm$ 15 gms per day). Another interesting observation in this context is of Shaper et al (1969), who found that among Kenyans who added no salt to their food blood pressure did not increase with age.

Other findings on household surveys and clinical surveys quantified disease patterns which reveal a heavy burden of illness.

An additional area of concern relates to the delivery of health services. In recent years the government has made intensive efforts to expand health services in these mountainous areas and an increasing number of villages now have health centres staffed by physicians. However, the village people seem to consider these centres to be relatively ineffectual and not particularly designed to meet their needs. Physicians tend to sit in their clinics waiting for patients to come. Only a few take the initiative to take health services to the people in their homes. A change in physician orientation is an immediate and urgent need, and the medical curriculum which determines physicians' perceptions of their responsibilities should be redesigned accordingly. A crucial observation is that thus far there has been too much stress on providing physicians and not enough on preparing other members of health team. Many of these villages can be better reached by well trained health workers then by physicians. The potentials of using community health workers are particularly great.

Finally, in view of limited resources, in the Buddhist villages around Leh it seems especially important to work out better collaboration with the Amchis or "Tibetan doctor". There are one to two Amchis per village and they are greatly respected, probably more respected than the physicians posted in the same villages Their methods could be greatly improved by simple and practical training. Since they have excellent rapport with their patients the present programme for providing training and help to this group should be strongly supported.

TABLE I

Results of Anemia Survey

Village	No. of patients with anemia	No. of patients with severe anemia (<7 Gms%)	Average age (yrs)
Thiksey and Shey (primarily Buddhist)	43	11 (23%)	28
Chuchod and Stok (across the Indus from the above two villages with Chuchod having a mixed Muslim-Buddhist population)	52	5 (9%)	33
Gund Khalsi and Panikar	49	8 (16%)	27

TABLE II

Results of Stool Survey for Parasitic Infestation

Village	No. of Stool samples examined	Hookworm	Ascaris
Thiksey-Shey High School	30	0	2
Chuchod	5	0	0
Specimens from Chagras	3	3	3

TABLE III

Results of Hypertension Survey

Age Groups	No. of subjects examined		No. of subjects with high blood pressure	
	Male	Female	Male	Female
20—29 yrs	2	1	0	0
30—39 yrs	7	5	0	2
40—49 yrs	12	6	3	1
50—59 yrs	4	5	2	2
60+ yrs	2	2	2	1
Totol	27	19	7	6

TABLE IV

Preference for Practitioners

Preference for Practitioner	Primarily Buddhist Villages (Shey, Thiksey, Stok and Khalsi) N=380	Primarily Muslim Villages (Chuchod, Paniker) N=310
Amchi	50%	11%
Both Amchi & Doctor	26%	77%
Lamas	24%	11%

LADAKH SERVEY QUESTIONNAIRE ON ENVIRONMENT AND ANTHROPOLOGY

Date :

Time :

Time to fill out form :

1. Village :_____ 2. Group No._____ Head of Household _____

4. Occupation :_____ 5. Ethnic & Religious Group :_____

6. Language :_____

7. Who are the local practitioners in the village ?_____
   a. What system of medicine does each use ?_____
   b. What type of diseases do they treat ?_____
   c. How much do they charge ?_____

8. What are the 2 main disease of the village :
   (1)_____ (2)_____
   a. What causes it ? _____ _____
   b. How is it treated ? _____ _____
   c. How prevented ? _____
   d. Who treats it ? _____ _____

9. What drugs are kept in your house ?_____

10. Water Supply :
    a. What is source & how far away is drinking water ?_____
    b. What is source & how far is washing water ?_____
    c. What do you store drinking water in & where ?_____
    d. Where do you defecate and urinate ?_____
    e. Where is (d) in relation to water source ?_____

11. Weaning :
    a. When are supplements introduced (child's age) ?_____
    b. What supplements are used ?_____
    c. When is weaning complete (taken off breast) ?_____

12. Family Planning :

a. What is desired family size ?_____

b. Are there any ways to prevent having children ?_____

c. Have you used any of these ways ?_____

13. Pregnancy History :

Categories	Education	Sex	Age is or would be if died	If dead, age at death
(1) Head of House :				
(2) Mother 1				
Sons :				
Daughters				
(in birth order)				
(2) Mother 2				
sons :				
(in birth order)				

(4) Others living in house :_____

(if wide age gap, ask about intervening pregnancies)

LADAKH SURVEY QUESTIONNAIRE ON CLINICAL CONDITIONS

Date :

Time :

Time to fill out :

1. Head of Household :_____

2. Village :_____ 3. Living in house :_____

4. Number present :_____

5. Cold :

a. Cough_____ Productive/Dry_____ Duration_____

b. Hemoptysis +/–_____

c. Dyspnea +/– _____ Duration_____ Nature_____

d. Fever +/–_____

e. Smoking_____ Duration_____ Nature_____

f. Weight loss_____

6. Rheumatic Heart Disease :

a. Joint pains (migratory)_____

b. Palpitations +/–_____

c. Chest pains_____ Precordial/lateral wall_____

d. Pedal oedema_____

e. Sore throat_____

7. Chronic Suppurative Otitis Media :

a. Ear discharge +/– _____ Duration_____

b Deafness or hearing impairment_____

8. Eye :

a. Sore eyes_____

b. Watering or discharge from eyes_____

c. Visual impairment or loss_____

9. Skin :

a. Site of sores _____

b. Duration _____

c. Are soaps or detergents used _____

d. Itching, redness, oozing, scaling _____

10. Neurological conditions and Poliomyelitis :

a. Weakness of limbs or limping _____

b. Sensory changes _____

c. Traumatic or congenital conditions _____

d. Consciousness _____

11. Examination of systems with positive history in above questions :

_____

_____

_____

_____

_____

12. Caries : _____

13. Obstetrical History :

a. Age at marriage : _____

b. Still births : _____

c. How cord tied and with what _____

d. Who managed delivery _____

14. Remarks :

_____

_____

_____

_____

_____

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Teaching Statistics to the Medical Undergraduates— Some Facts And Considerations.

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Introduction :

Of late, need of basic concepts of statistics has widely been recognized in almost all disciplines of human life. In the field of medicine/health, the understanding of the subject, especially in health planning, administration, clinical practice and research, etc., has been thought to be inevitably essential for proper appreciation of the problem faced. In view of this, the inclusion of the subject in the curriculum of the undergraduate medical teaching, though, was accepted quite some time back, yet, no considerable attention seems to have been paid towards the promotion of its teaching and the subject is still not treated at par with other courses of medical science.

In U. K., the Royal Commission on Medical Education (1965—68)[1] examined this subject and emphasised that, at undergraduate level, the subject of statistics be taught because of two broad reasons ; firstly the subject is an integral part of the logic of scientific method and can be used to interpret the observations made in the investigation ; and secondly, the subject consist of numerous techniques for studying the variation, association, relationship between the variables and other different characteristics of the distributions and includes many methodologies which may be applied in the asseesement of efficiency of new drugs, development of new vaccines, etc.

In India, in the recent years, such thought has been devoted to the contents of teaching of Preventive and Social Medicine and various seminars, workshops and conferences were also held in this regard. At every such occasion, the contents of statistics have always been the matter of discussion. Teachers of Preventive and Social Medicine at the Medical Education Conference[2], held in November 1955, recommended the statistical content of medical undergraduate curriculum for Preventive and Social Medicine. In 1965, the National Institute of Health Administration and Education, convened a conference[3] on Teaching of Preventive and Social Medicine in relation to the Health Needs of the country, which emphasized a close link between the teachers of Preventive and Social Medicine and other specialities, including statistics, in the teaching and training of undergraduate medical students. A seminar, sponsored by USAID (1966)[4], held in Trivandrum, concluded that the importance of statistics in medical curriculum is not fully recognized by the profession, in general, and by the students

in particular. This seminar emphasized the integrated teaching of statistics with other subjects. More recently in June 1970, a two week seminar on Teaching of Biostatistics in Medical Colleges of India was organised by the National Institute of Health Administration and Education (NIHAE, 1970)[5]. After a detailed review of the present situation, it was brought out that the statistical background being given presently to the medical undergraduates, fell short of the requirement, both in terms of coverage and depth, and that the subject had not yet received due recognition in the medical institutions. It was recommended that the teaching of statistics needs to be strengthened at the undergraduate level.

In view of the existing short falls in the teaching of statistics to the medical undergraduates and keeping in mind the recommendations of various seminars, conferences etc., made in recent times, attempts were made to study the present status of the teaching of the subject in different medical colleges of India

Method of Assessment

To review the present status, a questionnaire, relevant to the purpose of the study was developed and sent to 99 medical colleges of India. However, replies could be recieved from 42 (42.42%) medical colleges only. The questionnaire, besides seeking basic information such as, institution's name, name of the department responsible for teaching of statistics, yearly load of admission of students and number of the persons involved in the teaching of the subject, along with their qualifications and designation, also included curriculum contents, topics covered, number of teaching hours allotted for the subject (both theory and practicals) and statistician's (or any other persons teaching statistics) views to promote the teaching of the subject at undergraduate level. Some findings of the study are reported here.

OBSERVATIONS AND DISCUSSION :

Department Responsible for the Teaching of Statistics and Staff Position :

In all 42 medical colleges, Department of Social and Preventive Medicine was found to be responsible for the teaching of statistics. However, in 17 (40.47%) medical colleges, the subject was being taught by the teachers belonging to the disciplines other than statistics. It was revealing that in 12 out of 20 (46.15%) medical colleges, which were having the postgraduate degree (M.D.) and/or diploma (D.P.H.) courses, there was no statistician in the department. Only one post of statistician, not higher than the status of a lecturer, was seen in these medical colleges to teach the subject, to deal with the research work and also to render assistance to other departments on research problems. In reply to the question a whether single statistician is sufficient in the departments respondents from 20 (47.62%) medical colleges (respondents were Statisticians/Professors of Preventive and Social Medicine) respondent in negative and suggested considerable increase in the staff in the subject.

Curriculum Contents and Teaching Methods ;

In 1970, a seminar on Teaching of statistics in Medical Colleges[6] held at the National Institute of Health Administration and Education, recommended the topics which need be covered in the teaching of statistics at the undergraduate level. Besides emphasizing the teaching of the subject, in both paraclinical and clinical years, the seminars had also pointed out that introductory topics such as definition, need of the subject in medical science, methods of data collection, presenta-

tion of data, central tendency and dispersion should be covered up within 8 one-hour lectures and 9 two-hours practicals. However, rest of other topics, such as elementary ideas on probability, correlation and regression, sampling techniques, vital statistics and demography, important indicators of health and International Classification of Diseases, etc. should be discussed with the help of the problem oriented practicals within 12 one-hour lectures and 7 two-hours practicals.

In the present study, it was observed that teaching of the subject was divided into two parts mainly lectures and practicals, schedule of teaching of the subject differed from one institution to other in respect of year of teaching, teaching hours allotted, and curriculum contents. Introductory topics, like definition, methods of data collection, tabular and graphic representation, central tendency, dispersion and rates of vital events were covered by all medical colleges. Topics like correlation and regression, probability, techniques of sampling, tests of significance and demography were covered by only a few (19.05%) medical colleges. However, topics like, determination of sample size, analysis of variance, design of experiment and International Classification of Diseases, etc. were not covered by any of these medical colleges.

Time allotted for the teaching of statistics also varied from one medical college to other. In some medical colleges, there were less than 5 lectures on the subject. However, in some institutions, there was a provision of more than 35 lectures during the entire M. B B. S. course. On an average, 22 hours of teaching on the subject was found during the entire course of M.B.B.S.—an average of 14 hours for lectures and 8 hours for practicals. In 10 (23.80%) medical colleges, there was no provision of practical work. Here, it may be pointed out that 1 : 2 ratio of lecture hours to practical work on the subject had been recommended from time to time.

Questions on Statisties in the Assessment of Students :

Questions on statistics at different examinations (like day to day, terminals and professionals) on the subject of Social and Preventive Medicine/Community Medicine may create interest amongst students to devomenetetime to the study of the subject. However, in reply to the question whether at least one complete question on statistics in theory and in practical, separately, is being asked in the professional examination, only 9 (21.42%) medical colleges responded in, affirmative. In the rest 33 (78.57%) medical colleges, students were assessed in statistics on the basis of day to day/monthly tests or class practicals only. No specific marks were allotted for the assessment of students in statistics in any of the medical colleges studied.

Satisfaction with the Teaching of Statistics :

It was observed that respondents of 18 (42.85%) medical colleges were not satisfied with the teaching of the subject in their departments. For this they brought forward various reasons listed in Table I. It was interesting to note that respondents of 6 out of 16 (38.10%) medical colleges, where the post of statistician was lying vacant for the last few years and the subject was being taught by the teachers belonging to the fields other than statistics, showed their satisfaction with the teaching of the subject. It could have been probably due to the unawareness of the respondents with the proper curriculum contents of subject to be covered at the undergraduate level.

It was also observed that scarcity of relevant books, lack of mathematical background of students, negligible contribution of statistical questions in the examinations were probably the main reasons for the students to neglect the subject. Rao and Marwah (1971)[6] have also emphasized on the contribution of statistical questions in the examination and need of teaching of the subject with the help of problem oriented practicals to strengthen its teaching at undergraduate level.

TABLE I

Showing reasons for dissatisfaction with the teaching of Statistics

Reasons	Number of respondents	Percentage* to the total respondents
Lack of staff and qualified teachers on the subject.	8	19.05
Syllabus is not well defined.	3	7.14
Non-coverage of course, i.e. insufficient number of teaching hours are provided to teach the subject.	5	11.90
Paucity of students' interest as they think that the subject will be of no use for them in their professional career.	9	21.43
Negligible contribution of statisical questions in the student's examination and in view of this the students do not take interest in the subject.	8	19.05
Not much emphasis on problem oriented practicals.	5	11.90
Other reasons.	4	9 52

*Percentage based on multiple replies.

Suggestions to improve the teaching of the subject :

In order to improve the teaching of statistics, the respondents were also requested to suggest the ways Their suggestions in this regard are summarised in Table II.

TABLE II

Showing Suggestions made by Respondents to Improve the Teaching of Statistics

Suggestions	Number of Respondents	Percentage* to the total Respondents
Statistics section under the department of Preventive and Social Medicine should be strengthened in respect of the staff and mechanical facilities.	9	21.42
There should be a separate statistical unit in each medical college, consisting of at least one Associate Professor, one Lecturer and two Statistical Assistants, with appropriate mechanical facilities.	12	28.57
There should be a provision of uniform syllabus of the subject in all medical colleges.	16	38.14
Every department should have separate cell of statistics in each medical college.	5	11.90
Medical Record Section of the hospital should function under the control of statistics unit in order to obtain sufficient data on medical and health statistics, so that problem oriented practicals may be given to the students.	4	9.52
Appropriate weightage to statistical questions should be given during the student's assessment	21	30.00
Discipline of M.B.B.S, in addition to Social and Preventive Medicine, should also emphasize the role of the subject in medical science.	3	7.14
Relevant books on the subject should be made available.	6	14.29
Other suggestions.	3	7.14

*Percentage based on multiple suggestions.

Conclusions and Recommendations :

In nutshell, it may be concluded that the teaching of statistics falls far below the satisfactory level. There is great disparity in respect of both, topics covered and total teaching hours allotted to the subject. In many medical colleges, presently, the teaching of the subject is being done without statisticians. In the assessment of the students, during the entire course of M. B. B. S., there are hardly any questions on statistics. Provision of only one statistician in the Department of Preventive and Social Medicine was seen in the medical colleges to look after the teaching and research work in the institution. In most of the medical colleges, even some important topics of the subject were not covered. In view of these lacunae, it is recommended that :

1. There should be a separate and independent unit of statistics in every medical college, consisting of at least one Associate Professor/Reader, one Lecturer and two Statistical Assistants to deal with the teaching of the subject at undergraduate and postgraduate levels, to promote research activities in the institution and to help the medical personnel on statistically related research problems. This unit should function in close collaboration with the Preventive and Social Medicine Department and should own responsibility of research activities going on in the entire institution.

2. Statistical cell in every medical institution should be strengthened in respect of mechanical/electronic facilities so that the teaching as well as research activities may be improved, both quantitatively and qualitatively.

3. At least one question on statistics in theory and one in practical should be asked in the professional university examination so that the interest of the student towards the study of the subject may be created.

4. At the begining of the teaching of statistics. teachers should emphasize on the role of the subject in medical science and its advantages to the doctors in their future professional life so that they may realize the significance of the subject.

5. Only qualified statisticians, having postgraduate degree in statistics (and not in mathematics/economics with statistics) and orientation/experience in biostatistics should be appointed in medical colleges.

6. For orientation of statisticians already in service, different short duration refresher /orientation courses should be organised by leading institutions, having competence of modern teaching techniques and research methodologies.

7. Medical Record Section of the associated hospitals of each medical college should function under the control of the statistics unit so that the difficulty of problem oriented practicals could be overcome.

3. The relevant books and other related literature on the subject should be made available.

9, The teachers of the subject from differen medical colleges and other institutior

in the country and abroad should get together from time to time, to exchange their views on teaching material and experience, and to discuss the promotion of new teaching techniques.

10. An uniform course contents of the subject should be followed by all the medical colleges. A recommended undergraduate course contents of the subject and number of teaching hours required for specific topics at this level have been shown in Table III.

