

**A VIEW OF THE
WORLD'S MEDICAL
SCHOOLS**

Defining new roles

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A View of the World's Medical Schools Defining New Roles

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INTRODUCTION

In 1995, the World Health Assembly adopted resolution WHA 48.8 (1) which urged the World Health Organization and its Member States to undertake a re-orientation of medical education worldwide to better serve the future health needs of individuals and communities. Building on the Alma Ata Declaration (2) and the World Health Organization's resolutions of 1977 (3) and 1981(4), Resolution 48.8 acknowledged the complexities involved in reforming the health system and its constituent institutions, including medical schools. The Assembly affirmed the crucial role of physicians in health services delivery and stressed the importance of the generalist physician in the improvement of both individual and community well-being.

Although the resolution supported the essential role of the current network of medical schools, it encouraged all governments to undertake modifications of the present form and content of medical education, service and research to insure that the schools could make a better contribution to the ultimate goal of "Health for All". The World Health Organization's global strategy for changing medical education and medical practice was published in 1996 under the title "Doctors for Health" (5).

The need for medical schools to prepare "products" (graduates, research results, models of health service, etc.) that are compatible with the priority health needs of the public has been chronicled repeatedly (6 -11) but there is little formal data to document the existence of the current global dissonance between the medical training process and better solutions to the world's health problems. For many years, the World Health Organization has published a *World Directory of Medical Schools* providing basic information on the organization of medical schools worldwide. The seventh and latest edition, issued in the year 2000 (12), offers a considerably enlarged scope of data on the world's medical education system. Between 1996 and 1998, WHO initiated a comprehensive survey requesting all world medical schools (1657) and national health ministries to respond to a survey of over 250 questions concerning various aspects of medical school education, research and community service.

The results of the questionnaire form the basis of this report; it is a view of the "assets and liabilities" of the current global system of educating physicians. In addition to giving current information about the schools, it also draws certain conclusions and provides recommendations for the future. The report seeks to highlight basic features relative to medical schools' contributions in improving health services delivery and responding to society's needs. It offers an analysis

of the system of educating physicians for future roles but does not pretend to provide either a single guideline for all medical schools or a universal blueprint for immediate change; the data outlines only some aspects of the current educational situation. Its recommendations must be adapted to meet the needs of specific institutions and communities.

Reform of the medical school education process is only one step in the ongoing process of improving the health of the public. Relevant, cost effective, equitable health care of the highest quality should be the goal of all plans designed to create a better health system worldwide. Such reform requires the agreement and efforts of many stakeholders. The world community is increasingly aware of the social, cultural and economic benefits of good health; investing in health pays dividends beyond the cure of a specific, individual illness or the enhanced economic and social well-being of a community. More socially responsive medical schools are essential in attaining better world health. All medical schools should be actively engaged in creating educational programmes and research agendas that will ultimately enhance the overall health of individuals and populations.

NEW GOALS FOR THE WORLD'S MEDICAL SCHOOLS

There is increasing evidence of a substantial difference between what the world's current health systems claim to do for the public and what these systems actually do to meet society's needs. The apparent discrepancy between the health requirements of the people and how — in practice — the world's health care organizations serve individuals and communities is the most obvious aspect of the problem, but at least a portion of the health/society disparity is related to the current roles, structures and objectives of the world's medical schools. These institutions are theoretically charged to train physicians to care for the health of the public, and to define and carry out an agenda for relevant health research. Increasingly, however, the education and the research systems of the schools appear to be failing to meet these goals and the schools themselves are viewed as fragmented, overly expensive, poorly organized and often focused on non-societal objectives. There is "a lessening of public confidence in the good of the enterprise" (13). Many medical schools seem to have adapted poorly to the changing health needs of the larger community and some, at least, may no longer reflect the important social values of high educational quality, relevance, equity and cost effectiveness. The nature of their "products" — whether practitioners or research results — cannot help but ultimately influence the overall health of individuals and communities.

The history of the rise of today's medically-based response to the health needs of the people is well-known. Over the course of the last century, the public agreed to entrust its well-being to the medical establishment; support and improvement of medical education and the medical care system became society's road to health. The public accepted the so-called "Great Equation" — Medical Care Equals Health, (14) while other population-based, community-oriented factors — especially so-called public health initiatives — which impacted both the quantity and the quality of human life, received less attention. Society encouraged the medical profession to determine the types of health pathways that should be followed and the form and content of how and where the art and science of medicine should be taught.

Today the world — partly as a result of medicine's successes — is faced with new health dilemmas. Other factors besides medical care and cure are recognized as important contributors to individual and community well-being. Although acute diseases — both old and new — continue to exact an appalling toll on mankind, patterns of the global burden of disease (15) are changing. There is a need for greater attention to chronic diseases, environmental influences, life-

style modifications and occupational illnesses. There is a new understanding that non-medical influences — nutrition, violence, accidents, suicides etc. — seriously affect all of us. Despite the continued need for high quality medical care, society sees economic, social and cultural factors as significant contributors to human "dis-ease". Measures to increase the "quantity" of life must continue, but there is new emphasis on the factors which contribute to the "quality" of human existence.

What should be the future role of medical schools and of the physicians they train? In 1948 WHO defined health as "a state of complete physical, mental and social well being and not merely the absence of disease or infirmity" (2). This concept clearly separates the role of medical care as an essential contributor to health from a larger view of overall human well-being. A new view of health should play an increasingly important part in defining both the goals of tomorrow's physicians and the nature of the institutions that train them. Society has created a major network of institutions to educate physicians to care for people but these institutions — in addition to implementing the newest techniques in research and training — must undertake a serious review of their goals based on societal needs; they cannot survive just by initiating cosmetic alterations to their structure, by devising minor re-orientations in their curricula or by juggling slight shifts in the objectives of their research programmes. While the introduction of new methods continues to be essential, it is important to remember that "to innovate is not to reform" (16) and "tinkering around the edges" of medical education is unlikely to create more competent and socially sensitive caregivers for the 21st century. The schools must re-evaluate their basic missions, promote efforts to provide services based on human needs, integrate individual and community-oriented teaching and research, and take a proactive role in coordinating the health-directed efforts of all stakeholders.

No one suggests that medical schools should stop educating physicians in the best possible understanding of, and research in, the treatment and cure of individual human illness. But such training and research can no longer afford to be unidimensional; it cannot ignore the larger needs of the public. In terms of the overall health of individuals and populations, physician dominance is eroding and the curative biomedical model of disease is no longer the only way for society to approach health and illness. The schools must take initiatives to redefine the meaning of "health for all", carve out new roles for their programmes, forge partnerships with other community-based institutions and create cost effective programmes of the highest quality — suitably evaluated by peers and the community — which are designed to serve all the people. If for no other reason than "enlightened self-interest" medical schools and physicians must reorient their own thinking to meet the needs of society.

This report presents a factual review of information on certain aspects of medical schools today. Based partially on this information, it draws certain conclusions and also provides recommendations which may be useful for redefining the role of medical schools in our society. While the report focuses heavily on the current and future mission(s) of the schools, it is important to understand that changes in the educational process alone can have little effect unless other stakeholders and society at large are willing to initiate similar reforms and create new incentives throughout the entire health infrastructure. It makes little sense to reorient the training process unless the public is prepared to make changes within the system and to reward — financially, career-wise and in terms of personal satisfaction — medical school graduates who seek to serve the health of the people.