TABLE III

Showing Recommended Undergraduate Course Contents of Statistics and Teaching Hours Required for Specific Topics

Recommended course contents	Number of teaching hours required	
	Theory	r actical/ Demonstration
Introduction, definition, need of the subject in medical science.	2	—
Methods of data collection, tabular and graphic representation of data.	2	2
Central tendency, dispersion, Kurtosis and skewness.	3	4
Elementry ideas on probability	1	1
Bionomial, Poison and Normal distributions.	3	2
Correlation and regression	2	4
Determination of sample size	2	2
Sampling techniques, their applications, advantages of sampling, sampling and non-sampling errors.	3	2
Tests of significance—t, F, Z and X^2 tests	3	3
Vital and health statistics—definition, uses and sources.	1	As a part of field practice
Rates of vital events—measures of mortality, morbidity, fertility, population growth and population estimation.	2	4
Demography, introduction and uses of life-table, expectation of life.	2	1
International classification of diseases and medical certification of death.	1	As a part of field practice
Total teaching hours required for the subject during entire M. B. B. S. course.	27	25

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Teaching of Occupational Health in the Undergraduate Medical Curriculum

by

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Introduction:

The necessity of developing "need-based" oriented medical education has been recognized throughout the world. The aim should be to prepare the medical graduate in such a way that they are fully equipped to meet the social and health needs of the country, practising medicine at individual, family or community level. The contents of the curriculum and so also the health facilities for their practical training should thus be determined by the social and health needs of the country.

In India, medical education should aim to equip the young graduates so as to enable them to solve the national health needs under existing social conditions with the limited resources available. The medical education thus needs recasting in our context. However, the objectives of medical education need precise definition before recasting is effected.

The Medical Education Committee (Govt. of India, 1969) was appointed by the Government of India to examine the question of undergraduate medical education in the light of national needs and resources. Among the terms of reference of this Committee was also "to consider the development of medical curriculum in relation to national requirements, the need for uniformity of syllabus, apportioning of time between didactic and practical teaching, selection of entrants to medical colleges, reciprocity between various medical institutions and Universities and domiciliary restrictions in the matter of medical admission. The Committee (loc.cit) has since submitted its report which provides a guidline for developing the syllabus and the curriculum.

Social and health needs of a country are never static. The undergraduate medical curriculum and the teaching and training also need a dynamic adjustment with the changing needs. It is also true for the subject of occupational health.

The field of Occupational Health

Occupational health in its modern concept is concerned not only with the health of the industrial workers but with the health of all those who are gainfully employed outside their own homes such as in public offices, large shops, building trades, transport-land, sea and air, agriculture, plantation, mines and so on.

The Joint ILO/WHO Committee on Occupational Health (1950) adopted the following definition:

"Occupational Health should aim at: the promotion and maintenance of the highest degree of physical, mental and social well-being of workers in all occupations; the prevention among workers of departure from health caused by their working conditions; the protection of the workers in their employment from risk resulting from factors adverse to health; the placing and maintenance of the workers in an occupational environment adapted to his physiological and psychological equipment, and, to summarize, the adaptation of work to man and of each man to his job".

Thus the field of occupational health envisages health promotion, disease and accident prevention, and protection of workers from hazards in whatever occupations they are.

The Undergraduate Medical Curriculum

From times again it has been emphasized that the basis of undergraduate medical curriculum should aim to produce the 'basic doctor', "an intelligent educated and thinking man who has reached the stage of vocational training which will enable him to

acquire more readily the necessary additional knowledge for whichever branch of medicine his inclination and potential ability dictates. (Lane, 1960). There can not be two opinions on the already overcrowded undergraduate medical curriculum. The problem is to know how far occupational health should feature in such a course.

The ultimate aim of medicine is to raise the level of health of the people. The medicine today needs to be comprehensive in its approach. This necessitates study of "total man" in his "total environment" which also includes the most important component "occupation". The curriculum designed to train the "basic doctor" in our set up may have the following few essentials;

1. The teaching should be integrated with teaching in other subjects;
2. Occupational health need not be emphasized as a speciality at the undergraduate level;
3. The teaching should enable the student to understand the effect of work environment on the health of people and also on occupational and non-occupational diseases;
4. The training should acquaint the students with the common occupational diseases;
5. Opportunity should be provided to emphasize the role of rehabilitation in every day practice;
6. Due emphasis is needed on the occupational history of the patients so that the students get interested to see occupational health in its right perspective and
7. The teaching and training need to be practical and available occupational health facilities like the employees State Insurance Scheme need to be freely utilized for training purposes. A couple of visits to places of employment like a factory or a big office establishment may make the teaching more interesting.

Thus certain amount of instructions in occupational health are essential specially in a fast industrializing country like ours. There is need to introduce occupational health concept in the undergraduate medical teaching, keeping in view the essential requirement of establishing a firm foundation on which a 'basic doctor' is to be trained to meet the country's social and health needs.

The Contents of the Curriculum

The teaching of occupational health need to be integrated with the teaching of other subjects from the very beginning of the undergraduate medical curriculum. The contents may be spread over the Pre-clinical, Para-clinical and the Ciinical periods.

Pre-clinical: In the pre-clinical period, five lectures may be introduced with emphasis on the following subjects:—

1. Role of occupation in man's life including economics of man.
2. Work physiology and occupational psychology,
3. Functional anatomy-anthropometry-static as well as dynamic.
4. Occupational environment as a component of total environment and its effect on health.
5. Introduction to Ergonomics.

Para-clinical: At the para-clinical stage, six lectures may be given with emphasis on the following subjects:

1. The principles of preventive medicine as are applicable in the field of occupational health.
2. The genesis of occupational diseases as viewed in the epidemiologic triad of agent, host and environment.
3. Basic principles of occupational hygiene or hygiene at the place of employment.
4. Introduction to occupational health programme, its contents and benefits.
5. Existing labour legislations in the country.
6. Labour welfare programmes.

Field visits to some places of employment like a factory or an office etc. may be arranged at the para-clinical level.

Clinical: Five lectures in the clinical years may be given covering the following subjects:

1. Importance of occupational history in clinical practice,
2. Some important and commonly occurring occupational diseases, their diagnosis, prevention and treatment.
3. Accidents at the places of employment, their prevention and treatment.
4. Basic principles of industrial toxicology.
5. Existing occupational Health Programme in the state and the country.

Visits to existing occupational health services like E.S.I. may be arranged at this stage.

As mentioned earlier the teaching is to be developed in an integrated manner. Although it is recommended (WHO, 1957) that the teaching is to be best done by a qualified professor of occupational medicine yet in our present set up it is felt that teachers in the department of Social and Preventive Medicine may develop the teaching in collaboration with teachers from the departments of Anatomy, Physiology, Pharmacology, Medicine and Surgery including those from the sub-specialities like dermatology, ophthalmology, otorhinology, orthopaedic surgery etc. This requires that atleast one teacher in the department of Social and Preventive Medicine should be trained (or atleast oriented) in the field of occupational health. The National Institute of Occupational Health, at Ahmedabad and the Section of Physiological and industrial hygiene of the All India Institute of Hygiene and public Health, Calcutta can develop a programme for training or orientation of teachers from the departments of Social and Preventive Medicine. This may form the basis for future development of teaching of the subject at the undergraduate level.

Summary

To summarize, in spite of overcrowded undergraduate medical curriculum, certain amount of instructions in occupational health are essential specially in a fast industrializing country like ours. Details are to be avoided but there is need to introduce occupational health concept keeping in view the essential requirements in the training of a 'basic doctor'. The teaching and the training need to be integrated with other subjects from the very beginning of the undergraduate curriculum and may be phased at three levels viz. pre-clinical, para-clinical and clinical. In the present set up, it is felt that the teaching and training may be developed by teachers from the departments of Social and Preventive Medicine. A programme of training of teachers from the departments of Social and Preventive Medicine at the National Institute of Occupational Health and/or at the All India Institute of Hygiene and Public Health, Calcutta for the purpose may be started to provide basis for future development of the teaching and training in occupational health at the undergraduate level in the medical colleges in India.

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"The Teaching of Nutrition to the Undergraduate Medical Students with Reference to Community Needs"

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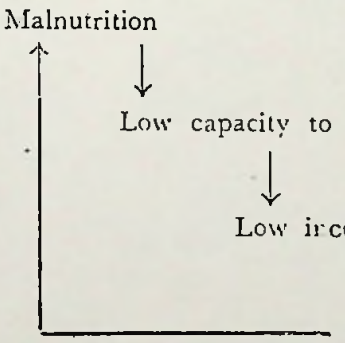
Nutrition adequacy is important in the life of an individual from the time of gestation to the time of acceptance of full responsibility as a socially functioning adult. The knowledge of nutrition is most important to the medical students. Nutrition and its various aspects are discussed. Nutrition is taught at present at various stages without recognition and adequate consideration. Now it is time for consideration of planning for teaching of nutrition, e.g., when to teach, who should teach, how and what should be taught.

There are now many advances and researches concerning medical science and allied branches. The expanded horizon of research has resulted in various disciplines like bioengineering, biochemistry, histochemistry, immunochemistry, cenetics, nuclear medicine and various other branches which were not named or heard of before a few decades. All these researches are mainly carried out in developed countries. It is very difficult for us even to imitate them at the present contest. Unfortunately at the present moment our medical students are only interested and excited with laboratory techniques, various machines and sophisticated appliances and they are apathetic to the actual needs of the community. Probably the fault does not lie with the students but with their educators who have failed to infuse them with real needs of the community. The rural population is 80% and most of the population is undernourished and inadequatedly looked after. Nutritional adequacy is important in the life of an individual from the time of gestation to the time of acceptance of full responsibility as a socially functioning adult.



The needs of the community are enormous. Our population is suffering at all risk periods; e.g.,

(1) Low average birth weight (2. 8 Kg).

(2) High infant morbidity & mortality (80-120). Ten times higher than western countries.

(3) 1-4 year mortality: 30-50 times higher than western countries.

(4) 10 per cent of total world population suffer from malnutrition.

(5) 20 per cent of world population (700 million) suffer from iron deficiency sufficient to alter productive capacity.

(6) Most of the patients suffering from diseases are malnourished as undernutrition and infection act synergistically.

At present there are 5128 Primary Health Centers in our country and 106 medical colleges. It is expected that there will be 1/3500 doctors/ population ratio. Now as it stands there is no scarcity of doctors but we want better trained doctors who understand the needs of the community. At present doctors are excited at murmur in the heart and knows many details of S.T. Depresion or gastro-jejunostomy operation, but they are apathetic to nutritional problems and social needs. So the main objective should be that he should be familiar with needs of community. However it is not possible to teach him all the facts and knowledge of nutrition as other branches. But he should be motivated to self learning and should have deep insight into nutritional problems.

At present in the medical colleges, there is no seperate subject of nutrition. It is taught inadequately by everybody and hence it is neglected by all. Calories, nutritional requirements etc., are taught in physiology, medicine, P.S.M. & Pediatrics without much of practical involvements. It is a common finding that a doctor is found prescribing only vitamins for growth failure to a child without analysing the proteins and calories intake. Hence it is desired that there should be a nutrition board in the medical college who would advise, direct and plan the nutrition teaching to medical students. The subject of nutrition should not be seperated but it should be taught adequately at all levels and by all people—whosoever is concerned with the patient. Everybody should be concerned with nutrition and nobody should be indifferent to it. The nutrition board should consist of representatives from Preventive & Social Medicine, Pediatrician, Physician, Dietician, Physiologist, Obstetrician, Surgeon.

The objectives of the nutrition teaching should be:—

(1) He should have the knowledge of local availability of food, its production and distribution.

(2) He should have knowledge of local customs, beliefs, superstitions about food, and food habits of community.

(3) He should have knowledge of nutritional needs at various periods and planning of locally available food under physiological and pathological conditions.

(4) He should have knowledge of function, digestion, absorption and metabolism of various food stuffs.

(5) He should identify and treat various nutritional disorders

(6) He should be in a position to conduct various health activities, both promotional and preventive.

(7) He should be co-operative with colleagues, voluntary and government organisations in upbringing nutritional status of the community.

(8) He should be in a position to train the paramedical staff.

A Medical Student can be taught in following way

Pre-clinical	*Clinical*	*Internship*
Social Anatomy	Social Pathology	School Health Clinic
Family size	Poverty	M.C.H. Center
Structure of community	Ignorance	Applied Nutrition
Classification, Socially, economically	Illiteracy	Projects
Social Ecology	Unemployment	
Religions	Food Habits	
Taboos	M.C.H. Centers	
Customs	Well baby clinic	
Habits	Family Planning Center	
Diet and	Clinico Social conference	
family survey	Nutrition surveys	

Family Health Advisory Service—A Training Exercise for Medical Student in Family Medicine From 1963-1967

BY

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The vital point of contact between the public and the medical profession is the family doctor, the practitioner of family medicine, the key to the kind of medical care of the future.

In the medical institutions, however, there is generally less exposure of the student, in the practice of the art and science of family medicine as medical curriculum is not tuned to the impact of socio-cultural changes in the family setting.

The last two decades have witnessed the gradual erosion of the privileged. The upper *'class'* enjoyed the material wealth when the *'masses'* were denied their very existence. This vast difference between the *'class'* and the *'mass'* is being gradually bridged, as the *mass* is movingupwards with their educational, cultural and intellectual pursuits. With greater awareness in the *mass* of their rights and privileges in the democratic pattern of society, a sense of discontentment, based on greater social and economic justice, is taking place.

A good number of working women are mothers with children under 10 years of age. This newly found freedom to work makes many of them to be dissatisfied with a career of wifehood and motherhood. Homemaking, being a dull glamourless career when compared with remunerative and prestige-giving occupations has weakened the family relationship.

The progressive population increase has brought to the front the complexities of psychological and mental health problems which had hitherto been eclipsed with physical health problems.

Urbanisation has affected healthy family life and has brought changes in the social set up. The lower income group of migrants are exposed to greater dangers due to their shift from safer rural environment to that of industrial setting and become a prey to diseases arising from stress and strain, unhygienic environment and malnutrition. The tempo of industrial revolution has gained momentum during the past two decades. The use of modern mechanised process is denying self-satisfaction and fulfilment of personality because of the mechanical and mass production techniques.

In short the modern society has given the average man and woman a sense of discontentment and emotional problems leading to behavioural drift and loss of social stability. Since health of the people depends upon biosocial environment under which they live and work and since in every illness it is the personality as a whole that reacts to environmental aspects, it is important to help people to adjust to the changing way of life imposed by the social changes in relation to socio-cultural factors both in health and disease.

To meet these challenges and expectations of the community which concern physician, we have to recognise that the hazards to health are greater today from the social rather than biological environment.

Medical profession has therefore to integrate with sociology and work in team with other specialists viz., sociologist, psychologist and nutritionist. Maximum understanding is to be created in the mind of the student in terms of social and behavioural factors. It is this understanding which would help the future physician to help the society.

The present-day training of undergraduates based mostly on bedside teaching in

the hospital, fails to provide orientation into the concepts that:

(*a*) Patients have families.

(*b*) Family is the unit for both developmental and social growth.

(*c*) Family survives within their socio-economic structure and in this cultural and religious ties predominate.

(*d*) Family lives in a house; in a physical structure.

(*e*) Individual reacts on society and society reacts on individual's behaviour.

The student needs to visualise comprehensive medical care and how it is applied to society as a whole, as well as, given opportunity to learn family, group and community care, which constitutes his laboratory. This essentially means organizing the teaching programme for providing direct experiences. The programme has therefore to be realistic in the sense that it is based on the actual background of the social, economic and cultural setting of the community and finally to pinpoint, how a physician can best contribute in that setting taking into account the needs of the family and the community.

In conformity with this principle, in 1963, the Department of Preventive and Social Medicine organised Family Health Advisory Service for senior clinical students purely as a teaching exercise to provide opportunities for direct experience in dealing with the health problems of 'Family'.

While the broad and general objective of Family Health Advisory Service is to train students in the practice of family medicine, the specific objectives are:

(*a*) to win and sustain families' confidence.

(*b*) to get an integrated picture of the past and present health and disease conditions of the families.

(*c*) to get an insight into the main health problems and needs of the family.

(*d*) to develop an appreciation of the interplay of the various biophysical, socio-cultural and psychological factors which affect the family in health and disease.

(*e*) to diagnose and manage common disorders for which patients do not seek treatment.

(*f*) to maintain regular follow up on the treatment and advice given with a view to ensure full rehabilitation.

(*g*) to guide families towards better health by laying more emphasis on promotion of health and prevention of disease rather than traditional cure.

In the absence of the field practice area in the form of an Urban Health centre, the campus of the All-India Institute of Medical Sciences has been selected as the venue for the training exercise for senior clinical students. The families of Class III and Class IV staff belonging to lower and middle socio-economic status and residing inside campus formed the nucleus for the exercise.

These families are entitled to medical care from the health insurance scheme (Employee's Health Service) under the administrative control of Medical Superintendent.

(*a*) Each student is allotted three families:

(*i*) Family needing advice on infant and toddler care.

(*ii*) Family needing advice on family planning.

(*iii*) Family with a member suffering from long term illness.

(*b*) Students are provided with 3 family folders, instructed to record both medical and social data in respect of their three families and maintain follow up action for one year. Each family folder contains 14 proformas covering the following fields:

(*i*) Demographic aspects.

(*ii*) Immunity status.

(*iii*) Environmental conditions.

(*iv*) Socio-economic status.

(*v*) Dietary habits.

(*vi*) Social customs and habits.

(*vii*) Interpersonal relationship and adjustment.

(*viii*) Physical examination of infants children for milestones.

(*ix*) Morbidity pattern in the family.

(*x*) Summary of health needs of family.
(*xi*) Recommendations by senior clinical students, for future course of action.

The student is also provided with a doctor's bag which contains common drugs like A.P.C., Fersolate, Multivitamin tablets, dressings and bandages for use in consultation with postgraduate and staff members attached to each batch.

The department has been allotted Family Health Advisory Service room in the outpatient block where all the procedures for the family health care are attended e.g. immunisation procedures, height and weight measurements and health education media.

Three community leaders have also been selected and involved in the training exercise.

The F.H.A.S. (Family Health Advisory Service) session starts on 15th June every year. 45 students of the 7th and 8th semester are attached to the Department of Preventive and Social Medicine. They are divided into 4 batches. Each batch attends the department for one afternoon a week for this exercise.

The staff member of the rank of Assistant Professor, one postgraduate student, one Medico-social worker and one Public Health Nurse are attached to each batch.

At the first session the staff member in charge of the batch explains the objectives and the working schedule of the Family Health Advisory Service in detail.

At the second session, the Medico-social worker and Public Health Nurse explains the art of interviewing the family. The students are then introduced to their respective families by the respective medico-social worker accompanied by community leaders. Subsequently students follow their families by weekly visits or more often when necessary.

The fourteen proformas included in the F.H.A.S. folder are explained at the subsequent session in detail by the staff to their respective batch for relevant entries and interpretation.

The session ends on 15th May every year. The family folders collected from students are kept back in the department for checking all details prior to handing over to the new batch of students on the 15th June. In the interval between 15th May to 15th June, the families are visited by paramedical personnel to maintain continuity in the F.H.A.S. exercise.

Students come to the Department at 2.0 p.m. and orientation session lasts for an hour at which following aspects are dealt with:

(*a*) Review of problems encountered at their previous visit to the families
(*b*) Discussion on practical problems.
(*c*) Discussion on teaching material relevant to the practice of family medicine in the form of cyclostyled notes.
(*d*) Quiz or test.
(*e*) Practical demonstration on vaccination/inoculation techniques.

Subsequently students go to the field and visit their respective families. One-third of their visits are supervised at a time.

During their visit to the allotted families each student:

(*a*) Collects information as per proforma in the family folder.
(*b*) Studies the impact of social, economic and environmental factors in the family.
(*c*) Deals with problem encountered by him.
(*d*) Summarises lessons learnt and offers suggestion from which others also benefit.
(*e*) Gives therapy for minor illness.
(*f*) Distributes M.P.F. (multipurpose food) on payment for selected undernourished children where indicated.
(*g*) Motivates the family towards better health.

The student then reports to the E.H.S. (Employee Health Service clinic). If any of the members of the three families allotted to him attend the dispensary on that evening, examines the patient for the ailment and discusses the total home background of the patient with Medical Officer in charge of the E.H.S. before treatment is prescribed. During the subsequent visits to the families, he same patient is followed by the student.

Special emphasis is given to specific problems in the family with a chronically ill patient, the family needing family planning advice, or family in need of advice on the care of the infant and the toddler.

Students also participate in special programmes undertaken as a teaching exercise viz.,

(*a*) Survey on nutritional status of children.
(*b*) Survey on physical defects in children.
(*c*) Distribution of multipurpose food to the undernourished and follow up for improvement in health.
(*d*) Sanitation drives.
(*e*) Film shows and exhibition in connection with problems of national importance organised by the department.

In this exercise, student visualises comprehensive and integrated approach in solving health problems in the family as a unit of service.

When a student needs help, especially when facing a resistant family, the staff, postgraduate and, para-medical personnel and community leaders involved from the campus community, extend a helping hand in tackling difficult situations.

All the F.H.A.S. (Family Health Advisory Service) records are scrutinized by the staff and mistakes made by students are pointed out and rectified.

All problems are discussed by the Professor at weekly staff meetings to make everyone conversant with the nature of problems encountered in the families, and to study the impact of socio-economic factors in health and disease patterns. Such meetings are attended by the community leaders as well. This ensures better co-ordination of all activities and integration at all levels by the staff in F.H.A.S. exercise.

At the end of one year, final assessment on each student's performance is done. Questions are based on practical aspects concerning comprehensive medical care as applied to community in the practice of family medicine. The marks obtained are taken into account towards day-to-day class assessment.

The Family Health Advisory Service Programme outlined above is an attempt at preparation of senior clinical student as a family clinician and for the community.

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NUTRITION EDUCATION OF MEDICAL STUDENTS -- A TOOL OF REORIENTING MEDICAL EDUCATION

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ABSTRACT

The paper presents an innovative approach of teaching nutrition to medical students, which is based on the concept of exposing medical students to the rural environment. The medical students become more efficient in therapeutic and applied nutrition practices and get a better understanding of the present socio-cultural set up.

INTRODUCTION

The Govt. of India launched the Reorientation of Medical Education Scheme(ROME) in 1977 with the specific objectives of exposing medical students to rural environment. The quality of medical care provided in a community is directly related to the knowledge and skills of health manpower in dealing with common health problems existing in a community.

Nutrition is an important medical science. A physician is expected to have an adequate knowledge of nutrition and to make recommendations for specific foods.[4] While nutrition has become such an important subject for health professionals, our medical colleges do not offer adequate training in nutrition.[1] It has been observed that medical graduates in India have very low profiles of knowledge about therapeutic nutrition and dietetics.[3,5]

The present paper presents an innovative approach developed by Dept. of Community Medicine, Mahatma Gandhi Institute of Medical Sciences, Sevagram, in teaching nutrition to medical students and reorienting their attitude towards health care.

OBJECTIVES OF TEACHING PROGRAM IN NUTRITION

i) to reorient medical education by exposing medical students to rural environment.

ii) to impart practical knowledge of nutrition to medical students.

iii) to increase the proficiency of medical students in tackling various nutritional problems in present socio-cultural set up.

iv) to inculcate epidemiological principles in undergraduate medical teaching.

v) to serve the community through student's active participation.

METHODOLOGY:

Every year a village is adopted by the Dept. of Community Medicine, which serves as a field practice area for new entrants. In the first semester the newly admitted medical students stay in this village for 15 days, when each student is alotted 4-5 number of families. The nutrition education of medical students which is mainly carried out during this stay, has following components:

a) Introductory Lectures: In these (3 lectures) the students are taught about types of foods, nutrients and their requirements, nutritional disorders and nutritional assesment of commnity.

b) Nutrition Survey: The students carry out diet survey of the individuals in their families by weighment of raw foods over 3 consecutive days. All the individuals in the families are assessed for nutritional status by using various indicators. At the same time the students study the ecological and socio-cultural characteristics of the family and the infant feeding and child care practices. The whole activity is supervised by faculty members of Community Medicine Department.

c) Case discussion: The student are taught about nutritional disorders by demonstrating various nutritional deficiency diseases observed during the survey.

d) Group discussions: The students are encouraged to sit in groups to discuss various aspects in which they calculate the dietary intake by using food composition tables, correlate the dietary intake with nutritional deficiency and plan out intervention strategies.

e) Nutritional Monitoring: In the subsequent monthly visits the students monitor the nutritional status and give appropriate nutritional ad-

vices.

PROGRAMME EVALUATION:

The evaluation of this teaching programme is a ongoing and regular process which is carried out in subsequent village visits. The assessment of the programme is done in the following ways:-

i) Assessment of the students:- The evaluation of the impact on the students is done at regular intervals, the students are assessed for their clinical ability to detect nutritional deficiencies, their ability to carry out nutritional interventions in most scientific way and by assessing their awareness about the feeding and dietary practices in rural field practice area. This is done by giving them practical exercises to be done in the field.

ii) Assessment of impact on comunity: As mentioned earlier, the students serve the comunity in this process of self learning, the impact on the community served is assessed by six monthly surveys of the community to assess the change in feeding practices, dietary intake the nutritional status. This data is compared with the baseline data collected initially.

DISCUSSION:

To increase the output of medical personnel, teaching has to be relevant to existing health problems in a commnity. Nutritional diseases form the main bulk of patients in Indian conditions, where the physician is expected to detect and manage them.

Teaching of nutrition to the medical students can be started in the first year. The method of teaching nutrition as presented in this paper, plays a major role in increasing the proficiency of medical students in therapeutic and applied nutrition as they become well-versed with food composition tables food exchange lists during diet survey. This proficiency they achieve by the process of self learning during diet surveys. At the same time it helps in increasing the clinical acumen of medical students in detecting nutritional disorders.

Because of exposure to the rural environment, the medical students get a better understanding of the present socio-cultural aspects and develops the habit of managing the problems with the current socio-economic constraints rather than a bookish approach.

Analysing and interpreting the results, correlating the findings helps in inculcating epidemiological principles. The active participation of medical students in growth monitoring and nutrition education helps the community in achieving better health status. Such an activity is, therefore, recommended for other faculties of Community Medicine/ Preventive & Social Medicine in other institutes.

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5. All the candidates should be assessed independently by all the examiners individually and effort should be made that questions of a uniform standard be asked from the trainees.

6. If there is a significant difference of assessment of the candidate between the examiners. then the candidate can be jointly assessed by a panel of examiners before a final verdict is given. Despite all efforts, assessment can never be wholly objective but efforts can be made to reduce the variables and to cover as wide a range of topics as possible to truly evaluate a candidate.

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Clinical Thrust in Teaching Biostatistics to Medical Undergraduates

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ABSTRACT

Biostatistics is among the lowest rated subjects taught to medical undergraduates. Most of it is attributable to lack of clinical orientation of the subject. It thus fails to meet the professional need of medical students. Realizing that course curriculum is the single most important item determining teaching, we propose a biostatistics curriculum based exclusively on the clinical aspects. Content and structure of the teaching is also mentioned. We indicate how so much of clinical work is inherently statistical and exploit this to suggest teaching of statistical concepts in a manner that the subject is seen as a means to achieve better clinical ability.

Reaction of medical students to the subject of biostatistics has been expressed by such adverse remarks as to leraance (at best) to (more commonly) active dislike[9], neither interesting nor helpful[13], and least interesting[1]. It has also received ratings ranging from dislike to abhorance[3]. In view of such reactions, the teachers have made attempts to discover and utilize any aids to facilitate their task as educators. Some improvement in teaching has been reported by such devices as defining precise objectives[2] and using timely articles as teaching aid[11]. Experiments like that of self instruction[14] and of independent study programme[6] have also been conducted with varying degree of success. However, to meet the challenge of teaching the subject in a clinically relevant and interesting manner[11], and to relate it closely, forcefully and convincingly to the students laboratory and clinical interests[3], further introspection on the content and method of teaching biostatistics is needed.

Course curriculum could be identified as a single most important item determining teaching of a subject. Various curricula have been suggested on biostatistics [1,9,10,12], including one[10] in collaboration with W.H.O. All of them emphasize on statistics as applied to

medical research and suffer from statistical overtones. There is a need of a curriculum which lays stress on the utility of statistical concepts in the day to day activities of a clinician — in forwarding most plausible diagnosis, in assessing the prognosis, and in deciding on the most fruitful course of management.

Besides the needs directly related to clinical work, utility of statistics is recognized also as a basic tool to scientific methods [7,15]. Statistics thus is important to methods in clinical sciences as well. Since the barrier of antipathies of clinicians to any form numerical values[9] is now broken, the way is clear for statistical inroads. The fear that the 'invasion' could make statistics master rather than a tool[16] is unfounded since statistics can never be regarded as a substitute for the rationale thinking of clinicians

Lot of clinic l work is inherently statistical. The present communicaltion exploits this to suggest a curriculum that brings basic statistical concepts as a means to serve specific clinical needs. Besides the clinical, the curriculum endeavours to meet the criteria of being oriented to scientific issues as well[9]. It also attempts to provide the required meat of clinical material to the gravy to statistical procedures[9]. The suggested curriculum may not be comprehensive from the statistics view point but would be relevant to the needs of the profession. It is restricted to the concepts appropriate for undergraduates only. The curriculum and the content and structure of teaching is given below.

1. Clinical uncertainties and their measurement

Inter—and intra— individual variations are among the most outstanding features of human beings. Each patient presents himself with unique features yet he is to be managed on the basis of the experience gained on others. Besides the biological variablity of the subjects, physicians may differ on diagnosis, prognosis and/or management of a case. Laboratory and instrument may also cause variation. On the top of this, enormous amount of information, generally needed on a subject, is hardly ever available in full. Conceptual, recording and communication variabilities further confound the uncertainties in clinical practice. An objective way to evaluate uncertainty is by computing probability. In clinical practice, the probability needed is generally conditional — for example, of abdominal tuberculosis when complaints of pain in abdomen, constipation and vomitting are reported. Such probabilities should ideally be based on records of large number of similar cases seen in the past. In the absence of such records, they may be based on experience also.

For independent events like hypertension and diabetes, the joint probability of the two occuring together in a person is the product of the individual probabilities. A clinician is rarely interested in such probabilities but he is interested in the probability of survival when two (or more) such independent diseases are simultaneously present in a case Rules are available by which probabilities of such and other 'complicated', including dependent, events could be calculated. For mutually exclusive events like prognostic categories, the probability of a person going into severe or critical state is the sum of the probabilities of these two categories.

The process of diagnosis is an exercise in classification wherein the probability of disease

given signs-symptoms-investigations gets due consideration. Additional information, as and when available, may substantially alter the probabilities and thus the diagnosis. Probabilities have similar role in assessing prognosis and in choosing treatment also.

Medicine is increasingly becoming objective by relying more on quantitative varibles. Clinical significance of these measurements is assessed against their reference values.

2. The reference values

Variability of the observations give rise to a scatter in the form of a 'distribution'. The common types are the classical bell shaped Gaussian as of body temerature, right skewed as of systolic blood pressure, and left skewed as of haemoglobin level. Most such distributions lend themselves to mathematical theorizing so that the probability of, say, systelic level $>$ 140 mmHg in a healthy person can be calculated. Clinically more important is the probability of a person being healthy when systolic level $>$ 140 mmHg. (Baye's) Rule exists by which such inverse probability could be calculated.

It is a general practice that clinical significance of a measurement is assessed by the magnitude of it 's deviations from the 'normal'. The term normal indeed has different meaning in different contexts but let us consider it to be that value which is generally present in healthy subjects. This normal could be a single value or a range depending upon that the variability is low or high.

Point normal generally is the central value measured by either mean, median or mode. Normal body temperature of 98.6 F is the mean in healthy subjects. In case of height and weight of children, median is used as normals. Mean in such cases could lack representativeness due to possibility of substantially low values even in healthy children. The normal haemoglobin level of 15 g% is that volue around which levels of most of the healthy people lie. This is an example of mode. Depending upon the type of distribution and purpose, either mean or median or mode could be used as point normal.

When the variability of the observations in healthy subjects is high, clinical interest is served better by normal range, viz. 70-100 mg per 100 ml of blood for fasting sugar level. Such normal range is generally obtained with the help of a measure of variability called standard deviation (SD). Variability is the difference of observations from one another but, to have a common base, we find deviation from a central value namely the mean. These deviations are 'standardized' by squaring to get rid of the negative sign of some deviations by computing mean of these squared deviations, and then by taking the square root to get back the original scale.

Realizing that some people in any population may have exceptionally high or low levels yet be perfectly healthy, we find ourselves willing to exclude certain small fraction of the healthy population with extreme values from the range of normality. It is arbitrary convention to exclude 5% (generally 2.5% on extreme) observations so that (middle) 95% of the healthy people are included. For measurements with Gaussian distribution, such normal range is obtained by mean $\pm$ 2SD limits.

3. Errors in clinical decisions

In accepting mean ± 2SD type limits as normal range, a 5% risk of wrongly classifying a healthy person as sick is already admitted. Differential evidence provided by a value of 100 mg for fasting sugar level against 10 mg is sometimes not fully appreciated because both happen to be within normal limits. Thus, indiscriminate use of normal limits ignore the distribution aspects. In some cases, the borderline values within normal limits overlap with the levels present in sick subjects (e.g. intra-occular pressure of 24 mmHg.) Thus, there is also a risk of sick person being categorized as healthy. Clinical relevance of normals in assessing future risks and needs of treatment can certainly be questioned. A pregnant woman with haemoglobin level of 13 g% could still be advised to take heamatinics while a non-pregnant woman need not be so advised. The normals are only a guideline and aid to objectivity-clinician remains the best judge.

Despite all possible care and despite decisions being based on appropriate probabilities, there is always some likelihood of the decision being wrong. An actual case of cancer can be missed and a case of benign tumour could be diagnosed as cancer. Similar errors are possible at prognosis and treatment stages also. Each type of error could be serious. Missing cancer has obvious serious implications so has unwarranted cancer diagnosis of a benign tumour—the latter could mean unnecessary psychological and physical trauma to the person and wastage of treatment inputs.

The outstanding cause of errors in clinical decisions is the lack of perfection in the medical tools. These tools for diagnosis, e g, patient's history, physical examination, laboratory and other investigations.

It is a big help to know predictivity of each tool. Positive predictivity is the ability to correctly classify a positive case. This is very high for positive parasite slide to diagnose malaria but is low for positive serological test to diagnose syphilis. Negative predictivity is the ability to rightly exclude negative cases. This is low for negative malaria parasite slide but it is high for negative oral glucose tolerance test to exclude diabetes. Tools with high predictivity, singly or in combination, should be used to minimize the probability of error. The other possible sources of error are insufficient experience of handling each type of patients, inadequate records, unwarranted extrapolation, and host of conceptual, recording/storing, analytical and communication errors. Merely being alert on these sources would help minimize the errors.

A satisfaction from the above mentioned curriculum is that basic statistical concepts like that of probability, distribution, mean, median, mode and SD, and Type I and II errors have been covered. It is hoped that teaching biostatistics in the manner suggested above will go a long way in building up a solid foundation for quantitative and scientific thinking in the future clinician.