A SURVEY OF THE WORLD'S MEDICAL SCHOOLS

The WHO survey which provides the basic data for this report gives information about the world's medical schools including their numbers, distribution, sources of financial support, the form and content of their curricula and research programmes, their faculties, students and administrations and how these are assessed, and their continuing education efforts. The data also gives some measure of the extent to which medical schools interact with their graduates, with communities, and their associations with other care-giving constituencies. In addition, the survey attempts to provide some measure of the degree to which today's medical schools are responsive to the health needs of the public.

The data complements material in *The World Directory of Medical Schools – Seventh Edition* (12) which includes information on each of the world's medical schools, including addresses and conditions for practice in the country where the school is located.

The survey — completed between 1996 and 1998 — is dependent on replies to two separate questionnaires, (Annex) one sent to the national ministry in each country and the other — containing over 250 questions — submitted in the appropriate language to 1657 schools in all 159 countries with medical schools. The survey does not pretend to present a complete picture of all facets of the medical school education process worldwide, but gives at least a partial factual review of formal physician training in medical schools today; it should be supplemented by other material available through WHO and other sources.

DATA

Data is reported from medical schools in specific WHO regions – African Region (AFR), Region of the Americas (AMR), Eastern Mediterranean Region (EMR), European Region (EUR), South-East Asia Region (SEAR) and Western Pacific Region (WPR). Map I (Annex) indicates the WHO World Regions, Table I (Annex) lists the countries in each WHO region and Map II (Annex) shows the number of schools worldwide in relation to population density.

Quality of data

The questionnaire was field tested in several countries prior to the survey and ultimately sent to all medical schools. Three follow up letters were sent to those

who did not respond. Because of the nature of the survey instrument, the difficulties in quantifying both brief questions and brief answers and the varying local interpretations given to each question, the World Health Organization cannot guarantee the accuracy of the responses. In some instances, data is incomplete because of a failure to return questionnaires; in other cases, partial information may be the result of medical school closings, school personnel responding to individual questions with two or three answers or difficulties in evaluating specific responses. In some cases reported percentages add to more than 100% because authorities entered more than one answer in their survey returns. In certain countries — for instance, in the former USSR and Yugoslavia — there have been major demographic re-configurations which have resulted in a reallocation of schools between and within areas.

Response Rate

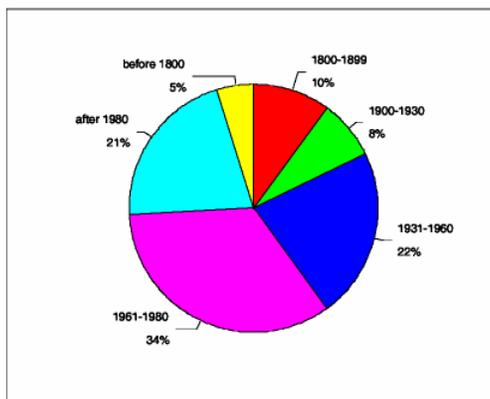
A total of 895 medical schools answered all or portions of the questionnaire giving an overall response rate of 54%.¹ Table II (Annex) indicates the response rate by region and Table BI (Annex) shows countries with a response rate greater than or equal to 50%. A number of governments and medical schools did not answer the questionnaire. In the report, the numbers of schools answering a specific question is usually included in parentheses after the data presented in the survey. Means or percentages are reported. The relationship between responders and non-responders, a comparison of response rates based on the age of specific medical schools and response rate data on individual schools and countries can be obtained from WHO. In some cases, information from countries with large numbers of medical schools — China (150), India (141) and the USA (141 — including osteopathic schools) — are reported separately but data on specific countries are usually not cited in this document.

Age of schools

GRAPH I shows the average age of the world's medical schools. Over 50% of the world's medical schools reporting (1198) began instruction after 1961. In the African, Eastern Mediterranean, and Southeast Asia Regions, 75% of the schools were established after 1980. In the European Region, on the other hand, 25% of medical schools were created before 1836; 50% of medical schools in the United States began instruction before 1916.

¹The response rate for China was 51/150, India 48/141 and the USA 94/141. Other countries with relatively large numbers of medical schools and their response rates were Brazil (31/82), France (14/45), the Islamic Republic of Iran (40/46) Japan (47/80), Mexico (42/56), the Republic of Korea (19/48), and Russia (24/53)

Graph I - Year Medical School Began



Since 1985, the number of schools worldwide has increased by approximately 305 overall.

Language of instruction

In Table IV (Annex) indicates the language of instruction used in medical schools worldwide.

English is the overwhelming instructional language (45.2%) followed by Spanish (14.%) Chinese (6.7%) and French (5.8%). Other languages (German, Indonesian, Japanese, Persian, Portuguese and Russian,) account for about 25% of the total. One hundred and thirty eight schools report teaching in two languages and 22 schools indicate the use of three languages.

COMMENT

Given the size and complexity of the survey and the number of schools contacted, the response rate of 54% met expectations. ¹ The World Health Organization has data from other sources on medical schools which did not respond to the survey, but such information is not included here.

The nature of the relationship between the numbers and distribution of medical schools and the overall health of the public is beyond the scope of this report. How many medical schools are "enough"? Should every country have a medical

¹Although 762 schools did not respond to the survey, data on the age of 332 non-responding schools was obtained from information listed in the World Directory of Medical Schools. (12)

school? Are there areas that "need" medical schools? Are 1657 medical schools sufficient to insure the health of the public? Which are the "best" medical schools? Instead of adding medical schools, should individual countries expand the numbers of other health-oriented educational institutions to help care for people? The data from this questionnaire do not allow the World Health Organization to answer these questions.

Medical schools are only one component of the international health systems that contribute to the well-being of individuals and communities. Human health is dependent on many factors — government initiatives, economic policies and the degree to which human health is seen as having priority over roads, houses, jobs, teachers and the many other ways which influence how a society cares for its citizens.

The purpose of this survey was to establish baseline data to assist in determining how medical schools fulfil their purpose in meeting health needs of individuals and communities. Schools are expensive to create, maintain and improve. Do they serve their purposes? Does society get "value for money" when it invests in medical schools? In a final analysis, the actual numbers and distribution of medical schools are probably of less overall importance than the quality of these institutions and the degree to which they are fulfilling their social obligations to the public.

THE MANDATE/MISSION OF THE WORLD'S MEDICAL SCHOOLS

In theory each medical school is expected to have a mandate or mission statement that expresses the purpose(s) of the institution. Since medical schools were created to meet the health needs of individuals and communities, such statements should define goals in relationship to the service priorities of the school in terms of both education and research.

DATA

The mission statements of medical schools

In Eighty per cent of the responding world's medical schools (826) have some kind of written mandate or mission statement. Within the African Region (AFR), the Region of the Americas (AMR), the Eastern Mediterranean Region (EMR), and Western Pacific Region (WPR) the percentage of schools with a mission statement ranges from 77.5% to 93.7%. In the European (EUR) and the Southeast Asia Regions (SEAR), the percentage of schools with mission statements is 65% and 68.9% respectively.