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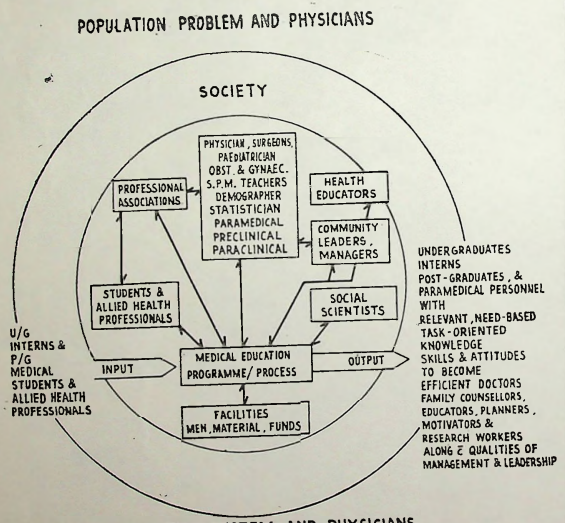

MEDICAL EDUCATION SYSTEM AND PHYSICIANS

FIGURE 4

Ref: I.J.M.E., Vol 22, No 2, May-Aug 1983, pp 11-13.

Teaching of Communicable Diseases at Medical College, Aurangabad : A Review and Plan of Action

By

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The objectives of teaching undergraduate students about communicable diseases at Medical College, Aurangabad. have been stated and the importance of this aspect in total syllabus of Preventive and Social Medicine has been underlined. The various phases through which the teaching of communicable diseases has gone through over the last fifteen years have been outlined. A feedback has enabled changes to be made to make teaching more effective. For meeting the objectives stated, a plan of action has been drawn up and has been presented.

Medical education has been viewed by many as transference of knowledge and the emphasis has probably been on teaching and not on learning. Many teachers hold a view that once a medical student is equipped with the necessary knowledge, he should be able to apply this knowledge in his professional career. This view, however, is not shared by the others and they feel that the student also ought to be demonstrated the application of knowledge. They also feel that actual participation would be still better to form clear concepts, attitudes and development of the skill of application of knowledge in specific situation. The evolution of teaching porgramme of communicable diseases (C.D.) at Medical College, Aurangbad, during the period of last fifteen yeats, to make it more effective, has been reviewed in this paper, and reflects changing concepts making it effe...

The objective of teaching the C. D. as seen by us are, (1) to impress upon the student the important place occupied by C. D. among the prevantable sickness in our country; (2) to impart knowledge and give him experience so as to be able to be a good diagnostician; (3) to be able to practice comprehensive management of cases; (4) to understand the epidemiology and measures for pervention and control of C. D., in the individual, in the family and in the community; (5) to be able to play his part well in the national programmes for control eradication of C. D.

Thus it is considered essential to involve the students in such activities and give them such practical experience as will enable them to develope proficiency and competence in the application of knowledge and practice of skills adopted, and meet the objectives outlined

In the inital days, after the establishment of medical college, Aurangabad, the topics of C. D. were dealt by the department of medicine in the form of didactic lectures. It was soon realised that there was too much stress on didactic lectures (which made them boring to the students), and that too related to clinical aspects and little if any, the epidemiology, prevention and control. Therefore, in addition to a formal posting of a fortnight in isolation ward, a series of lectures e.g. epidemiology was started by Preventive and Social Medicine (PSM deaprtment, to stress the importance of C. D. independently; and medicine department continued with theory lectures and clinics as before.

The feedback from time to time from undergraduate students revealed, a confusing difference in emphasis in teaching epidemiology and clinical aspects during these lectures, particularly showing an absence of correlation in teaching and practical application by both the departments. Therefore, PSM department introduced the home visit programme for fourth clinical term students, weekly for four hours since 1966-67. The students were allotted cases of C. D., like tuberculosis, leprosy, diphtheria, gastroenteritis, etc. selected from O.P.D./Urban Health Centre/indoor patients and were expected to pay home visit once a week in two hours. Following home visit the next two hour session in the week was kept for discussion on home visit. This was done with a group of 15-20 students, divided into 3-4 batches, each batch given a separate case for home visit. It was thought that this training would provide an opportunity to students to study the situation in family setting and use knowledge and to develop the skills. This programme did help the students study the disease in family set up and social conditions, and also inculcated them the aspect of family care. However, from the experience of students and teachers over years and the evaluation of students performance in examinations it became clear that there were some lacunae in the training and that there was a scope for betterment of the programme. The students sometimes did not pay the home visits regularly and enthusiastically. It was difficult for the limited staff of the PSM Department to accompany or to supervise the students at the time of every home visit. An inevitable time lag occurred between diagnosis in the O.P.D. or admission of a case in the ward, allotment to the batch of studnts, actual home visits and discussion. On some occasions a disparity in teaching by physicians and by teachers in PSM was noticed. The students naturally were confused by the different approaches.

In order to overcome this problem, the didactic lectures on epidemiology as well as clinical course and management of C.D. were taken over by PSM Department from the Medicine Department. After a couple of yeary another change introduced was that in addition to home visits, the bedside clinics in infectious disease ward by PSM teachers in fifth clinical term once a week were started. The ward posting and clinics by medicine department also continued. Thus the major task in teaching of C.D. was done by PSM department. After working this system for some years it was realised that the teachers in PSM while teaching C.D. either in didactic lectures or in clinics did not stress much on clinical course of disease and management of cases. This was with the presumption that the student know and all this while posted in infectious disease ward, tuberculosis or skin and V.D., where actually they spent less time In Medicine Department the teachers did not

give sufficient emphasis to cover all the diseases and particularly the facets like chemoprophylaxis, immunologicals, early diagnosis, bedside laboratory tests etc. were not touched to the desired extent by them. There thus was a division into 'preventive' and 'curative' clinics with repetition in teaching and a confusing overlap.

In order to obviate these problems in teaching, to make it more interesting and practical, to make the students practice in realistic setting and to provide opportunity to use knowledge and skills, some more changes were essential in the teaching of C.D.

Now we have planned a combined coordinated endeavour by medicine, paediatrics and PSM Departments. The students while in fifth clinical term will be taught about the clinical course, early diagnosis, bedside tests, management etc. by the physicians in the posting of stndents in isolation ward, This will be immediately followed by demonstration of epidemiological techniques and preventive/control measures with reference to the individual family and community in all aspects by teachers in PSM by taking the students for home visits to suitable local case. In acute conditions like diptheria they will be shown how to examine the contacts, how to detect susceptible, to make stain and examine the nasal smears or throat swab, how to keep follow up, detect the source thereby, whom to give and how to give which type of immunological, how to impart health education etc. In chronic conditions like tuberculosis the study of epidemiology, assessing the effects of disease on family, the relevant socio-economic factors, the difficulties in domicilary treatment and how to make the patient regular, or in a case like leprosy how to achieve isolation without hospitalisation, rehabilitation etc. will be demonstrated to them. The role played by different organisations in control of communicable diseases like tuberculosis, malaria, leprosy will be shown through field visits. The staff of Urban health Centre, and Venersal Disease Control Unit attached to the PSM department will be actively involved in this field work.

All this endevour is with the expectation of increasing the motivation of students towards learning with interest and understanding as they will have an opportunity to visualise the practical application of what they are being taught. It is felt that this approach of starting with a patient of C.D. in the hospital and going to the family is one way of exposing the student. We are also planning to utilize the other approach, starting from community and going to the patient, simultaneously.

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Training of Epidemiology during Undergraduate Medical Education—Need for Reorientation

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ABSTRACT

Inspite of various national health programmes and new drugs, control of common communicable disease is negligible in India. The question is whether our health manpower is suitably trained in Epidemiology so as to be of help in control of these diseases. In light of existing patterns of training in Epidemiology and lacunae thereof, some suggestions for reorientation of training in Epidemiology are put-forth.

Introduction

The quality of medical care provided in a community is directly related to the production of health manpower which should be fully equipped with knowledge and skills to provide appropriate and timely health care to the beneficiaries. It has to be planned in view of health needs of the community and according to availability of resources and technology. Unfortunately there has been tendency to over-emphasize use of the most sophisticated technology as the ultimate answer which a country like India can hardly afford.

Medical teaching and training pattern in India at undergraduate and postgraduate level has been a matter of criticism for a long time. It has been shown that hospital based, cure oriented approach is a complete failure (UNICEF/WHO, 1975). Generally speaking, a medical graduate after passing through six

years of medical education is bewildered and finds himself gropping amongst a few pharmaceutical names only. He cannot be regarded as the pioneer of provoding comprehensive health care to the community in whatever way he renders his services.

As a step towards production of appropriate health manpower, the Reorientation of Medical Education Scheme has been implemented in medical colleges in India (Govt. of India, 1975). But unless there is a proper understanding amongst the teachers of medical institutions and until the objectives of the scheme are taken care of, it is going to be another refuse in the dustbin of high level policies and programmes.

In developing countries where more than three quarters of total morbidity is because of infections and malnutrition, there is further need and importance of teaching and training of infectious diseases and nutrition in particular. Tuberculosis, Malaria, Filarias, Leprosy and Enteric Infections are at the helm of morbidity pattern and cause widespread mortality as well (Health Statistics of India, 1981).

Existing Teaching Methodology

With minor differences and exceptions aside, the teaching and training of epidemiology in majority of institutions is irrational. The theoretical aspects of epidemiology are taught in and after second phase of M.B., B.S. by the Department of Preventive & Social Medicine, now called Community Medicine. The teaching does not detail out clinical aspects because of two reasons :

1. As the students are still in para-medical phase, it is thought to be untimely and premature.
2. The teachers of Preventive & Social Medicine are usually not associated with hospitals and thus they are not fully equipped with clinical teaching.

In the final clinical phase, the students are taught and trained solely about clinical picture of diseases without mentioning the epidemiological characteristics of the disease. The teachers of medicine are not reoriented in epidemiological understanding. The outcome is, as expected, unorthodox. The student who now becomes a medical graduate is filled with symptoms, signs and syndromes without any understanding of epidemiological lay out. Thus he observes a patient as a single entity and a disease as a single episode without bothering for its origin and causation, the underlying factors and the community implications. The measures taken are therefore unit-based. The whole chain of complex events have been in progress for so many years and inspite of the fact that new drugs and better technology is available the situation of communicable disease has remained same or worsened. We have not been able to control Malaria, Filariasis, Veneral Diseases and Tuberculosis as a consequence only of inadequate approach to teaching and practice of Medicine. The resources go waste, the basic health needs of the people remain the same, the economic stagnation stays and what we gain is over-increasing disease load, malnourished future population, deteriorating

brain-power, human garbage and a handful of practising giants. There is no one else to blame except providers of medical education and health care.

The 'Integrated' Model

In the present situation, teaching of epidemiology particularly of communicable diseases, needs considerable change. A model has been framed in this regard keeping in view the following aspects :

—The teaching should be need-oriented and competency based.

—Prior educational objectives should be identified on which course curriculum should be designed.

—Clinical training should be 'integrated' with right emphasis on individual and community orientation.

—The teaching should be comprehensive with right emphasis on promotive, preventive and curative aspects of health care and rehabilitative aspects wherever needed.

—The teaching should not be only hospital based but underlying causes, role of environment and other factors in the community should be incorporated.

—The teaching should not be based on high level teachnology alone in investigations and management but also dependable on available resources and aids.

Keeping in view these aspects, some prerequisites are essential. The teaching should emphasize commoner conditions prevalent in the area. The Department of Community Medicine should be regarded as clinical with an infectious disease ward/hospital. There should be provision of minimum facilities in urban slum and rural areas for proper training and residing. The duration of training should be equitably divided in hospital and field situations with care not to hinder relevant knowledge being imparted to students.

Programme in the model

In this model, the subject of epidemiology extends throughout the para-clinical and clinical phases of undergraduate courses. In the beginning, an understanding of medical sociology and biostatistics should be imparted. In para-clinical phase, after basic knowledge of microbiology and clinical pharmacology has been given, epidemiology should be taught for 4-5 terms in late para-clinical phase and clinical phase. General epidemiolgy should correspond with clinical methods in Medicine. Once this is achieved, systemic epidemiology and clinical

picture of a disease should be taught and in detailed programmes care should be taken to see that the two pronged teaching corresponds diseasewise, as far as possible. During ward training and posting, the teaching should be integrated in the wards etc. With participation of faculty members of Departments of Community Medicine and other departments.

During the rural posting of undergraduate students in the final phase, further training by these departments should be undertaken in field conditions with stress on environmental and socio-economic factors. The teaching should include :

1. Individual case studies with community implications.
2. Epidemiological studies of prevalent diseases in the community.
3. Family study of infectious diseases in field practice areas.
4. Assessment of Community Health.

Emphasis should be given to diagnose and manage a particular disease in rural areas with minimum laboratory aids and treatment facilities (Annexure I).

Internship Programme

Community posting of 4-6 months during internship can be vitally utilised for training in epidemiology. In the urban areas, small postings, may of week or fortnight duration, in District Tuberculosis Centre (D.T.C.), Malaria Centre, Leprosy Unit etc. can be beneficial besides posting in the infectious disease ward/ hospital. In the rural posting the interns can be trained in implementation of various national vertical programmes in collaboration with clinical departments and Directorate of Health Services. Field studies, Family Health Care Programme and seminars and discussions can be arranged in the area. The interns can be posted at sub-centres where they can learn administrational and management aspects, peoples' participation and total health care concepts. In adopted Primary Health Centres under the Scheme of R.O.M.E. there is wide scope of integrated teaching of students and interns. The visiting specialist alongwith the community physician can discuss the morbidity in the area and they can train interns in an integrated manner, the epidemiological concepts of diseases prevalent there.

Researchers have time and again recommended team approach. It has been rightly said that the specialists have to develop an understanding of and make a commitment to Community Medicine as fundamental as their commitment to superior scientific care (Cherkasky, 1969). The present model envisages

interaction among various disciplines, may as well have a decisive role on the emphasis and status Anaesthesiology receives at undergraduate curriculum. Keeping pace with this the present study was undertaken to find out (a) how much the present consultants themselves were exposed to Anaesthesiology, while they were undergraduate students ? (b) in the light of their area of specialisation and the subsequent years of experience of having interaction with Anaesthesiology how much time do they feel should now be devoted to Anaesthesiology at undergraduate curriculum ? (c) would they like to have inter-disciplinary approach by holding joint seminars with Anaesthesiology to improve the standard of teaching during undergraduate medical curriculum ? (d) any other comments on undergraduate anaesthesia teaching and (e) to make certain recommendations for improvement if deemed necessary.

Method

The undergraduate students are posted for eight weeks in Anaesthesiology department at this College. The students are divided into groups and each is attached to a Consultant Anaesthesiologist for practical demonstrations and participation in the administration of anaesthesia in the operating theatres. The theoretical aspect is mainly in the form of diadectic lectures, at times making use of audio visual aids, by consultants in the department ; and tutorials by consultants, senior registrars or registrars. They are also given opportunity to attend departmental postgraduate seminars, journal clubs, case conferences and encouraged to take part in the discussion that follows. Anaesthesia, analgesia, resuscitation, and intensive care medicine are the main fields they cover during their posting. The practicals include demonstration of various methods of general anaesthesia, regional analgesia ; practice of endotracheal intubation and cardiopulmonary resuscitation on manikins, setting up of intra-venous infusion, monitoring of vital signs in an anaesthetised patient, maintenance of airway in unconscious patient, and the handling of anaesthetic equipment. At the end of the posting they are given an examination, consisting of theory, and orals covering the syllabus. Students who performed poorly are asked to repeat the posting.

A questionnaire specially designed for this study was sent to all the Consultants, in the hospital. The Consultants in our own department were excluded from the study. They were informed not to disclose their identity while filling in the questionnaire. All the responses obtained were subsequently analysed.

Results

Out of 67 Consultants manning our hospital 5 of us are in the department of Anaesthesiology who were not served this questionnaire. Five were on leave, who could not be served. Thus 57 questionnaires were served. We had a 'spontaneous response rate' of 26.31% : 15 responded on their own with-in ten days' period. Inspite of several reminders after a three months' period the total responses received were 41; giving the 'provoked response rate' of 45.61% and an overall response rate of 71.92%.

By the time of this study the consultants

team approach in teaching so as to have a total concept of the situation. The crux of the matter is that we have to develop students intellectually and to cultivate their intrinsic potentials. The quality and range of knowledge and skills and attitude towards work of future medical graduates will largely determine the health of the community. The teaching and training should be taken in such a way that it is not felt as an undeserving punishment but rather a rewarding experience.

Suggestions

—Development of competencies, educationoal objectives and course curriculum and evaluation.

—Recognition of Community Medicine as a clinical subject.

—Establishment/development of infectious disease ward/hospital and its control with Community Medicine.

—Establishment of Epidemiological Unit in teaching hospital.

—Change in examination pattern of Community Medicine after clinical phase.

—Community posting including in rural areas during ubdergraduate curriculum and internship.

—Reorientation of staff of Community Medicine towards infectious diseases.

—Reorientation of staff of internal medicine, paediatrics, Obstt. & Gynae. and others towards epidemiology.

—Specialist courses of postgraduate levels in epidemiology.

—Establishment of perfect liasion between Community Medicine and Internal medicine.

—Provision of better living and teaching facilities in rural areas including better communication.

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An Approach to the Teaching of Demography In Medical Colleges in India

By

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Summary

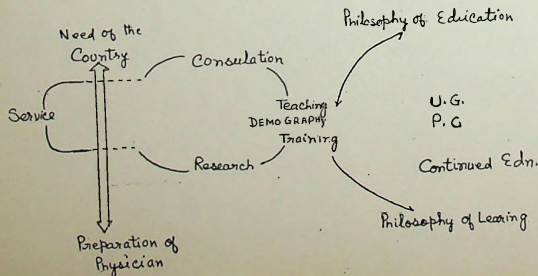
1972-74 experience of Teaching of Demography to medical students at JIPMER, Pondicherry gave an impetus to continue this effort to gain experience for future teaching and training. During 1974-76, an effort was made at Mysore Medical College to emphasis, teaching of demography to medical students. From this experience students and staff reactions. lacunae in teaching of demography in Medical College is highlighted. Areas of application in demography is pointed out which is the present concern for India and the World.

Introduction

Demographic approach to study the community is being emphasised sometimes for analytical purpose or as health indicators. Linking demographic data and social data with epidemiological data is a technique for analysing the interaction between these variables and the health situation. Demography exposes characteristics of individual, of family and features of the environment.

Irregularities in the demographic indices are characterised by differences in age structure between population which in turn makes it necessary to use different approaches to the organisation of Medical care in various parts of the country. Medical Education system has a link to facilitate a change. (Fig. 1) Thus in the last few years efforts are being made to bring Medical Education in tune with our country's situation.

Fig 1 Fundamental Function Of Medical College Stretched to the Current Need.



Countries like India, which are suffering from population pressure have come to realise that a whole new set of measures are needed to change some age old ways of thinking of habits and tradition.

Recommendations

Recommendation of M.C.I. on Graduate Medical Education (Sept. 81) recommends—' During first three terms principles of sociology, including demography, population dynamics and elements of biostatistic social factors related to health and disease, urban and rural society urbanised impact on health and disease, community behaviour and ecology...

Recommendation of the Conference on Medical Education held in 1971 at New Delhi recommends—' Every medical college should have a standing curriculum committee which should always be active, should incorporate the desirable changes from time to time depending on national and community needs. It has to be responsive to social and cultural changes...

National Seminar on the Physician and Population change 1979 recommends— 'reorient to produce competent physician...Social science and Demography should be included...

Sri Lanka conference on Population and Development in 1979 points out—population and development are recoganised almost universally as different sides of the same coin...

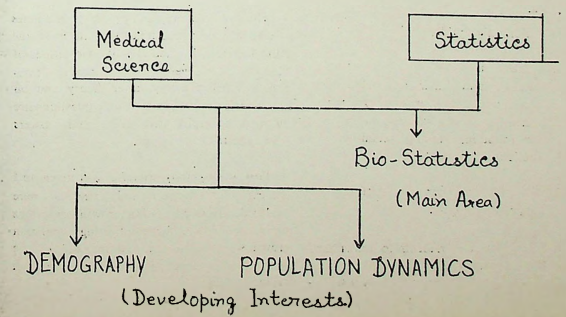
Bucharest represented a milestone in making Governments consider how population affects economic and political stability.

Conference on the Teaching of Demography in Medical Schools held in Bogota, Colombia during 1968 recommends—to coordinate a series of demographic theme and their interrelationships with health.

Current Picture

Fig. (2) and (3) depicts the current picture of teaching of demography in Medical colleges.

Fig. 2 Teaching of Demography – Current Picture



Medical science and Statistics have contributed Biostatistics which is the main area of work today, Other developing interests are Demography and Population Dynamics. Fig. (3) clearly points out starting from teaching of demography in U.G. course in 2-4 hours to Faculty indifference and not clear about objectives.

Fig 3 : Teaching of Demography—Current Picture

1. Mainly Lectures 2-4 hours.
2. Subject is taught by P & S M department.
3. Staff orientation to teaching of demography is inadequate.
4. Resourse persons (in demography) are not readily available.
5. Library referene insufficient.
6. Collaborative Research (MedicalScience and Statistics) practically nil.
7. Faculty interest in curriculum oriented to effective demography teaching—indifferent and not clear about the objectives.

Objectives and work models followed

Out of many objectives one can formulate in teaching demography following were taken into consideration :

1. To provide a basic educational and informative guide.
2. To coordinate a series of demographic themes and their inter-relationship such as socio economic implication, fertility, mortality, migration and urbanisation, family planning and policies on population.
3. To make students aware of the help from demography.
4. To make the students to understand the need for an alternative policies, promotion of demographic considerations in development planning and development of policies and programmes in the country.

Work Model

The aid series prepared by the programmes of teaching and research in population of the Pan American Foundation of Associations of Medical Schools were used in teaching demography. Before theory, after theory and on the day of terminal examination—questionnaire on the demography were given and answers were collected for analysis.

Post demography exercise was given to I clinical year students and answers were analysed. Here population growth, important problems of India, factors affecting population growth were emphasised. At the end of the course students reaction was obtained through evaluation slip.

Selected group of teachers were interviewed to obtain :

—their consideration regarding importance of teaching of demography in medical colleges.
—their applicability.
—additional skills for the teaching of demography.

Fig. 4. Work Model followed in teaching of demography.

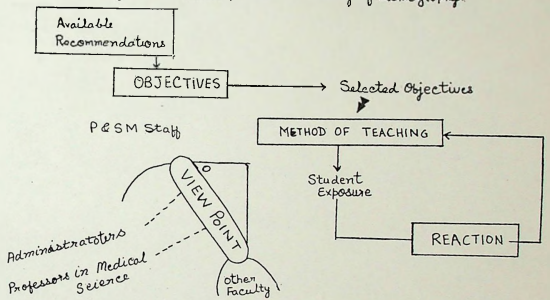


Fig. 5 : Teaching of Demography—Main activities at Mysure Medical College

—Lecture.
—Lecture cum Discussion.
—Discussion primarily with students preparation.
—Field exercises in small group.
—Library studies in small group.
—Syndicate studies.

Reactions from Students

Majority of students reaction were favourable.

A few were critical for teaching in a seperate name. They felt that demography was too elementary for medical students.

A few were of the opinion that demography was nothing but figures, rates and ratios.

Application of demography in service planning was appriciated by one and all.

Reactions from Staff

Staff whom we interviewed did not favour a seperate course in demography to medical students.

They accepted the relationship between physician and population change and further doubted the application of knowledge in the health planning.

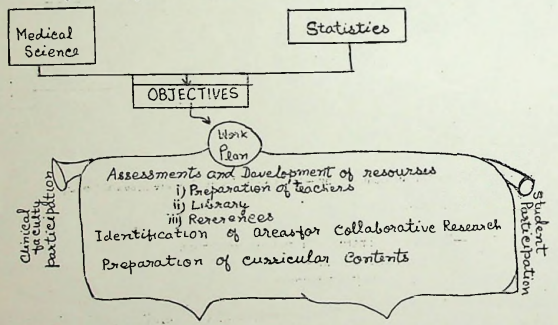
Teaching with practical approach was welcomed by all.

The views summerised here highlight the area of misunderstanding among staff and students in teaching demography to medical students. Here time factor, discipline responsible and applicability are questioned by them It is specifically pointed out by majority that Preventive and Social Medicine department puts show off through incorporation of sub-disciplines in teaching.

Areas of Importance and Future Interest

Work plan is suggested for an effective colloboration which can result in a fruitful outcome (Fig. 6). From time immemorial it is known that faculty and students play key role in this regard.

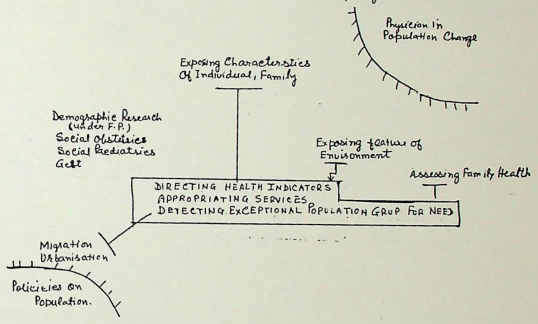
Fig. 6 Suggested Steps in Planning



Pointed out areas of search and research in demography (Fig. 7) clearly indicates the tungston in the bulb for glowing. Exposing characteristics of individul and family directs

the need and the servies Community aspirations in health, fulfilment of community expectations, manpower planning for our country, demographic indices as determinents of community need and services have become the present concept and scope in teaching of demography in Medical colleges.

Fig. 7 Area of Search and Research in Demography



Conclusion

Three years of trial and approach in teaching of demography in medical college clearly indicates that it is in formative stage. Developing interest in demography are not yet touched upon. Staff orientation and collobarative research have greatest importance.

The tried experiment is one of gradual exposure on applied aspect of demography. Method of teaching was kept flexible for an active experience in learning.

Faculty sneezed uncertainty and students appreciated to little extent with a feeling of load on their curriculum.

On the whole, there is a need for :

1. Teaching of demography in the area of developing interest.
2. Formulation of pattern of integration of teaching of demography in medical colleges.
3. An approach to the teaching can be arrived at through workshop or Institution.
4. Crystalisation of World Meet, Population Commission Sessions, World Conferences on Population are needed.
5. Not to allow exponential growth of our ability to collect, store and porcess

information far faster than our ability to synthesise and interpret it.

6. Adoptibility of resolutions of leading organisations like UNESCO, UNFPA re to be pointed out from time to time.

Lastly, the words of Demographer Ashish Bose —"What we are seeing is proof that urban misery is a necessary but not sufficient impetus for migration.

"The hope of the demographers which they say is sustained by human experience, is simply that the greatest number of people will go to the areas of greatest opertunities and that it will work out over time:

ACKNOWLEDGEMENT:

The author is highly indebted and grateful to the primary stimulation and experience at JIPMER, Pondicherry under the guidance of Dr. D.K Srinivasa, now Professor and Head of the department of Preventive and Social Medicine, Goa Medical College, Panaji, Goa.

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Performance Factors of Medical Students— An Interrogatory Study (Part III)

By

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INTRODUCTION

The eminent medical educationists all over the world have not spared even a little span of various period for the critical analysis of the performance factors of the medical students which might prove directly or indirectly beneficial to the incoming future professional colleagues. The medical students, inspite of their best efforts, achieve a wide range of scores in the examination, though they are exposed to almost same teaching/training environment with their past brilliant scholastic performances in most of the cases. Keeping in view the importance and practical, utility, a study on performance factors of medical students was carried out with the objectives to find out the extent of significance of these factors in relation to various score grades.

MATERIAL AND METHODS :

The present investigation was conducted on paraclinical students (1980-81 batch) under the Department of Social and Preventive Medicine, M.L.B. Medical College, Jhansi (U.P.) India. Of 98 students, only 69 (70.4%) could be covered due to various obvious reasons such as continuous absence from the class and non-co-operation in the study. The informations on various performance factors were collected on predesigned and pretested proforma.

The medical students were categorised into three groups depending upon the percentage of average scores obtained in the first professional examination. These scoring groups were low with 50-55% marks, average with 55-60% marks and high with more than 60% marks. The analysis was done manually and test was applied to elucidate the significane of differenee wherever possible.

Though, a large number of performance factors were taken into account for the purpose of the study, however, only a few are communicated in the present communication as various other factors have already been reported (under publication).

OBSERVATIONS :

Various performance factors such as personal habits, addictions, hobbies, mental status, extra curricular activities and monthly

due to rapid urbanization and the attendant socio-pathology are quite visible in the dense, crowded cities like Calcutta or Bombay although we may not have large scale studies on this aspect. One must be, however, cautious in adding that all these manifestations of mental ill health may not be entirely due to over population per se but due to its interaction with other factors like poverty, societal failures, disease, etc. Thus it may be stated that over-population has been one of the crucial factors impeding the attainment of social goals in India. This is an illustrative rather than an exhaustive discussion.

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Health in the Epidemiological Perspective

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The factors determining the fertility behaviour, the national and regional differences in the fertility patterns and the factors responsible for these differences are dealt with. The co-relation between family size and the health status of the family is illustrated. Infants and pre-school age children are worst hit in large families particularly with upper respiratory tract infections ; high birth order children suffer malnutrition.

The content and scope of Public Health like society itself has undergone constant change. As old problems are solved or fade into minor significance, new ones or those unappreciated in the past arise to take their place, so much so that Public Health finds it necessary to redefine its field. From its traditional concern for dealing with problems of the environment and pestilential and mass diseases at a time when these posed as formidable threats to human existence, it has grown into newer fields. In this endeavour 'Epidemiology' was its principal tool. Soon it was realized that the perspectives and principles of epidemiology could be usefully applied far beyond the disciplines traditional realm of communicable diseases to the study of multiple determinants and consequences of chronic diseases and accidents, to studies of growth and development, pregnancy outcome and prematurity and to studies of health relevant behaviour and the working of health service systems.

Admittedly, Epidemiology has been a late comer in the field of Population and Family Planning. As a discipline basically concerned with problems of health and disease as 'mass phenomena' it is only justifiable that its frontiers are now extended to comprehend the complex problems of population overgrowth and approaches to solve them. Conceptually, Public Health's growing concern about population problem is most appropriate, timely and sound as 'Health' is now being thought of not in terms of disease or mortality alone but in terms of the overall well being of the individual in the society so much so our health strategy ideally should be geared to promoting higher standards of human efficiency and satisfaction. In this context, let us examine how an epidemiological approach is not only relevant but offers the plausible solutions to population problems related to health. It may be useful to identify certain special areas in which epidemiological principles can be applied with advantage to population and family planning:

Firstly, it relates to Community Diagnosis of the population problem itself which will include:

determination of the extent of the problem at various levels including pressures on the social, economic and health systems ;

assessment of reproductive risks and identification of high risk groups ;

study of the changes in patterns of health and disease and health behaviour and their determinants in population groups ;

examination of the relationship between family size and health: relationship between high infant mortality and foetal wastage to fertility.

(II). Epidemiological assessment of fertility control methods under clinical and field trial situations.

(III). Field studies relating to physiology of reproduction - study of physiologic variables in fertility, lactation practices, antecedents and consequences of foetal wastages, perinatal and childhood mortality, etc.

(IV). Epidemiology of family planning behaviour.

(V). Epidemiology of programme acceptance including study of impact of health programmes on Family Planning acceptance.

(VI). Evaluation of Family Planning Programmes.

Our main objective today is enhancing the quality of life of people aiming at promotion of health and human efficiency. Family Planning is no longer viewed in isolation but as an integral facet of health care.

This conceptual change helps to bring into sharper focus the potential benefits accruing from family planning to all members of the family, especially to women and children. This in turn must enhance the acceptance of family planning and bring down birth rate.

In order to appreciate the favourable influence of family welfare planning on the physical, mental and emotional health and well being of the total family, it is essential to examine carefully the effects on health by repeated, ill-timed and unplanned births. One has to consider the complex interrelations between family planning variables such as family size, birth order, birth interval, maternal age and set of dependent variables such as perinatal and childhood mortality, maternal morbidity and mortality, the total health of the members of the family including physical and intellectual development of children, the interplay of environmental and socio-economic factors which influence this association should not be lost sight of, but a detailed discussion on this is beyond the scope of this paper.

It must be remembered that 'Health' is a key variable in population dynamics and family planning programmes. Morbidity and mortality which are epidemiological determinants of health status are variables which influence fertility behaviour and in turn are affected by it. Let us look briefly into the dialectical nature of this eternal interaction. Perinatal and childhood mortality, deemed as sensitive community health indices are shown to be affected by family planning variables such as parity and maternal age. It is relevant to recall that the association between parity and childhood mortality was recognised nearly two centuries ago. At a time when I. M. R. in Great Britain cannot have been less than 200/1000 live births, it was shown by Bland (1781) that proportion of children surviving decreased with increasing family size.

Several recent studies have clearly shown that the risk of still-birth is relatively high for first births, lowest for the second birth, and gradually increasing after the fifth or the sixth birth. Infant deaths especially in the post-neonatal phase and early childhood mortality increases steadily with parity. Morris and Heady (1964), who studied the social and biological factors associated with infant mortality, observed that 'social factors act through and upon biological factors affecting the size of the family, the spacing of children, the nutrition of mother and child and opportunities for infection' and concluded that parity, mother's age, her social class and the region in which the parent lived exerted largely influences on still-birth, neonatal and post-neonatal mortality rates. The British perinatal mortality survey (1958) too reported identical results.

American study, Shah and Abbey (1971) brought out that risk of both neonatal and post-neonatal deaths was considerably greater among infants whose mothers had no prenatal care as against those whose mothers received pre-natal care. New Combe (1965) based on a study undertaken in Canada found that the risk of infant death was highest for infants born to mothers under 20 years and dropped to a low in the maternal age range (25-29 years) and rose against with age. Indian studies (based on hospital statistics principally) have shown family size-and malnutrition of mother and infant as important factors–associate with infant mortality. Constant child bearing is not only an unhealthy burden on the mother but that large families, malnourished and living in overcrowded dwelling places were very susceptible to infection. Bajpai et al (1966) brought out that risk of perinatal mortality increases at maternal ages greater than 25 years and sharply after 35 years and that it was highest in first births, lowest for second and increased thereafter. It was observed that low birth weight was another major cause of perinatal mortality and that 70 per cent of losses occurred in poorer classes of people. Mehdi et al (1961) brought out that the principal biological classes of perinatal death were related to maternal age and parity. One of the major recommendations for pre-natal care was not only to correct the obvious deficiencies but to maintain optimum nutrition of the mother and the foetus. Regarding the hazards of grand multiparity there is documented evidence that it carries increased risks of maternal mortality and obstetric complications such as

pre-eclampsia, eclampsia, placental disorders, uterine rupture, mal-presentation and haemorrhage.

As a result of general decline in fertility in the West, there has been significant reduction in the mortality among grand multiparas treated in modern hospitals; yet the relative risk-associated with multiparity continues to exist and morbidity has not declined as much as mortality. Studies have shown that maternal mortality in grand multipara remained twice as great as that for all deliveries and I.M.R. nearly 3 times greater for infants of grand multiparas.