In countries with large numbers of medical schools — China (150), India (141), and the United States of America (USA) (141) — the proportion of schools with mission statements varies — China (71.4%), India (57.1%), the USA (97.8%).

Most current mission statements address the function of the school in terms of health services delivery to the community, the goal(s) of the school's research programmes applied to health services and the health role of its graduates. Only in the European Region (EUR) and Region of the Americas (AMR) did the percentage of mission statements that addressed these areas fall below 85%.

COMMENT

The data indicate that most of the world's medical schools have mandates/mission statements which set forth institutional goals and state specifically the school's role in terms of commitment to graduates, to the community and to health services research. If the existence of such a statement is a valid indication of institutional involvement in both individual care and in community-oriented, population-based services, then today's medical schools appear to fulfil their

responsibilities to society. There is evidence however of a lack of a meaningful relationship between the school's mandate and the institution's organized commitment to address the priority health problems of the public, its social responsiveness, or its support of research programmes designed to benefit the majority of people. In the area of health research alone, it is estimated that only 10% of the funding by both the private and public sectors is devoted to the investigation of the health problems of 90% of the world's population (17). There is little indication that medical schools themselves commit a larger percentage of research funds to addressing the major world health risks.

Why is the social commitment to the health of the public — theoretically reflected in the mission statements of most medical schools — not usually fulfilled? Did the medical school founders have different expectations than those who now control the institutions? Have unexpected social events altered the goals of the schools? Have the governing bodies lost perspective as to what the institution's actual mission should be in terms of teaching and research? Does the faculty create a vision of health and instruct students to undertake roles that are at odds with the expectations of the society at large? Are medical schools increasingly disconnected from the health realities facing the people and from a value system based not only on technological solutions to ill-health but also on principles of quality and equity?

By definition a mandate is "an order or command" or "the will of constituents expressed to their representatives" (18). Based on the WHO survey and on other information, a majority of medical schools do not seem to be accountable — and often are not even asked to be accountable — for executing such "an order or command" nor do their activities reflect the wishes of the communities they are supposed to serve. In practice, it would appear that many medical school mission statements are not synchronous with either the educational or service needs of the public.

THE FINANCIAL SUPPORT OF MEDICAL SCHOOLS

In order to create and nurture institutions to serve the public, society must devise methods to support them financially. Health care, *per se*, is costly and requires the maintenance of an educational system which demands substantial economic input without much discernible monetary return. No one disagrees that the provision of optimal individual and community well-being pays important dividends for society, but the educational process which creates care givers rarely appears as a positive figure on the balance sheet.

Medical schools themselves are among the most expensive components of any health system. They are labour intensive and the cost of adequate teaching facilities, administration, faculty salaries, and new technologies and research are substantial. Depending on the individual country, several funding avenues exist to support educational costs: student tuition fees, government subsidies, etc.; most schools are dependent on a mix of financial sources. Unfortunately there has been an increase in numbers of so-called "commercial" medical schools — basically supported primarily by tuition payments, operated for profit and often not adhering to governmental standards or instructions. Many of these schools do not pretend to educate practitioners to meet the health needs of the public.

Theoretically, if medical schools are truly designed to serve the people, an argument could be made that their funding should come largely from public sources. The data indicates that national governments play an important role in supporting medical education and research. However, there appears to be a substantial discrepancy; the public supports medical schools but, in many cases, medical school graduates do not appear to serve the health needs of communities and individuals. Society must be prepared not only to support the schools financially but also to demand relevant education and research programmes. It is also important that society provide financially rewarding future career paths for graduates who wish to serve communities. Few medical schools have yet found the proper financial formula to ensure their growth, improvement and essential community-based role. The long term viability of medical schools requires new, more comprehensive sources of funding.

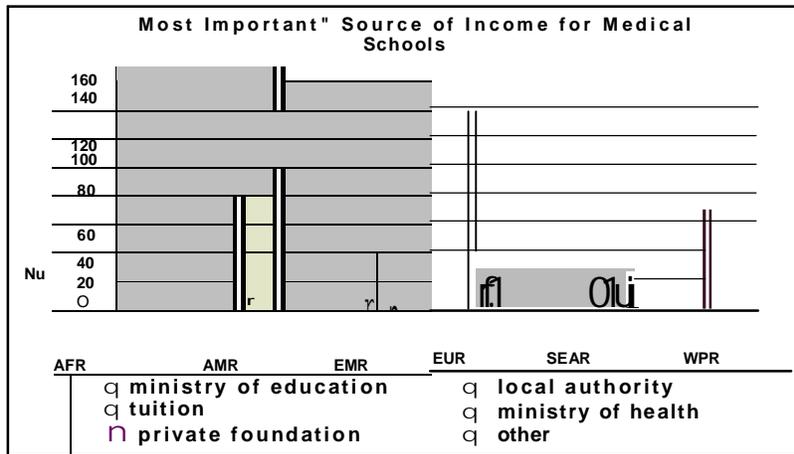
DATA

Sources of funding

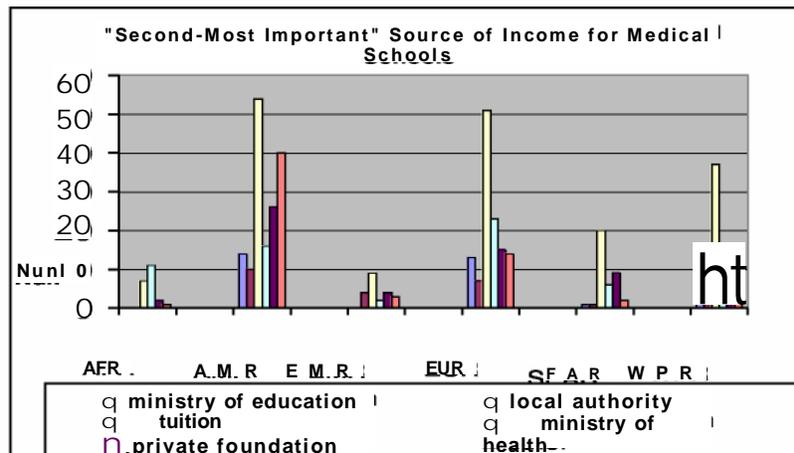
The survey sought information on the "sources of funding" for individual medical schools.

Graphs II and III indicate the "most important" and "2nd most important" sources of income for the 825 medical schools responding.

Graph II



Graph III



- n Fifty-five percent (455) of the schools indicate that the Ministry of Education is a "source of income" for their institution and 79% (358) of these indicate that it is "the most important source of income".
- n Forty-three percent (367) list the Ministry of Health as "a source of income" and 43.9% (161) of these indicate that the Ministry of Health is "the most important source of income" for their school.
- n Tuition support is "a source of income" for 77.3% (638) of medical schools but only 31% of these list it as their "most important" source of income.

In the Western Pacific Region (WPR), Southeast Asia Region (SEAR) and the Region of the Americas (AMR), 35% to 41% of schools indicate that tuition support is their most important source of income. Fifty percent of the Indian medical schools list tuition support as of the highest income priority.

While many schools (26%) indicate that the local authority is "a source of income", the contribution from this source is usually low, except in the Western Pacific Region (WPR) where 45.9% of the schools report that the local authority is their most important source of revenue.