Grand multiparity continues to be highly prevalent in the developing world and morbidity and mortality associated with it are obviously high. It may be recalled that in India the incidence of 'Improvident maternity' itself is nearly 40 per cent. Though reliable data on mortality exprience by parity and age are rare from developing countries, it may only be fair assumption that grand multiparas fare worse in these countries compared to the West.

Among other health hazards to which multipara are exposed, two deserve special mention: namely diabetes and cancer cervix. Several studies have indicated that after the age of 40 years the incidence of diabetes is higher among women than among men and that diabetes increased with parity for the women. In one study it was pointed out that occurrence of diabetes was equal in unmarried women and in married women who had no children and that compared with multipara diabetes was about twice as common in women who have had three children and six times as common in those who have had six or more. There have been several reports on the association between multiparity and cancer cervis. It has been suggested that association with high parity may be due to early marriage in these women. Indian workers, Wahi et al. (69) have further corroborated this view.

Birth/Pregnancy intervals

It is well known that pregnancy constitute[8] an intense stress in any woman's life preying on her innate resources. An appreciable interval between births therefore is generally accepted as useful to the health of the mother and the child. Khanna study has shown that birth interval seemed to exert the greatest influence on mortality during the first year of life; neonatal and infant mortality were high for infants born less than two years after a previous birth; the mortality rates declined as birth intervals became progressively longer than two year for mortality in the second year of life, the rate was highest for infants born after an interval of less than one year.

Family Health

There is overwhelming evidence from studies conducted in various settings to illustrate the correlation between family size and health status of the family for risk of infection. Infants and pre-school children are the worst hit especially with upper respiratory tract infections and gastroenteritis.

It has been well established that malnutrition is directly related to the increased strain on family resources with each additional child. The worst hit are children and women during pregnancy and lactation. Children below 5 years constitute a major vulnerable segment of our population from the nutritional point of view, 15 percent of India's population as against 6-8 per cent in advanced countries. It may be remembered that 40 per cent of our total deaths occur in this age group as against 3-7 per cent in advanced countries. It is also a matter of concern that the decline in I. M. Rate witnessed in this country has not been reflected on the pre-school child mortality rate. This apparently acts as a motivating force for bringing up large families specially in our society where every surviving child is deemed a potential asset. Nutritional status of surviving children is most unsatisfactory. In a revealing study confined to Pediatric Wards in S & E. India it was found that 15 per cent of hospital beds were occupied by frank cases of malnutrition (P.C.M. avitaminosis A and anaemia).

Analysis of hospital cases of severe forms of PCM showed that of these children only 39 per cent belonged to birth orders three and below while 61 per cent belonged to birth orders four and above. A Study of 1,500 children in Peri urban Hyderabad showed that 32 per cent of children of birth orders four and above exhibited various signs of nutritional deficiencies whereas only 17 per cent of children of earlier birth orders (1-3) showed such evidence.

Another vulnerable segment of population is expectant and nursing mothers. At any one time in India there would be atleast 5 million

expectant mothers in their last trimester. Approximately 25 million pregnancies occur per year in India. Great majority of the pregnant women subsist on diets grossly inadequate in many nutrients both during pregnancy and lactation. Contributing considerably to maternal mortality and morbidity the relationship between family size and dietary status deserves particular attention.

Anaemia as an important cause of ill-health and mortality among women of child bearing age deserve special mention. Hyderabad studies have shown that the incidence of severe anaemia was significantly different between women having three pregnancies or less and those with four pregancies or more.

It may in conclusion be observed that there is clear indication of the impact of family size on nutritional status. Frequent pregnancies of women subsisting on marginally adequate diets impair their health and impose additional burden on child care. It is also noteworthy that given the food standards limitation of family size 3 or less children will significantly improve the nutritional status of preschool children and reduce maternal ill-health and mortality.

A word about the association between intelligence and family size would be in place here. Studies conducted in the West have indicated progressive decline in intelligence scores with increasing family size regardless of social class. It has also been shown that development of intellect is favoured by the small family environment. There has also been some indication to suggest high degree of association between family density and mental retardation. There is likely to be great emotional investment, warmth and concern on the part of parents of small families for physical and mental development of children whereas in large families in spite of parents' concern for their children's well-being, there is simply less opportunity for parent-child contact. This smaller degree of contact in larger families may be reflected in poorer-slower-development of verbal ability in these children, a factor which may affect the children's performance on intelligence tests. Investigations have established that the growth of the intrauterine child is significantly retarded in the last seven weeks of pregnancy on account of lack of nutrition to the expectant mother. There is also evidence that the last six weeks before birth and first six weeks afterwards are the period of most rapid and critical brain development. The magnitude of the problem and the urgency for critical intervention are obvious when we recall that approximately 17 per cent of births in India are premature, partly attributable to malnutrition.

My endeavour simply has been to broadly outline the gross implications of the unplanned family for the total health of the family. There is overwhelming evidence available today on the subject, as could render further research on the subject nugatory. But this knowledge would mean little unless it percolates through all the echelons of the service hierarchy and thence to the village couples who need it most. That brings us to the crux of the problem. Have we today the requisite machinery to disseminate this message to the masses? And, what is more, are we confident enough to accept this great challenge? If past performance is a pointer, our failures and weaknesses both in strategy and implementation are fairly obvious. The images of rural health in general and family planning services in particular are far from flattering. It is worthwhile to recall here a significant statement by the Hon. Minister for Health, Dr. Karan Singh, "Unfortunately the family planning scheme had been conceived in such a manner that it had come to mean a scheme that benefitted only the Government. "Family Planning", Hon. Minister suggested, "should become a mass movement where people are motivated to 'demand' family planning service".

Two issues implied in his statement, namely motivation of the couples to demand family planning and matching it with adequate health services based on an epidemiological analysis, demand special attention. Let it be remembered here that 'demand for service, in our context' should be deemed as a late stage in the process of integrating modern medicine with our cultural matrix. To render this possible one should begin with, as Bryant has put it, creating an awareness. The awareness 'becomes a concern, then an expectation, then a demand and the demand grows faster than the possibilities of response'. It has to be frankly admitted that we have not progressed beyond the initial phase in this direction. It is here that the epidemiological approach would be of great help.

While considering the family planning behaviour of the community, the question of acceptability of contraceptive methods deserve our attention. Let us take the question of the 'ideal contraceptive—a thing that is so elusive.' We seem to be sold to the idea especially in recent times that once we develop a suitable contraceptive, it may be a panacea for all our ills in the population front. While we should not slacken our research efforts in this direction by any means, one has to be pretty guarded while making such assumptions. History has taught us that community acceptance of a certain health dictum or practice, however beneficial and attractive it may appear to be, cannot be taken for granted. The consumer has his own value of judgement which we often lose sight of. To quote an example: even a health practice like smallpox vaccination has not received universal acceptance even today among our communities.

The second crucial issue is the provision of a basic minimum health care and merging family planning with it as its core. Drawing inspiration from the reports of the Bhore Committee and the Mudaliar Committee—the Government have undertaken the major responsibility for tackling health problems of the country for which purpose a huge network of service agencies has been established. The P. H. C. sub-centre complex has come to stay. But if it is to act as a powerful instrument for providing basic integrated health care to the rural masses it needs to be thoroughly overhauled. It is generally agreed that the pride of place among the basic services should go to the maternal and child health services.

I had occasion to closely observe the rural health scene in one of the prosperous districts of a prestigious state in the country. I was stunned to learn that M. C. H. services often exist only on official records. Cut away totally from social life to which they are accustomed, made responsible for one lakh to one-and-half-lakhs population scattered over 100 villages with primitive communication systems, and operating on a meagre budget (Rs. 5000-7000) the medical officers feel unequal to the demands of the situation.

Today we are committed to giving an added boost to our family planning efforts making it the pivot of our health scheme. It remains to be admitted that while the great struggle to provide basic services to rural masses continues relentlessly, the academic community of the medical college unfortunately, remain passive onlookers. The prevailing tendency was to isolate themselves completely from the mainstream of public health services. It may be pointed out that the corrective lies in a wholehearted attempt to move out of their traditional realm to join hands with health administration in developing health strategies to suit regional singularities within the overall framework. It is obvious that a deliberate and total commitment on the part of the medical educationists to improve the image of rural health services should be deemed an essential pre-requisite to usher in the social orientation of medical education.

I shall conclude by quoting Rene Saud "The place of medicine is in the stream of life and not on its banks".

Guest Editorial

Community Medicine—The Never Born—A Story of two Decades

By

D. Anand

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It was in early sixties that India as many other countries in the thrid world were happy to turn a new leaf in the medical education system. Social and preventive medicine - a newly constituted department with full time faculty members was added to the medical school with the hope that medical education will get rid of most of the ills related to the preparation of a medical graduate for service in the rural areas. Perhaps in that euphoric period it was not realized that we are attempting to entrust so much to so few with so little. Well, in the eighties now we do have a hind-sight if not the wisdom.

One may ask the question 'did community medicine or its synonims (social medicine, social and preventive medicine) ever get a chance to be born and become viable ? What went wrong between the concept as visualized and the realities observable in most of the medical schools who experimented with the idea particularly so in the developing countries

The answer to these questions can be obtained by a review of three facets to the development of the academic aspects of community medicine.

Firstly, the faculty drawn for community medicine was mostly composed of those who in the early period came from the field and there-after completed post-graduate studies to qualify as teachers. They were considered out-siders to the academic world who get rapid promotions becanse of the vacancies that existed. Even today the faculty members in this department as one teacher stated 'continue to be second class citizens'. The ranking is not so much a result of lack of professional training. It is a part of mental block mostly attitudinal, which accepts the presence of community medicine departments in medical schools with reservations.

It also needs to be noted that if the early teachers in the subject lacked academic competance, today they are handicapped with lack of adequate field experience. Either of the two situatious prevent optimum growth and professional recognition.

Secondly, the facilities given to the departments of community medicine. Medical faculties concious of standards so as to provide the details of dessecting tables or microscopes. failed to identify the minimum requirements of a department. There are very few medical colleges where the faculty in the early stages were responsive to the needs for establishing out of the wall field training sites. Intrestingly

enough some of these experiments were successful in those medical schools where there was no separate department or where a clinical professor coordinated the student activities such as in Thailand, Turkey and Colombia. These are exceptions but they did provide strength to support the statement that community medicine at the undergraduate level should be primarily seen as practice of good medicine.

Paradoxically the institutional problems fade into insignificance compared to the bottle necks faced in dealing with the government controlled health care programms to establish field training sites. In retrospect, it is the government health departments which fostered the ideas and stimulated the universities to take more active interest in training a basic doctor who could serve the largest section of the population of their respective countries. But in implementation, the beurocracy has moved at its own pace some-time even contradicting the tacit acceptance to support the medical faculties community based programme. The governments in most of the countries have moved with extreme caution in providing universities the freedum to operate in a community as they do in a hospital. Very few medical colleges in recent history and specially so after the Alma Ata Conference (1978) can claim to have carried out any significant research which may have contributed to innovative approach(es) in primary health care. To a large extent, this could be associated to the governments lack of support to the university programme On the other hand where the governments have trusted the medical faculty to undertake operational research specific to the service needs, the tesk has been successfully accomplished One of the most recent examples is the Departmeat of Social and Preventive Medicine of the University West Indies which has been given the UNICEF award for their contribution to the development of health service in the Carribean region (fourteen Carribean territories).

Thirdly the student perception of the role of community mediciae in their professional development. In most of the para and clinical departments students get fair mix of learning opportunities of what is taught to them. In this learning experience, the teachers are active participants. On the other hand, the teachers in community medicine act through and with the cooperation of the staff in health centres Very often the discussions in the classroom find little evidence in every day work experience. In such a situation student is likely to get an impression (and very n turally that community medicine is the name of a mental concept that is to be talked and discussed but it is not seen in day to day practice for it is not born,

When will the gestation period be over ? When will the medical faculties take the step forward to demand their rightful place in providing services and conducting operational research on major health problems seen in their respective regions ? When will the government health departments accept the medical faculties as equal partners in a joint venture for service to all by the year 2000 ? It is only then that the community medicine will be born.

Inaugural Session

Opening Remarks*

By

P.N. Wahi
Hony, Executive Director, I.A.A.M.E., New Delhi.

Your Excelleney, Dr. D.J. Reddy. President of the Association, Mr. Vice-Chancellor, Dr. Sharma, distingushed participants, ladies and gentlemen As Executive Director of the Indian Association for the Advancement of Medical Education, it is my privelege to welcome the distinguished guests, members of the Association and participants to the XXII Annual Conference of the Association. We are very grateful to the Director General of Health Services, and the Central Institute of Psychiatry, especially its Director, Dr. Shridhar Sharma who has put in considerable efforts to organise the holding of the Conference.

We are very grateful to His Excellency the Governor for his agreeing to inaugurate the Conference. On behalf of the Association I feel happily priveleged to welcome you, Sir, to the Conference. Advice coming from a leading personality like yourself — involved in education and selection of educationists, responsible for shaping the destinies of the country, would be acceptable to the profession in the much needed reorientation of medical education and health service programmes of the country to meet the needs of the society.

Students and teachers all over the world are equivocal in expressing their discontent with the existing medical educational pattern as completely inadequate to train a doctor to meet the constantly changing needs of the society. The changes are a reflection of the dynamic revolution of our social structure, especially during the last three decades. Since medicine functions as a part of the society, it must be amnable to change, if it is to survive. To day, we are launching on a realistic programme of seeing hew medical education can meet the requirements of a developing society and how best to shape the future of medical education and research, so as to be acceptable to a democratic society in a developing country like ours. It is for this reason that we have decided at this occasion to invite, besides the medical educationists and health personnel, economists, sociologists and experts in population dynamics to participate in the conference to give a frank appraisal of the structure and the manner in which the problems that face the society in regard to medical care can be tackled.

*XXII Annual Conference on the I.A.A.M.E. Central Institute of Psychiary, Ranchi-29th-31st January, 1983

on their capacity to function as an integrated team, each of its members performing given tasks within a co-ordinated action programme. It, therefore, goes on to observe that it is of crucial importance that the entire basis and approach towards medical and health education, at all levels, is reviewed in terms of national needs and priorities and the curricular and training programmes are re-structured to produce personnel of various grades of skill and competence, who are professionally equipped and socially motivated to effectively deal with day-to-day problems, within the existing constraints. It is for experts like the present distinguished gathering to translate these expectations into an effective system of education producing the personnel of requisite competence and motivation.

In our country, any system which does not keep the poor and the country-side in the central focus will continue to be elitist coverage. Unless we are able to supply personnel from our medical colleges who m the service specifications, the imbalan referred to in the National Health Policy do ment as between the rich and the poor on one hand and the urban and the rural on other would continue. Social justice removal of regional imbalances are as relev in the matter of health care as in the econo field. It is no doubt a challenging task, given the rich cultural background and high sense of idealism, it is not beyond capabilities to produce the professionally co petent manpower which would be in tune w the aspirations of the poor and the needy.

I have great pleasure in inaugurating Conference and wishing it complete succes the achievement of its objectives.

Ref: IJME, Vol 2b, No 1, Jan-Apr 1987

Dr. N. G. GADEKAR ORATION

"Training of a Diagnostic Radiologist"

By

Dr. (Mrs.) S. Chawla

Mr. Chairman, colleagues and friends, I deem it a great honour and privilege, to be asked to deliver the first Professor N.G. Gadekar Oration, at this, the 26th Annual Conference of the Indian Association for the advancement of Medical Education.

Since this is the first oration to be delivered in honour of this great man, it would not be out of place, to give a brief sketch of the life of Professor Gadekar.

Professor Gadekar, born in March, 1904, died in March 1986. He graduated from the University of Bombay in 1929 and soon after that, obtained the D.M.R.E. from Cambridge University.

During the Second World War, he joined the Army Medical Corps and served as a Major upto 1945. He was captured, along with many other British and Indian Officers by the Japanese, at Singapore, and spent a number of years as a prisoner of war. Here aimdst great privation and suffering, which caused permanent damage to his health, he kept up his own morale and those of fellow officers. After demobilisation, he joined the J.J. Group of Hospitals, Bombay. Later, he moved to Delhi and worked at the erstwhile Irwin Hospital. Bombay's loss was Delhi's gain as subsequent events showed. Dr. Gadekar reorganised the Radiology department at Irwin Hospital, cut out a lot of dead wood and set an example to the staff of the department by his hard work and dedication.

This was the time, after the British left India, when a large number of Indian physicians and Surgeons were working in an honorary capacity in this hospital. Thus, all these clinicians came in close contact with him. At that time, in the early fifties, radiology as a speciality and radiologist as a specialist in his own right, had not gained wide acceptance in the medical profession in India. Professor Gadekar's analytical approach, his diagnostic acumen and his keen interest in the follow up

of his patients, contributed a great deal towards raising the status of Radiology in Delhi and subsequently in the country.

In 1956, he joined the newly established All India Institute of Medical Sciences as the Professor and Head of the Department of Radiology. I had the privilege of working with him there from 1959 to 1962.

In those days, the department was located in a few small rooms in the nurses hostel, but the excellent, meticulous and painstaking work, done by Professor Gadekar earned him a high reputation amongst his clinical colleagues. He was the first radiologist in Delhi, to establish regular interdepartmental meetings, a practice that is now universal. He was a greatly respected and much loved chief in his own department. He was gentle, friendly and helpful, totally unselfish and a man of exceptional integrity. The hospitality of Professor Gadekar and his gracious and charming wife is legend and was extended alike to the high and the low. All of us, who came in contact with him, are richer by the experience.

The subject, I have chosen for the oration today, is the 'Training of a diagnostic Radiologist'. Before I proceed, let us first define the term 'Radiologist'. Soon after Roentgen's discovery of X-rays in 1895, it was easy to define a 'radiologist'. A 'radiologist' was a physician who had special knowledge of the uses of ionising radiations, both for diagnosis and for treatment of diseases. As the scientific knowledge increased and the scope of both the specialities widened, it became impossible for one person to be an expert in both the fields. So, Radio-diagnosis and Radio-therap separated and evolved as distinct specialiti The term Radiologist, was then used, mai for the diagnostic Radiologist.

The situation is different now. Many the newer imaging modalities do not emplo ionising radiations and thus are not strict 'radiology'. Prime examples of these are ult sound which uses sound waves, and magne resonance based on magnetism. Both the modalities produce images which have to interpreted. Since the diagnostic radiologis are trained in the art of reading shadows a interpreting images, it is easier for them to u these techniques also. Most of these new imaging modalities are, actually, being used people who were originally using X-rays. S the term radiologist is usually used instead an imaging specialist.

In developed countries, where the depar ments of Imaging are large, most radiologist take up only one sub-speciality. Here, th conditions are very different. The number radiologist are very few. Often there are on one or two radiologists in the department an they have to carry out all the imaging invest gations. Therefore, it is essential that a train radiologist should be given an exposure, thoug a limited one, to all the relevant imaging tech niques. Later on, depending upon the specia needs of the department, where they will wor they can take refresher courses and furth training in that particular imaging technique Only a person who knows something about th various imaging modalities, their uses an limitations, can select or advise regarding th most appropriate investigation for a particula clinical problem. Since conventional X-rays, at least in the developing countries will conti nue to be the mainstay of radiology, for a long time to come, training in X-ray diagnosis will have to be more comprehensive.

The next point is to assess, how much radiology does a graduate know, when he joins a post-graduate course? It is the experience of most teachers of radiology, that very often, the newly qualified doctors do not possess even a basic knowledge of the subject. This is due to the fact that not enough teaching or training in radiology is being imparted to the undergraduate Medical students. We all agree that undergraduate medical curriculum is already overloaded and additional burden on the student is undesirable. If it is accepted, that a basic knowledge of radiology is an essential part of the training of any physician or Surgeon, then ways and means can always be found, of imparting this knowledge.

In most medical colleges in India, a few radiographs showing normal anatomy are shown to the students during their Anatomy lectures. During the clinical years, they are supposed to study the radiographs of their ward patients and thus learn the rudiments of radiology. During the final year, some didactic lectures are taken, the number of which varies from one College to another. The quality of teaching and the number of radiographs shown and the techniques discussed again varies from one individual teacher to another. During internship, there is a very brief exposure of the interns to the Radiology department but this is again optional and insufficient. However, the training is inadequate in almost all the Medical Colleges.

Many clinicians still argue that little formal teaching is needed as the clinicians teach radiology to the undergraduate students on their ward rounds. There is no doubt that the clinician acquires considerable knowledge of the radiology of his own speciality, but he does not, however, have the radiologist's experience in teaching the subject. He may teach them how to recognise various patterns of diseases pertaining to his own speciality, but without training them in the analytical approach. The students need a well planned radiology course, which should not only introduce them to film interpretation but also instruct them to choose the safest, cheapest and the most direct means of arriving at a diagnosis. This will be of great help to them in their clinical work after graduation, even if very few of them will take up the speciality as their career. Those who will take up the speciality will benefit if they already have some basic knowledge of the subject.

Next, we come to the *Selection of Candidates*. In the past, every aspirant to a post-graduate qualification in India, at first tried for admission in one of the major specialities like medicine, surgery and their allied subjects. Radiology was a last resort, of the unsuccessful candidates.

Now, with the advent of modern imaging techniques and the ever-increasing reliance being placed on investigations and better career prospects, the scene has now completely

changed. More and more students are now opting for radiology, some of them making it their first choice. The selection of candidates, is however mostly not in the hands of the teachers. The Universities follow a uniform pattern for admission into various disciplines. It may be argued that the practice of radiology depends a great deal on visual acuity and on analytical approach, so a good eyesight is essential and psychological tests for the reasoning power, mandatory. However, in actual practice, marks in the examination, either in the M.B.B.S. or in the admission test are usually the only criterion for selection. Once the candidate is selected, there are only 2 to 3 years in which the person has to be trained. It is understood that the trainee will be a full-time student attached to an academic department for the duration of the course.

The training can be divided into four basic components :

(i) Thesis or Dissertation.

(ii) Basic sciences, including physics as applied to Radiology.

(iii) Diagnostic Radiology and newer imaging techniques.

(iv) Concepts which are specifically applicable to diagnostic Radiology.

(i) Thesis or Dissertation

In most Universities a thesis is a prerequisite for getting a post-graduate degree. The thesis subject, if properly researched, takes up a great deal of the time of the trainee. the other hand, if no exposure is given research methodology and review of the wo literature, the training remains incomplete. is my belief that writing a dissertation is us provided it is kept brief and does not en spending too much time, on the part of candidate.

(ii) Basic Sciences

The practice of diagnostic Radiology based on knowledge of normal anato physiology, biochemistry and the paraclin subjects of pathology and microbiology When seeing an image, unless one is fu conversant with the normal, the deviation fr the normal is not noticed. If deviation noted then the next question is, is it a vari of the normal or is it pathological? If i pathological, then what is the pathol Adequate knowledge of the basic subjects related to radiology is thus essential.

This can be best achieved by briefly disc sing the anatomy, physiology and pathology various systems or organs before their rad logy is discussed. If it is possible, mu disciplinary seminars and symposia can be h on selected subjects. This will be helpful the post-graduate students of all the specia ties of that Institution.

The trainees also need to learn basic rad logical physics and details of the equipme used in the department. In the past, wh equipments were simple, many radiologi were able to repair minor defects of th machines and knew each and every component of their equipments.

This is not possible now. With each passing year, the machines are getting more and more sophisticated and computerised technology has come to play an important role in imaging. These machines are now repaired by highly qualified engineers usually under annual service contracts. But, it is still necessary to know the principles on which these equipments are based and also how to handle them so as to avoid frequent break-downs and damage to the equipments. Such training is usually imparted by radiation physicists but in departments where there are no physicists, the senior radiology teachers have to do this job.

The third component of training is expertise in diagnosis by imaging techniques

How much emphasis should be given in the curriculum to the different modalities? This naturally depends to some extent on the local conditions. In India, except for a few upgraded Institutions with large and well equipped imaging departments, most of the teaching hospitals have only conventional radiology equipments and ultrasound.

Therefore, knowledge about modalities like computerised Axial Tomography, Nuclear Magnetic resonance and Positron emission tomography etc. can only be theoretical in nature. Too much time need not be spent on these. A brief introduction to the subject, the basic principles on which these modalities are based, indications for their use, advantages, disadvantages and their limitations is all that is necessary. If it is feasible, the students should be posted for a fortnight to upgraded departments of Radiology where they can see these techniques being used.

Ultrasound is in a different category altogether. The ultrasound equipment is now available in most teaching hospitals and is being used extensively in the country. Ultrasonography is essentially an operator oriented modality and improper placement of the transducer can completely transform the image. It is a recognised fact that if the operator is not properly trained, incorrect diagnosis are often made, bringing the modality into disrepute.

In addition to the formal, theoretical teaching of ultrasonography, actual practice and handling of the equipment must be done by the trainee. The students should be posted by rotation to the ultrasound section of the department, where they can work under the supervision of a member of the faculty. A very large number of diseases can be correctly diagnosed by ultrasound. Therefore, certain amount of expertise is expected from the post-graduate.

Diagnostic Radiology which constitutes the major work of any department, needs a great deal of time and attention of the trainee. Large number of conditions have to be recognised and correctly diagnosed. The best method of learning radiology is to see a large number of X-ray films, of various lesions, study them, describe the images and then by process of elimination, reach the most likely diagnosis. Before this can be done effectively, a sound and 'in-depth' knowledge of various clinical dis-

ciplines like medicine. surgery, pediatrics and orthopaedics etc is required.

It is the experience of all of us that despite the one year's internship and one year's housemanship usually the graduate has only superficial and perfunctory knowledge of the clinical subjects.

In the short training period available, it is not possible to post the students to various clinical departments for refreshing their knowledge. Therefore, the trainees should be encouraged to take detailed history and do the clinical examination of the patients who are referred for radiological examinations. If it is not practical to do this on all routine cases, at least all the patients who are referred for special investigations should be studied in detail.

All academic departments should have daily departmental meetings. At these, all the positive and interesting X-rays of that day should be seen by all the faculty members and the trainees, before the X-rays are despatched to the various outpatients departments and wards.

The radiology department should also have frequent interdepartmental meetings with the various clinical departments, by rotation. These meetings would be useful not only for the trainees of all the specialities but also for the faculty In these, clinical history of the patient and radiological findings can be correlated. If the patient has had a biopsy or surgery or an autopsy has been performed, then combined clinical, radiological and pathological correlation can be obtained. Such free exchange of information between the various specialists results in better diagnosis and treatment of the patients, in addition to inculcating good practices in the students.

Trainees should also be encouraged to go to the wards for following up their patients and to get the final diagnosis, if possible. Pathology department is another important place which the trainees should visist frequently. A great deal is learnt by correlating the radiological findings with the gross morphology and histology of the resected specimens.

In the radiology department itself, all the trainees should be posted to various sections by rotation. Amongst these sections, the dark room is very important. Good radiology depends to a great extent, on the radiographic techniques and darkroom work. The reputation of a specialist depends upon the accuracy of his diagnosis, this accuracy can only be achieved, if the X-ray films are of good quality. These can only be obtained, if there is careful positioning of the patient, standard radiographic views are taken and there is meticulous work in the dark room. Often cardiomegaly has been dignosed when X-ray film of the chest is taken in expiration or in supine position or at short focus film distance. Fractures can be easily missed or their lack of alignment overlooked unless standard projections are taken. Artefacts on the intensifying screens, due to careless handling in the dark room can cast shadows on the X-rays which can be wrongly interpreted as pathological lesions.

In most western countries, the trainee radiologist is given only a very rudimentary knowledge about radiography and dark room work. These countries have well regulated and well appointed Schools of radiography where the radiographers are trained under the supervision of senior and highly qualified Superintendents. Moreover, most of the radiology equipments are computerised, and the radiographic exposures are automatically regulated. Developing and fixing is also done automatically.

In India, the position is quite different. Very few institutions in the country run courses for radiographers. The duration of the course and the curriculum content varies widely from one Institution to another So the training of radiographers leaves much to be desired. There is also a brain drain and many good X-ray technicians leave every year for greener pastures in oil rich countreis.

Thus, the radiologists have to most often train their own technicians, hence radiography and dark room experience must form an integral part of the training.

In order to gain experience of radiography and various examinations they should be posted to different X-ray rooms by rotation. Here they shoulsd see all the requisition forms, plan the examination and view the wet films before the patient leaves the department. They should first observe contrast studies like barium examinations and intravaneous urographies being done. Later, a certain specified number of examinations should be carried out by the trainee himself. Fluoroscopy, with or without image intensifier still plays an important role in diagnostic radiology. It is required for barium studies, for Hystero-Salpingography and various angiographic studies.

It is now universally accepted that screening of the Chest for pulmonary lesions is worse than useless as small lesions can be missed while the patient gets a false sense of security that he has no lung disease. Fluroscopy, however, is required for seeing the movements of the domes of the diaphragm, for cardiac pulsations and for cardiac valve calcification etc. specially in Institutions where echocardiography is not available. Fluroscopy is an art. How to handle the patient in the dark, specially the young and the infirm. how to allay apprehensions and how to make a diagnosis without giving too much radiation to the patient and to the radiologist. These are the various aspects of fluroscopy which need emphasis.

Interventional Radiology for therapeutic purposes has recently becomes a very important part of imaging. Ultrasound and computerised Axial Tomography guided biopsy, drainage of abscesses and various angiographic procedures to control bleeding from various sites, are done routinely in some departments. Most of the interventional techniques require sophisticated imaging equipments and experience in these procedures and may not be available in all the departments. But, some exposure to interventional techniques is necessary.

In order to train the postgraduate to diagnose various lesions, a very large number of conditions have to be shown. In the limited period available for training, no single radiology department can come across the very

large variety of X-rays required for training. Therefore, all teaching departments need to have good film libraries. In these, X-ray films, sets of investigations and fully worked up cases should be kept. These should have a brief clinical history, description of the radiological findings, possible diagnosis and differential diagnosis written on the covers The best method would be to have taped audiovisual lectures which the students can project and see as well as hear the description. These are beyond the reach of most teaching departments in the country. So, X-ray films and slides showing various conditions would serve the purpose equally well. The trainees should be encouraged to spend some time every week for self-study in the film museum.

The emphasis in the training should be mostly on common ailments. Time and again, medical educationists have discussed and bemoaned the fact that undue importance is being given in the curricula to rare and exotic diseases, at the expense of common diseases. This is applicable to the radiology students also. Very often, the students rattle off, all the radiological signs of uncommon diseases but cannot recognise diseases like mitral stenosis, ileo-caecal tuberculosis and carcinoma oesophagus etc. on the X-rays. This tendency cannot be decried too strongly. The faculty, more than the students, is to be blamed for this. Many faculty members have their pet subjects and research projects and these interests very often spill over in their daily work and teaching. The trainees should be made fully conversant with all the common as well as the uncommon radiological manifestations of diseases which are prevalent in India. After all, our aim is to train radiologists who expected to work in India, under In conditions. If a trainee can recognise corre most of the common diseases when he ob a post-graduate qualification, then to my m the purpose of training would be served any case, all doctors with post-graduate qu cations are expected to be conversant with use of the medical library. So, if and w faced with an uncommon condition, should be able to refer to the literatur consult a senior colleague. Those of trainees who later get absorbed in teac Hospitals or in large imaging departments, take refresher courses or can get trainin the particular modality which they are g to use.

An important part of training is radiation protection

Since the radiologists have to spend times in the X-ray departments, they mus fully conversant with the harmful effects radiation. It is well known that effects ionising radiation are both short-term long-term, both somatic and genetic. Not is the radiologisis and all the staff of the ra logy department but the patients as well as public at large has to be protected from ex sive radiation doses. It should be emphas that the only safe dose of radiation is no ra tion. Since this is not practical, rigid sa rules must be followed to keep the dose minimum.

In my experience of the last three an half decades of working as a Radiologist, I that people even if they know the facts, tend

become complacent and do not in practice follow rigidly the safety requirements. Thus, not only do they harm themselves but also pose a hazard to the patients and to the public at large. In this context, the history of radiology is extremely important. A great deal was published in the radiological literature in early nineteen about the lives of pioneers in Radiology and the damage they suffered by working with various radiation sources. Some of the injuries caused to the hands by handling radiation sources and various malignancies which were caused by ionising radiations can be emphasised. This will go a long way towards ensuring compliance with radiation safety precautions.

It is true, that with modern sophisticated X-ray equipments one has to be grossly careless to receive that much damage. However, many radialogists have to work with simple, low powered equipments, which may not have adequate in-built protection. Moreover, a worker in the radiology department in his or her life time is exposed to continuing subminimal doses of radiation. Since the effect is cumulative, radiation can decrease the life span, can cause genetic mutations and many somatic effects. Various international commissions on Radiation protection have laid down the maximum permissible doses which a radiation worker can receive per week, per quarter and annually etc. These are the maximum permissible doses but efforts have to be made to keep them much lower. Various ways and means of achieving this can be taught both by the medical faculty and by the radiation physicist

Some time should also be devoted to the medicolegal aspects of radiology. In the Western countries, specially in the United States of America, medical malpractice suits are filed frequently and often unnecessarily. These are not common as yet in India. However, with more and more public awareness of its rights and with spread of knowledge, it is possible that in the near future, all doctors including radiologists will have to prepare themselves for medical malpractice suits. Once the patient comes to the radiology department, then the radiologist is solely incharge of the conduct of the examination. If the radiologist finds that carrying out of a particular examination is likely to harm the patient due to excessive radiation dose which the examintion entails, then it is his duty to discuss this with the referring clinician and then take a joint decision. More serious than this is the death of the patient during or immediately after a radiological examination. Some side effects are bound to occur in a few patients with use of contrast media for various special investigations and in interventional techniques. With the advent of modern non-ionic contrast media, the incidence of severe and fatal reactions has been considerably reduced. However, these are rather expensive and not readily available in India. The trainee radiologist must be given a good grounding in the pharmacodynamics of all the various contrast media used in radiology, their relative advantages and disadvantages, the various reactions associated with them and how to combat them. In order to safeguard the radiologist from medicolegal point of view, patient's consent to treatment is required. The consent is only valid if the

patient has been made to understand the nature of the examination and consequence of what is proposed. This is normally done before all surgical procedures in India but usually not for radiological examinations. Ideally, every patient for intravenous urography or for angiography or arteriography should give valid consent before the examination is carried out.

The various facets of training which I have mentioned uptil now are general and would be applicable to training in most clinical disciplines. In addition to these, there are certain specific concepts which have to be kept in mind in the training of radiologists. These are, planning of an imaging department, purchase and maintenance of equipment, administration of a department, and lastly quality control of images. Let us take these, one by one.

Planning of an X-ray Department

Although these days there are architects who specialise in planning hospitals, yet in many parts of the country, a radiologist will have to guide the planning of a new department or renovating of an old department. Location of the X-ray department in the hospital, relation of the darkroom to the X-ray rooms, radiation protection, construction of light traps etc. are important considerations in planning a department. There should be some didactic lectures of this important subject.