Other sources of income — donations, research and clinical support, other ministries, clinical fees and private foundations account for a small percentage of income sources for all medical schools.

Because of the difficulties with fluctuating currency rates and the problems comparing annual average tuition fees between countries, no valid assessment of the relative costs of medical education was possible. In general, foreigners (where they are eligible for admission) are charged more than non-local residents who, in turn, pay more than nationals who are local residents.

COMMENT

Throughout the world, government ministries are the major source of financial support for most medical schools. Depending on the WHO region, either the Ministry of Education or the Ministry of Health appears to provide a large proportion of revenue for teaching and research. In certain countries (India and the USA), tuition fees are one of the most important sources of revenue, but even in these countries, governmental support is of greater importance.

The strong investment in medical education by government health and education ministries and, in some areas, by local authorities, could be interpreted to indicate that society in general, through its tax payments, has a significant financial stake in the mission and quality of medical schools. The substantial public investment in medical education would tend to indicate that governments should have greater influence on both the nature of educational programmes and societal

goals of health institutions. If, in effect, taxpayers are playing a major role in supporting medical schools, these taxpayers should expect that graduates be prepared to address the public's health problems.

In many countries, tuition support will continue to play a major role in financing medical school programmes. The extent to which so-called "private" institutions should teach and undertake research on health priorities defined by government policies was not determined by this survey but there is evidence that even private institutions are heavily supported by government funds. The question of the degree of regulation that should be imposed on such schools is unresolved, but there is increasing sentiment that all medical schools — since their graduates serve the health of the public — should meet certain societal standards.

ADMISSION TO MEDICAL SCHOOL

Throughout the world, admission to medical school represents an important goal for substantial numbers of students and their families and, for many, access to a medical career represents the pinnacle of success. Some students are attracted to medicine because of its perceived economic rewards; for others the intellectual/moral challenge, the scientific excitement or the opportunity to serve people are the primary reasons for choosing the profession.

Policies which influence admission to medical school have substantial impact on patterns of local health services. To a certain degree, these policies reflect the culture of a country and the socio-political orientation of the national health system. In all countries, medical school requirements, standards and economic realities dictate the numbers and types of students admitted, their entering qualifications and career choices. Factors such as the number and distribution of medical schools, the kinds of premedical education available, the courses required by the institutions or professional bodies, the number of students admitted per medical school, alternative career opportunities, the cost of education and the nature of future job expectations, can influence the decision to apply. In addition, pre-admission requirements, the duration of medical study, the instructional language, entrance examinations and the type and relevance of the pre-entrance interviews — when they exist — are important in determining the kinds and numbers of students who both enter and graduate from medical school.

DATA

The Duration of Medical Education

The survey indicates that the duration of medical education study falls into two basic categories, with minor differences from country to country. Under the so-called "European" system, there is a mean of 12.5 years total required education prior to entering medical school. Medical education — which includes two years of "premedical" courses — encompasses approximately 6.5 years before a student receives a medical degree. Under the "American" system, students undergo 12 years of pre-university study, then enter university where they complete medical school-dictated "premedical" work and subsequently are admitted to a medical school, graduating with a degree after four years of study. The end result is that one system (European) requires approximately 19 years of study while the other (American) demands 20 years before a degree is awarded. In practice, both systems show marked variations in the duration of training and many students spend

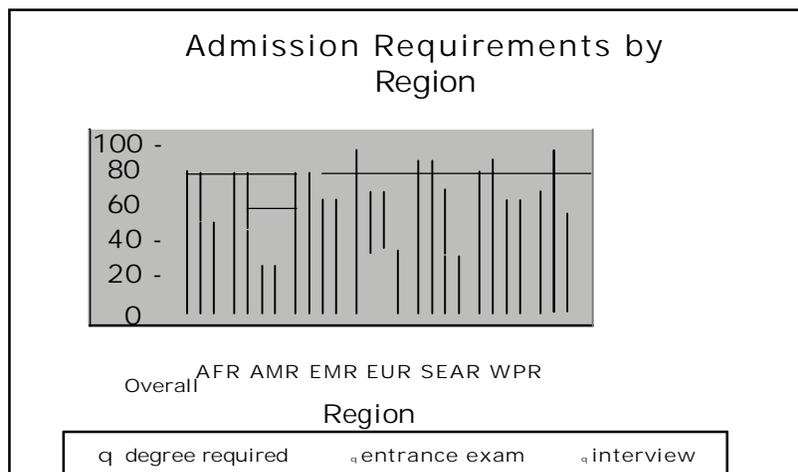
additional years — not necessarily in formal study — before completing their professional education. To some extent the differences reflect the diverse nature of the educational process throughout the world.

Under both systems, the academic medical year lasts for approximately 10.1 months, but at some institutions, students spend virtually the entire year in study.

Prerequisites

GRAPH IV indicates the percentage of various prerequisites — prior degree, entrance examination and interview — required for admission to medical schools worldwide.

Graph IV



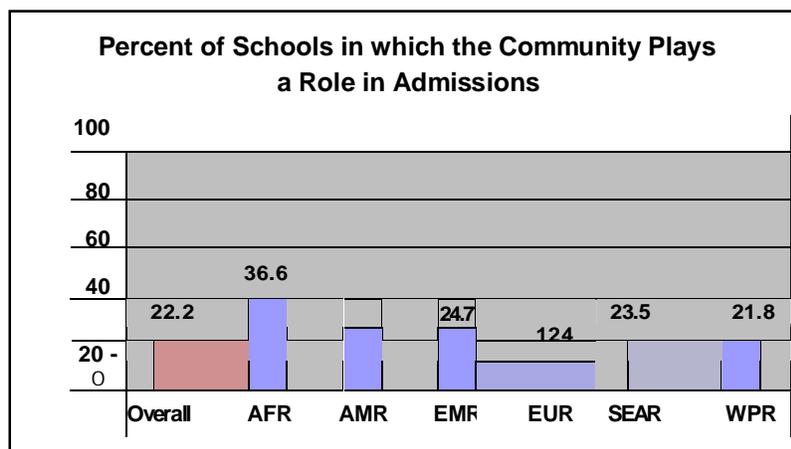
In the United States, a university degree or certificate is required by 60.2% of medical schools reporting. China reports the need for an interview in only 16.3% of its medical schools; the United States requires an interview in 97.9% of cases.

Community Involvement in Admissions

In some countries, the community plays a role in determining which candidates enter medical school.

GRAPH V shows the degree to which the community is involved in the admissions process in the various WHO regions.

Graph V



Community input into the admissions process is uniformly low (22.2%). The United States indicates that in 48.4% of its schools the community plays a role in the admissions process.

Foreign Students

Foreign medical students are eligible for admission to 81.8% of schools (906). China (46.2%) and the USA (57.6%) have relatively few foreign students matriculating.

COMMENT

The survey indicates that there appears to be agreement on the need for a specified number of years of undergraduate study before entrance to medical school and, in general, a relatively uniform number of years required to complete a basic medical curriculum. Beyond these parameters there is a wide range of admission requirements. Some of the regional differences are noted below.