The *next point* is purchase of equipme Various machines are available, some simp some sophisticated and some specifically mea for certain investigations. It is true, th usually the purchase of equipment depends the budget available but in order to avo wasteful expenditure, the radiologist sho have some knowledge about the various ty of machines and their uses and limitations that equipment appropriate to the needs the hospital should only be purchased.

The third item is preparation of a train to be a good leader of the team. Radiologi have to normally work with a large numb of paramedical workers whose cooperati and devotion to duty is essential to run department successfully. The fourth ite quality control is very closely related a interlinked with good team spirit. It sho be inculcated in the trainees that in order have discipline and high quality precisio work in the department, all the staff membe have to work in harmony with each oth and it is upto the radiologist as the leader the team to ensure this.

The Aim of Training

In India, as in most developing countri there is a great dearth of radiologists. study of manpower, facilities and utilisatio of radiological services was conducted in 197 It was found that the level of the use diological services between developing untries and Industrialised societies varied by factor of 40. Even this does not reflect a e picture as most of the services are concen- ted in Urban areas. What we need are good neral radiologists who should be able to gnose with the help of X-rays and ultra- und, most of the common diseases. There should be well balanced training programmes which can produce sufficient members of young, competent radiologists, capable of managing small departments alone and interested in keeping their knowledge up to date.

Thank you

HB-8G.

MAINSTREAMING GENDER IN PRE-SERVICE TRAINING OF HEALTH PROFESSIONALS

Issues for discussion

Gender mainstreaming

- The term 'mainstream' is used to indicate that issues of gender inequality should be dealt with in every aspect of organisational structure and programming, rather than as a separate, add-on activity. In other words, gender inequalities should be addressed in the mainstream of organisation and programming.

- Having a module or a course addressing gender issues in health may be seen as only a first step in gender mainstreaming pre-service training of health professionals.
- The goal is to have gender issues addressed integrally in all aspects and in all topics included in the training.

- Process of gender mainstreaming
- Content of a 'gender-mainstreamed' curriculum

PROCESS

- First decisions

- Appropriate group to start with: Medical? (UG or PG? Specific specialisations in PG?) Public health? Nursing? Paramedical? Or combinations of these?
- Factors governing this decision?

PROCESS

- Ground work
- Reviewing literature on education methodologies and curricular integration efforts on gender and other topics
- Mapping ongoing initiatives
- Identifying good practice examples
- Informal consultations with potential collaborators and resource persons
- Developing an understanding of challenges and constraints

PROCESS -2

- Creating an enabling environment at national and state levels, and within the institution
- Long-term goal: Gender perspective becoming part of the institutional/professional ethos and culture
- Short-term goal: Operationalising gender mainstreaming of curriculum through: Favourable attitudes; Formal policy; Adequate resources; Functioning mechanisms to support (technical and other), monitor and evaluate

PROCESS -3

- Identifying Change Agents to provide leadership to and implement the process
  advocacy – a skill in itself
- Capacity building for Change Agents
- Outlining a 'piloting' or 'action-research' process
- Planning for upscaling

CONTENT

- **Identifying Core Competencies** in terms of knowledge, skills, attitudes and values that health professionals are expected to have in order that they are competent to provide health services/ plan health programmes/ carry out health research that integrates a gender (and social?) perspective

CONTENT -2

- **Carrying out curricular reviews to identify competencies that are part of the objectives and included in actual training, mentioned in objectives but not adequately addressed in actual training, and competencies that are not included even in the objectives**

CONTENT -3

- Identifying and generating teaching, learning and assessment methods to fill in gaps, starting with improving competencies that are recognised as needed but inadequately addressed in the present curriculum

CONTENT -4

- Identifying suitable entry points on a case-by-case basis for progressive curricular changes– which topics, in which years of training, through what mechanisms (i.e. part of core teaching? Special projects? Optional modules?)

MP - 85.

Gender And Medical Education

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Public Health

- To make a difference at the population level

When to intervene?

- How big is the problem?
- How serious is the problem?
- Is there something that can be done?

How to intervene?

- Deal with root cause where possible
- Have to understand what the root cause is

Determinants

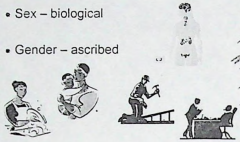
- Differences between groups illustrates what we understand about health
- Rich vs. poor
- Rural vs. urban
- Black vs. white
- Male vs. female

Why gender?

- The reason for understanding gender issues is not because women have some intrinsic value over and above men
- Rather because this is yet another area where there are inequalities

Sex and gender?

- Sex – biological
- Gender – ascribed



Change over time

If we ignore gender

- a flawed body of medical knowledge
- providing students to potentially incorrect information
- preparing students inadequately to deal with the issues that they will face
- may result in programmes and policies that have less impact than they may if they did take gender into account

Absorption

- breathing
- through the skin
- eating
- affects the way toxins are dealt with in the body
- affects the way we metabolise drugs

Are we told

- men exchange about 50% more air in a given period than women
- pregnant women exchange 70% more air in a given period than non pregnant women
- the larger blood flow in men and pregnant women can deliver greater total amounts of toxin to the target tissue

Transdermal absorption: sweat increases the absorption of water-soluble substances and impedes the absorption of lipid soluble substances

- men sweat more
- men have thicker epidermal layers on their upper extremities
- dermal hydration is greater for men and pregnant women
- dermal blood flow is the same for men and women but greater for pregnant women

In relation to ingestion:

- men have higher gastric acidity enhancing the absorption of weak acids and impeding the absorption of weak bases
- women have increased residence time in the stomach and intestines during pregnancy due to lower motility
- for the same levels of alcohol intake even after correcting for body weight, women have higher blood alcohol levels

In relation to metabolism men have a higher basil metabolic rate and metabolites can be either less or more toxic than their parent compound

Is any of this relevant?

- The data we do have are usually developed for the average man and we do not know if exposures (toxins, drugs, etc.) are more safe or less safe for women
- Women also have been systematically excluded from many drug trials so that the pharmacokinetics is not known for them
- Side effect profiles may be different
- Yet information is presented as finite and fact

Common knowledge

- TB and leprosy are more common in men
- TB is known to be related to poor social conditions
- Women make up 70% of the worlds poor
- So how come there are more men infected with M Tuberculosis than women?

TB

- Before the age of 15 boys and girls have similar rates - then men begin to outstrip women
- Once infected with the bacillus only some people become infected
- Progression rate from infection to disease in people aged 10 – 44 is 130% higher in women than in men
- Yet more men than women are reported as having TB infection.
- And more women than men die from TB

Gender sensitive research

- Some must be explained by biological differences
- Some must be explained by gender differences
- Women's access to health services has been described as more restricted than men's - and this could explain why women are not diagnosed and reported as having TB
- less access to treatment
- could explain the increased mortality

Any evidence?

- Equal prevalence of malaria in men and women in Thailand
- Men access services more

Any evidence?

- Rresearch on leprosy has shown that women are more likely to hide their condition
- Passive case finding, which relies on people presenting themselves at a health service, identifies more men than women, but door to door surveys find more women
- Similar findings have been documented in relation to leishmaniasis

So what?

- The information in textbooks about male female differences may not be correct

Non communicable disease

- Traditionally, and still a popular belief, is the notion that men have heart attacks
- Women doing clerical work, married to blue collar workers with 3 three children had a higher risk of coronary health disease than Caucasian male executives

Gender sensitive research

It has been postulated that because of this belief

- women have not always received optimal treatment
- diagnosis in women takes longer (68 months for women compared to 9 months in men in one study)
- they are referred later
- have fewer diagnostic tests

So what?

- the example of myocardial infarction illustrates how inadequate training can impact on individual and population health
- what was taught to medical students can prepare them inadequately for future work

Why worry about gender?

- To provide up to date adequate medical education
- To impact on our ability to graduate professionals who can adequately treat individuals
- To improve our ability to impact on population health

Health programming

- HIV infection is the biggest epidemic facing medicine, science and society
- As a sexually transmitted disease the transmission of HIV is related to the abilities of individuals to determine if, when, with whom and how they have sex

In what way does gender play a role in HIV?

- How to prevent spread?
- Women find it difficult to negotiate condom use
- High rates of rape
- Rape in marriage
- indicate how difficult it is for women to control their sexual encounters

So – in relation to progammes

- HIV programming must deal with women's rights to control their own sexual relations
- Reinforce the notion of joint responsibility between individuals for sexual health
- Making condom use more likely is one way that sex could be safer for everyone
- Is this approach used at every opportunity?

Antiretroviral treatment during pregnancy and childbirth

- This has been called PMTCT – preventing maternal to child transmission
- This terminology presents a missed opportunity in trying to deal in a more holistic way with the HIV epidemic

Technically correct

- the virus passes from a mother to a child – only women get pregnant –
- people working in public health are long past focusing on the technical aspects, to the exclusion of other contributing factors, of disease causation

So what's in a name?

- it implies that the mother alone is responsible for her child's infection
- yet we know that women get infected from sex with another infected individual
- Negotiating when and how to have sex is difficult for women
- It seems apportioning blame here is not useful or accurate
- It is parents who are involved not just mothers

Cnt...

- To leave it to sound like the responsibility of the mother alone is to compound the problem
- Why blame and shame a woman who is likely to be devastated about having an ill child in the first place
- She also has less control over the nature of her sexual encounters?
- It also promotes the idea that women alone are responsible for children.

Is this programming taking gender issues into account?

- HIV programming must deal with women's rights to control their own sexual relations
- Reinforce the notion of joint responsibility between individuals for sexual health
- No....

So?

Call to speak of

- Prevention of PARENT to child transmission

Will this help?

- This language empowers men as well as women to take responsibility for protecting themselves and their families
- Avoids reinforcing blaming and shaming stereotypes

OK one rhetoric for another?

- There need to be programmatic changes as well
- Note that preventing children being born with HIV will not impact on the overall epidemic significantly
- Need to prevent everyone (as many as possible) becoming infected

How to prevention infection?

- Requires that people, men and women, of any age take responsibility for their sexual behaviour and the consequences of that sexual behaviour
- Including being a parent to their children irrespective of whether that child is HIV positive or not.

What programme changes?

- Offers an opportunity to draw men into the programme
- Men could be invited to attend at least one antenatal care visit with their partner
- They can access information on PTCT
- They can receive information on getting tested and how this will benefit the family in terms of prevention

Change social norms

- They can also be part of the antenatal care of their children
- This may promote them being involved in the post natal care of their children
- In other words insitutuions in society begin to challenge a social norm that women alone care for children

So – in relation to progammes

- HIV programming must deal with women's rights to control their own sexual relations
- Reinforce the notion of joint responsibility between individuals for sexual health
- Making condom use more likely is one way that sex could be safer for everyone
- Is this approach used at every opportunity?

Condoms....

- Need to normalise condom use

How does this relate?

- 5-10% of pregnant women sero-convert during the year that the they are pregnant
- The risk of PTCT goes up to 80% during sero-conversion
- Preventing new or re-infection in women at any time during pregnancy and breastfeeding would be an advantage to her and to the coupies' child.

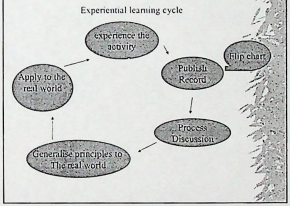
Are men willing?

- There is some evidence in Zimbabwe that men would be prepared to use condoms during pregnancy and breastfeeding to avoid new or re-infection of their partner and thus their babies

So?

- Will assist that couple
- Could increase the acceptability of condom use more generally within relationships and potentially in the society

How to teach gender??



Why?

- Gender relations are premised on deeply embedded, entrenched and taken-for-granted assumptions about what it means to be a woman / man
- What counts as valid ways of relating and what our rights and entitlements are as gendered beings
- Gender relations are forms of consciousness which are taken-for-granted and continue as we are often unaware that we hold these assumptions and participate in these ways of behaving

Why cnt

- One has to work with these embedded constructs
- To show how we impose our own history of relationships with others onto people with whom we interact
- These are not only personal ways of behaving but are common in society and institutions
- These methods of relating are not value free but result in systematic inequalities that extend beyond ourselves

So when we teach

- Develop methods that help to explore how we relate
- Illustrate that we relate in particular ways that are patterned
- Resources for reflecting are required that enable us to see ourselves in new ways and to imagine new ways of relating
- To achieve this, it is essential that the training methods include self-reflection.

Has anyone done this?

- Suzanne Williams, Janet Seed and Adelina Mwau The Oxfam Gender Training Manual. Oxfam 1995
- Hope, A., and Timmel, S. (1984). *Training for transformation* Volumes 1 2 and 3. Mambo Press Harare
- Harrigan, P., Gomez, E., da Silva, J., de Schutter, M *Workshop on Gender, Health and Development: Facilitator's Guide*, Pan American Health Organization (PAHO), Washington D.C 1997

A few more

- Fonn S and Xaba M. Health Workers for Change. WHP/WHO Geneva 1998
- Varkey SJ, Fonn S, and Kathipole M. Health Workers for Choice. Women's Health Project Johannesburg. 2001.
- Klugman B, Fonn S and Tina KS. Reproductive Health for All. AIDOS Italy and Women's Health Project South Africa 2001
- Cottingham J., Fonn S, Garcia Moreno C, Gruskin S, Klugman B, Mwau A, Ravindran S, Snow R, Xaba M. Transforming Health Systems: Gender and Rights in Reproductive Health. 2001. WHO Geneva.

In closing

- I trust I have made my point
- If we seriously want to train people to deal appropriately with the health problem we face we must include gender

The challenge to all of us to is to move from rhetoric to action, to change the way we teach and what we teach.

MP-SG

Gender and Medical Education

Work so far

&

Strategies of the AMCHSS/SCTIMST

Medical Education

- 183 Colleges of Modern System (2001)
- About half of them established in last 20 years, a big majority of them in private sector
- Produces over 20,000 doctors/year
- Nearly 400 Colleges of Indian Systems of Medicine and of Homeopathy
- Produces about 15,000 doctors/year
- Over 80% of all doctors, and over 85% of modern systems doctors in private sector

AMCHSS/SCTIMST

- Being a national medical and public health institute, SCTIMST concerned about medical education
- AMCHSS was established in mid-1990s to strengthen public health
- AMCHSS also has strong component og gender in its training
- Discussion started in later part of 2001 and culminated in consultation on Jan 31, 2002. Project began in 3rd quarter of 2002

National Consultation, Jan 31, 2002 in Mumbai

OBJECTIVES

- Understanding the Needs for Gender Sensitisation
- Critiquing Content and Method of Medical Education
- Developing Long-Tem strategies for Intervention

QUESTIONS EXPLORED

- Is there a need to understand gender in medical education?
- What is the nature of this need?
- How do we approach this need?
- Whom would we approach?

Issues Raised
RELATED TO MEDICAL PRACTICE

- Women needs are often ignored, though women's bodies are sites of exploitation and malpractice
- Unnecessary/irrational drugs and surgeries, unethical trials, etc.
- Population control policies target women
- Doctors do not provide information to women, for informed consent only husband is consulted or husband's consent demanded

Issues Raised
RELATED TO MEDICAL PRACTICE

- Even women's reproductive health issues are given less importance
- Women's specific problems and needs in disease conditions are studied less and are ignored
- Lack of continuing training and orientation
- Etc.

What should be the process of engendering medical education and practice and other stakeholders & groups?

- Gender sensitive healthcare involves 'unpacking patients'.
- It means looking at men and women patients and their specific needs, look at what class backgrounds and cultural backgrounds they belong to, examining presumptions and stereotypes that have been entrenched.
- recognising the fact that patients come from households and they live in a social environment.
- Gender could be used as an indicator because it incorporates all kinds of inequities.

What should be the process of engendering medical education and practice and other stakeholders & groups?

- There should be a gender analysis of the different diseases.
- The medical system is premised on the assumption that there is a family, which is able and willing to carry out the role of caring. Women really struggle to fit into this perspective because they often do not have this kind of support.

Strategies, Tools and Mechanisms for Engendering Medicine - General

- Research topics related to gender must be given to students
- In student selection for medical schools, gender sensitivity should be one of the criteria. This will also start influencing the school education
- Introduction of rights perspective in medical education with appropriate emphasis on gender
- Social science teaching in medicine needs to be introduced or improved
- Identify gender sensitive trainers

Strategies, Tools and Mechanisms Changes in the curriculum

- First priority would be to develop a module for under-graduate medical students because they form the large majority of the medical students
- To use the existing network of medical colleges for introducing innovations in medical curriculum
- Existing literature and training modules on gender should be reviewed and adapted for use
- Documentation of local level initiatives in this field

Strategies, Tools and Mechanisms
Changes in the curriculum

- Should we do review of present curriculum to make recommendations on what should be removed for being gender biased?
- Thus, critical review of existing textbooks from gender perspective is essential. Such material will be useful in training as well as in sensitising the authors
- For multiplier effect, training of the trainers and policy makers should be given importance

Strategies, Tools and Mechanisms
Setting in which ME is provided

- Changes in the curriculum and teaching would not be sustainable unless there are structural changes made in the institutions and actual practice is re-oriented.
- For gender sensitisation, engendered setting is also required
- Gender hierarchies in medicine, and strategies at institutional level to reduce and eliminate them and discrimination that goes along with them

The AMCHSS/SCTIMST Project

- National Consultation
- Designing Training-Of-Trainers' module
- Training-Of-Trainers
- Training of two or three medical teachers of all medical colleges in six states
- Review of medical Text books
- National seminar
- National Conference of decision makers