- n The United States, which theoretically has strict standards for admission, asks for evidence of a prior degree or certificate in only 60.2% of cases¹.
- n Barely half of the world's medical schools require an interview.

¹Although no requirement for a prior degree is stated, in practice virtually all US medical schools expect evidence of completion of undergraduate study before admission.

- n In some areas (Western Pacific Region), entrance examinations are required by 92.9% of schools while in other areas (African Region) less than half of the schools (47.8%) ask for an admission test.
- n The community usually has relatively little input into the admissions process.

Responses to questions on admissions indicate that the process is variable worldwide and is often controlled primarily by the individual medical school itself through a system which may or may not include evidence of a prior degree or certificate, an entrance examination or an interview.

Two factors appear to be of importance in determining who should be admitted to medical school: 1) intellectual ability, and 2) motivation. Intellectual ability is probably the most important measure of suitability for a medical career; this quality can probably be best assessed by the use of some kind of written, pre-medical testing process. Motivation — the candidate's understanding of the rigours of a medical career and his or her willingness to commit to the realities of health care — is more difficult to evaluate, although the interview process is supposed to provide some measure of an applicant's suitability for the profession.

Schools' admissions policies mirror a major dilemma facing the world's health system today. On the one hand, physicians must be competent to understand the complexity of medical sciences and how to appreciate and use new, sophisticated modalities for care and treatment. On the other hand, many medical problems are relatively routine and the provision of effective health care requires someone who is not only a good medical provider, but who also relates well to the concerns of individuals, families and the community. Although students must understand very complex physiologic and pathologic processes, the practising physician must be a team worker, communicator, decision maker and manager. The physician must be able to empower people to protect their health and work with other partners and organizations to meet societal needs. Admissions policies often result in candidates being selected for qualities which may not be the most important in later life.

How should society gauge the public's health — which often may be "non-medical" — against the sophisticated, intellectual demands of a medical career? What kinds of admission processes should society support to maintain this balance? How should the profile of the doctor of the future — as defined by WHO (5) — influence the design of such processes?

In their mission statements, most schools stress the importance of community involvement and care, yet in only a relatively small percentage of medical schools does the community play a role in who should be admitted to the training process. It goes without saying that it would be difficult to effectively design a new

automobile, or for that matter any "product", without input from the consumer. To what extent — and if so, how — should the community decide on the type of candidates who would be suitable for the profession? If most of the world's medical schools receive substantial financial support from public sources, it seems not unreasonable to expect that taxpayers should have a voice in determining who should be admitted, or at least be consulted on selection criteria.

MEDICAL STUDENTS

The survey obtained information from 895 institutions — just over half the total number of schools; consequently figures on students admitted, enrolled and graduated worldwide are difficult to estimate accurately.

Even if all institutions had responded, there is a proportion of students who do not finish the course of study, take time off, or leave and re-enter medical school later in their careers.

Other data on students are also difficult to quantify. For instance, some schools chose not to provide a breakdown of the ratio of male to female students; in some areas there appears to be a preponderance of females but in general males make up a larger percentage of students.

Generally, a low ratio of students to teachers is thought to be good for instructional purposes but this ratio is variable worldwide. The variation may reflect methods of teaching, cultural differences or economic realities from country to country. In schools with large research programmes or where many faculty are part time, student/teacher ratios may be especially misleading.

It is important to remember that the actual number of medical school graduates does not necessarily reflect the number of practising physicians in any given area.

DATA

Student Enrolment and Graduation Rates

n A total of 712 611 students (1996) were enrolled in 740 medical schools worldwide at the time of the survey.

n Approximately 178 000 students were admitted to the responding world medical schools in 1995.

Numbers of admitted students (1995) ranged from just over 8000 in the African Region (AFR) to over 41 000 in the Western Pacific Region (WPR).

n 146 454 medical students graduated from the responding schools during this period — 82% of those who enrolled. The percentage of students graduating compared to those enrolled ranged from 40.3% in the African Region (AFR) to 99.7% in the European Region (EUR).

There were marked differences in the numbers of graduates from area to area. For instance, the European Region (EUR) (206 schools) noted 54 895 graduates

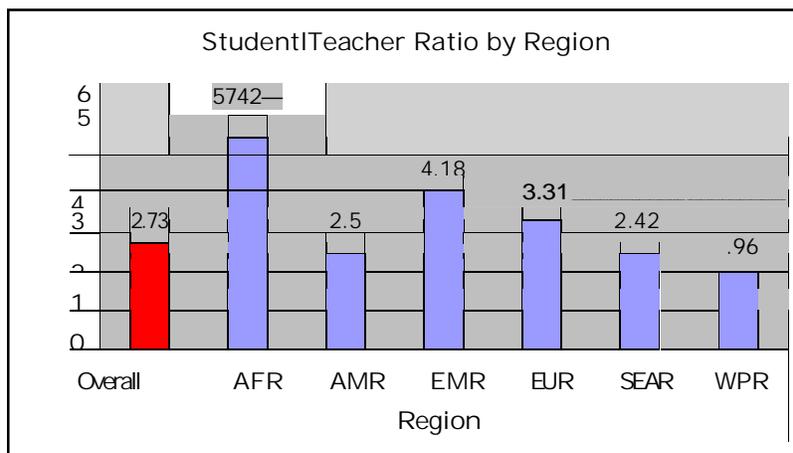
(266 graduates/school) while the Region of the Americas (AMR) (244 schools) had 31 806 graduates (130 graduates/school). China with 47 schools of 81 responding indicated 21 921 graduates (466 graduates/school), while India with 47 of 141 reporting showed 5084 graduates (108 graduates/school).

Among countries with large numbers of medical schools, the United States graduated slightly more students in 1995 than it admitted in the same year. The discrepancy may represent students who, in the course of the four year period, chose to interrupt their studies or it may indicate a decision on the part of some medical schools to reduce the numbers of students admitted. Some schools experience relatively substantial drop-out rates — either because of school policy, less rigorous admission standards or as the result of socio-economic factors.

Student/Teacher (S/T) Ratios

GRAPH VI indicates that the student/teacher (S/T) ratio worldwide is 2.73. The USA reported a student/teacher ratio of 1.11.

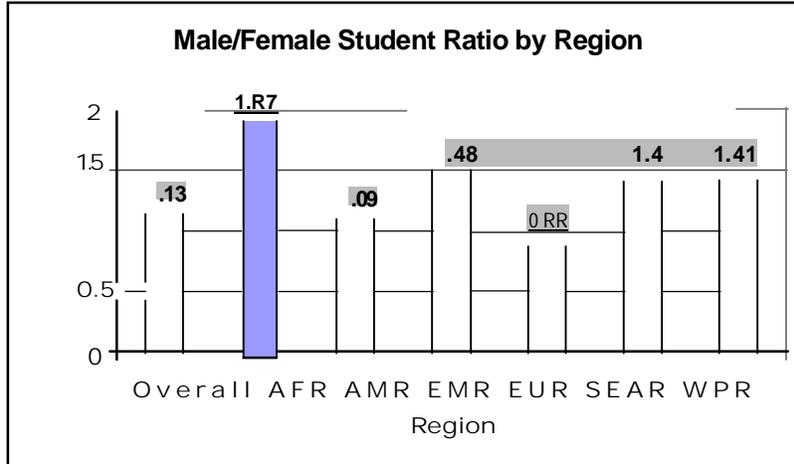
Graph VI



Male/Female (M/F) Ratios

GRAPH VII shows the male/female (M/F) ratio in the various WHO regions. The worldwide male/female student ratio is 1.13. In China the M/F ratio is 1.23 and in India it is 1.81. Forty-six of the 740 schools did not respond to this question.

Graph VII

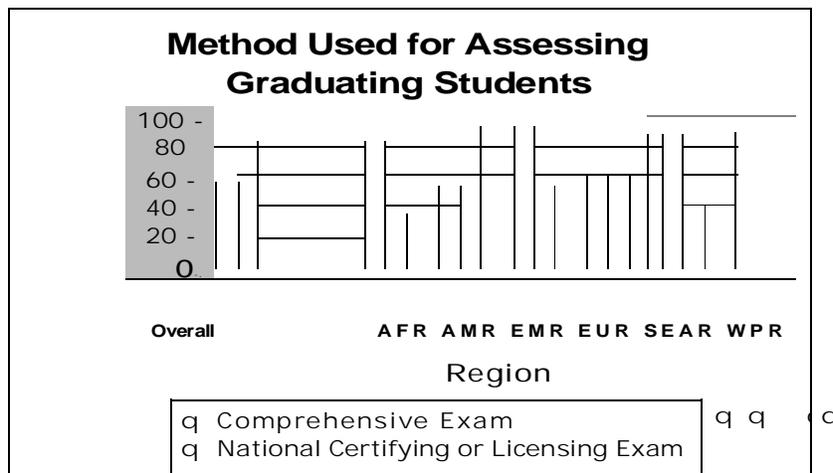


Performance Assessment

Virtually all medical schools use some standard to evaluate graduating student performance.

Graph VIII indicates the percentage of schools requiring successful completion of a final comprehensive examination prepared by the school and the percentage of schools requiring satisfactory performance on a national

Graph VIII

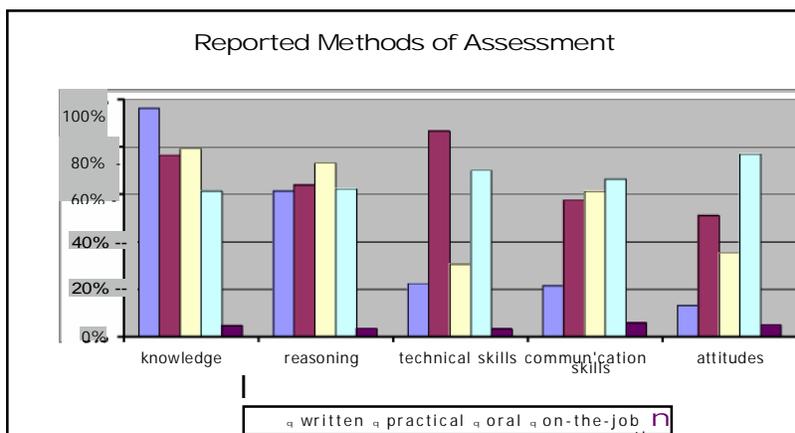


certifying or licensing examination. Only 16.3% of the US schools require a final comprehensive examination; 89.4% of Chinese and Indian schools have this requirement. Some schools required successful completion of both a comprehensive and a certifying examination.

All US schools require successful completion of a national examination; less than 50% of Chinese or Indian schools ask their graduates to complete such an examination.

Graph IX presents data on the responses of 846 schools to the question on methods used to assess student knowledge, reasoning, attitudes, technical ability and communication skills.

Graph IX



Most institutions (695) use a combination of written, practical, oral and on-the-job assessments to evaluate student competence. Knowledge is evaluated through written methods in 96% of the regions reporting, and practical, oral and on-the-job evaluations are used by 45.9% — 94% of the schools. Attitudes, oral and communication skills are usually evaluated by on-the-job assessment; technical skills are assessed in practical ways. Written, practical, oral and on-the-job methods are used in a 61%-73% of schools to evaluate student reasoning. The graph indicates the relative importance of on-the-job assessments in evaluating students.

COMMENT

Complete data on numbers of students enrolled and graduated is difficult to obtain, as is accurate information on student/faculty and male/female ratios. Student performance in medical school is evaluated in different ways and a graduate's qualifications for practice are assessed by different criteria. Although the percentage of students graduating may be a measure of student performance, this percentage does not necessarily reflect either student competence or the difficulty of the curriculum. The large variation from region to region in the numbers of students enrolled and graduated also raises questions as to whether there are limits as to the quantity of future physicians that any school can successfully train.

In theory, some unbiased evaluation of a student's ability to perform as a competent physician should be a reasonable measure of a school's educational effectiveness. However, this type of evaluation does not necessarily occur; in some areas comprehensive examinations are given by the medical schools themselves while in other areas, a national licensing examination is required. In more than 40% of the schools, no national certifying test is administered. In these institutions it must be assumed that school-devised standards or some other medical group evaluations are the criteria for the awarding of a degree. These criteria may or may not reflect competence in important health-related areas nor do they necessarily mirror a graduate's knowledge of community health problems. The marked differences in standards and testing procedures from region to region are not bad in themselves but with increasing globalization and the movement of physicians across borders, there is need for policies that better define and accurately assess the essential qualities needed for practice.

The varied evaluation procedures used by medical schools reflect a major educational problem. There is no basic global yardstick by which to measure medical competence. This does not mean that graduates worldwide should all meet identical standards but there is a need to better define, teach and test for the range of attributes and qualities required of physicians. Schools should create curricula which emphasize the importance of knowledge and proficiency in important health-related areas. Although most institutions are admitting competent students and educating them to comprehend a sophisticated knowledge base, they may not be training and evaluating them based on criteria relevant to the health needs of most patients or communities. In addition, there appears to be evidence that relatively few schools are teaching future physicians about their responsibility to the larger community, especially in the need to provide health care equitably.

MEDICAL SCHOOL FACULTY/STAFF

All information about the structure of medical school staff worldwide are difficult to quantify. Theoretically, schools have a group of full-time faculty whose major responsibility

is teaching and a second, often larger cadre of part-time teachers — not always hospital based — who together account for the bulk of student instruction. In the past, when the health system placed primary emphasis on the value of hospital care for the individual patient, the quality of full and part time staff could be assessed more easily. Health today, however, is less well defined in terms of care within hospitals and although the traditional, hospital-based instructional format continues to be of major importance, teaching patterns have changed significantly. New care modalities, outpatient treatments, sophisticated technical interventions, economic constraints, increased numbers of older patients and the use of non-physician personnel for both the diagnosis and treatment of human illnesses, have placed more of the patient/health provider interaction outside of tertiary hospitals. Many human diseases — except those encountered at the extremes of human life — are not as threatening as they once were and routine hospitalization — in addition to its cost — may actually be more hazardous to a patient's health than outpatient care. Not only are the teaching duties of clinicians changing, but preclinical faculty — who often do not benefit from either the prestige associated with the care of patients nor from its financial rewards — are finding that full-time teaching alone is insufficient to supply necessary personal or economic incentives. There is also evidence from some regions that research commitments or the need to supplement income from patient care sources has decreased the amount of time available for interactions with students.

Most institutions require evidence of clinical and/or research ability from their staff, and society increasingly demands a combination of sophisticated medical knowledge and a population perspective from its practitioners. Unfortunately, too many schools emphasize care and cure areas that primarily interest their faculty members; these interests may conflict with the need for effective teaching about societal ills or the actual concerns of patients. In addition, many schools have still not accepted the idea that medical education is a lifelong pursuit and requires the institution of programmes designed to continually improve staff and keep them in touch with advances in their field(s).

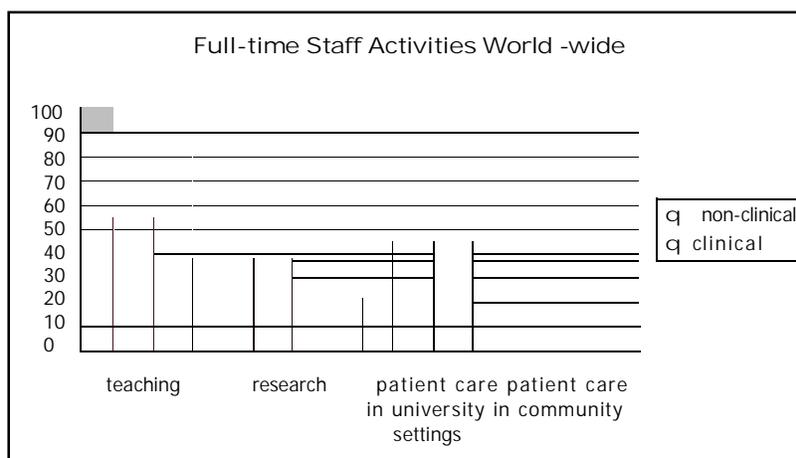
DATA

Non-Clinical and Clinical Staff

Of 552 responding schools, 64% of preclinical and clinical staff are reported as full time and 36.% as part-time. The percentage of part-time faculty ranges from 22.5% (European Region) to 50.1% (African Region).

n GRAPH X indicates the percentage of time spent throughout the world by full-time, non-clinical and clinical staff in health related activities. The graph also indicates that the majority of staff patient care activities take place in university settings rather than within communities.

Graph X

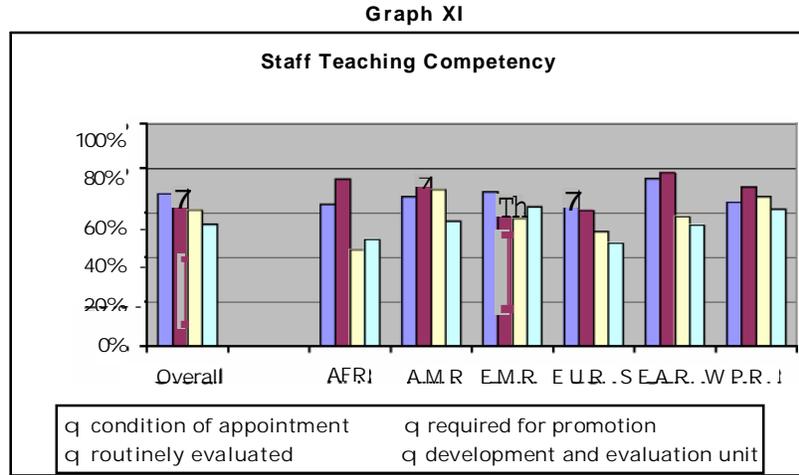


In the United States, 33.3% of full time non-clinical faculty time is spent teaching; full-time clinical teachers average less time teaching than do non-clinical faculty. Full-time clinical staff in the United States spends 23.4% of time teaching while in India full time clinical staff gives 40.8% of time to student instruction.

Staff Competence

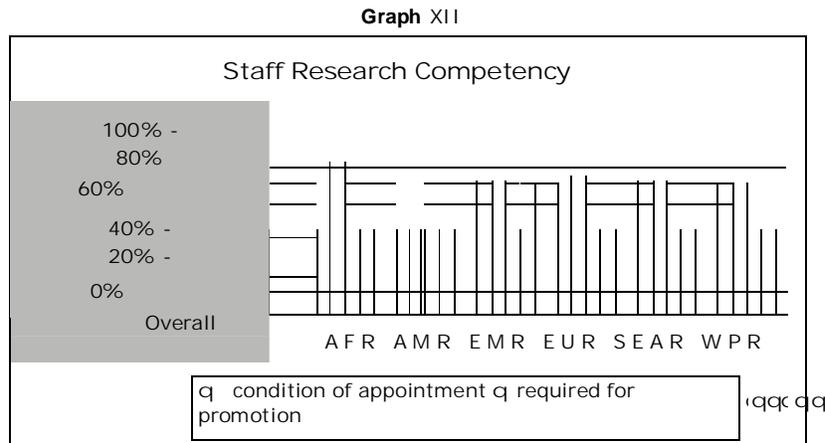
As a condition of appointment and/or promotion, most medical schools claim that they assess staff competence in teaching, research or community/public health subjects. Since faculty theoretically must keep abreast of new initiatives in medicine and health in order to be eligible for promotion, there is evidence that increasing numbers of schools are committing more resources for staff development.

n GRAPH XI shows the percentages of schools which require evidence of TEACHING competence for appointment and promotion and the percentages of schools which actually evaluate such competence. In addition the graph shows the percentage of schools with units designed to develop staff teaching ability.



In over 75% of the Southeast Asia Region schools, appointment and promotion are competence-linked. Only 53.8% of US schools make competence in teaching a condition of appointment, but assessment of teaching competence is required for promotion and is routinely evaluated in 85% of the schools.

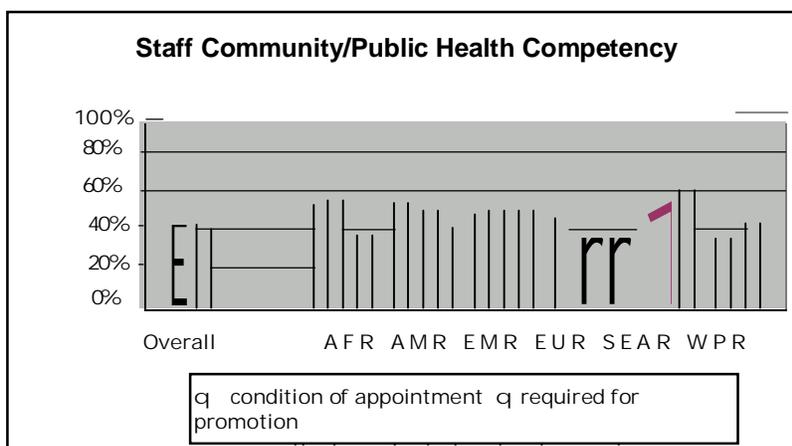
n GRAPH XII shows the percentage of schools which require evidence of staff competence in RESEARCH for appointment and promotion and in



indicate the percentages of schools that both routinely evaluate this skill and have units for staff development.

Graph XIII shows the percentage of schools requiring evidence of competence for appointment and promotion in COMMUNITY/PUBLIC HEALTH. The requirement for evidence of competence in this area is appreciably lower than the requirement for competence in either teaching or research.

Graph XIII



In China and the United States approximately 40% of schools require evidence of competence for either appointment or promotion in community/public health. Less than 40% of schools worldwide report that they have resources to facilitate staff development in community/public health.

COMMENT

In medical schools around the world the term "faculty" or "staff" is variously construed and may include both so-called "courtesy" positions and appointments for physicians and others who do not spend much time at the school in teaching, research or community-oriented efforts. The public probably assumes that most medical school staff members are primarily involved in teaching; it is apparent however, that student instruction is not necessarily a major faculty commitment at many schools.

The survey indicates that full-time clinical faculty spend the majority of their time in activities — teaching and otherwise — in university settings rather than within the community. Despite the fact that most physicians usually deal with

relatively common health problems and that these are often best evaluated and treated outside of hospitals and clinics, the imbalance of teaching time allocation between hospital and community reflects both the strength of the hospital tradition in medical instruction and the propensity of medical schools to place students at sites where they (the students) can be most easily and economically assessed. Schools attribute the lack of community-oriented teaching to economic constraints that outpatient work places on teachers, the difficulties in bringing sophisticated technical care to community sites and to the problems in overseeing student learning away from medical centres.

The data also shows that evidence of faculty competence in a given area may not be essential for appointment or promotion at many institutions. While the public assumes that teachers, researchers and community health experts are competent in their fields and are somehow evaluated for evidence of ability, the survey indicates that this may not be so. Faculty competence is routinely assessed in only 50% — 70% of the schools reporting.

Although the importance of part-time instructors is not a new phenomenon, the change in health care patterns worldwide may, in part, be responsible for the fact that a substantial percentage of medical student teaching is now carried out by staff who are not full-time. The idea of a full-time teaching staff is attractive, but for years medical schools have depended on instructors whose primary allegiance lies outside of the educational institution. The conflict between the demands of student instruction and the service needs of patients or research commitments has always been present but, in some areas, this dichotomy may be increasing.

There are many factors which have, over the last quarter century, altered the profile of the medical student/teacher interaction. Medical schools in general have not adapted well to the fact that many patient encounters are now of relatively short duration and may take place at sites which may not be conducive to traditional teaching methods. Many medical problems which previously required long-term hospitalization are now dealt with in offices, clinics and in the community. Economic constraints have increased and in many instances, well-qualified physicians may feel that they are unable to afford time to instruct students. Many physicians now depend heavily on laboratory reports and the results of technologically advanced techniques for diagnosis and treatment. The importance of computer-based tools and information, the use of distance learning, the introduction of standardized patients and increased physician specialization have also contributed to the shifting roles of staff in relationship to teaching and research.

These various constraints offer both instructional costs and benefits but the definition of "teacher" is certainly less clear than it used to be. The changes are not necessarily bad ones. Although the factors noted above have conspired to alter the student/staff learning environment, medical schools are making greater use

of new modalities and teaching opportunities which expose students to a more realistic view of health problems in the community, often in venues — physician's offices, rural and urban health centres, etc. — where much of contemporary medical care now takes place. This shift in care patterns emphasizes the increased need for instructors who are not only well versed in individual patient care, but also knowledgeable in epidemiological considerations or problems arising from the relationship of the patient to the community.

The information on the research and community/public health roles of medical staff, highlights concerns about the role of medical schools. It is apparent — especially at the more prominent schools — that research pressures today often conflict with the teaching and service commitments of faculty. The extent of this conflict raises questions as to the degree to which medical schools should also aspire to be research institutions and to what extent, research — usually somewhat divorced from the immediate health concerns of the community — impacts the schools' role as socially responsible institutions. What kind of research should the schools support? If medical schools are supposed to teach future practitioners and also serve the community, what should be the investigational balance between faculty interests and societal needs?

The survey did not directly address another area of increasing concern in the process which trains care givers. Over the last century, teaching has become more disease-centred and less patient-centred — more involved in understanding and caring for some specific organic malfunctioning and less concerned with the ultimate welfare of the complete patient; while this shift in medical teaching has brought benefits, many instructors have forgotten that good health goes well beyond the provision of quality biomedical care. It is important that medical students not forget that they are trained to care for people and be exposed to concepts and have as role models, teachers who demonstrate humanism, empathy, respect, tolerance, and dedication to the most needy and vulnerable of the world's populations.

MEDICAL SCHOOL FACILITIES AND EQUIPMENT

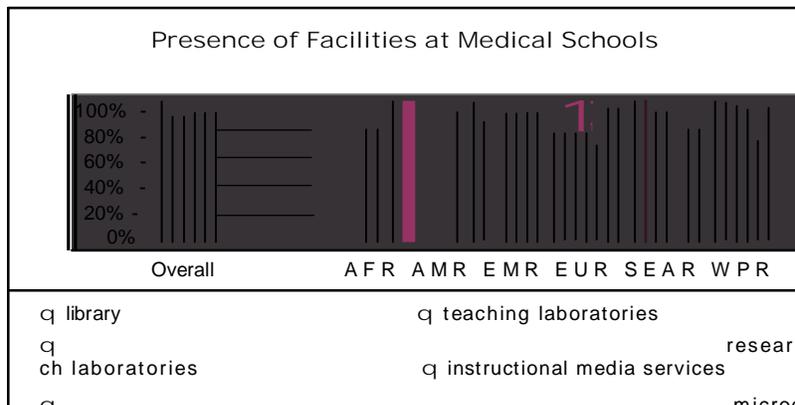
As a prerequisite, all medical schools should possess adequate equipment, suitable educational venues and, assuming that research is part of the school's mission, appropriate basic and clinical laboratories and investigation sites. In Flexner's report (19) on American and Canadian medical schools, the lack of up-to-date equipment for students was one of the major problems confronting attempts to modernize medical schools. Today there is an even greater need for adequate technical facilities and, since the education of future physicians is dependent on the availability of patients, there must also be appropriate learning sites and/or adequate simulation techniques to prepare students to meet the range of health problems that they can expect to see in the future.

DATA

Adequacy of Facilities

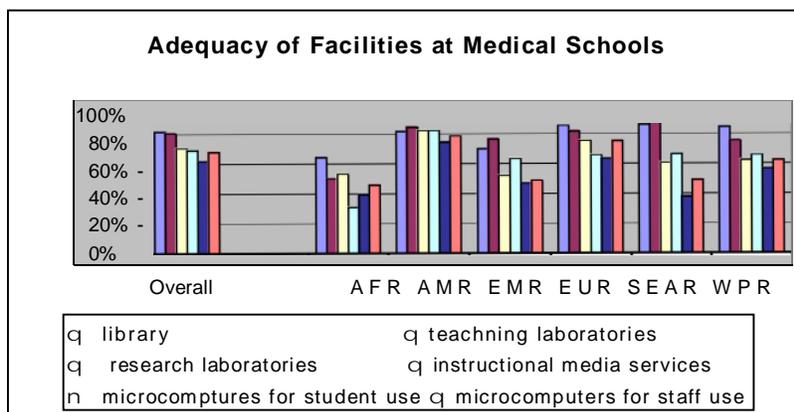
n GRAPH XIV (872 schools) compares whether medical schools world-wide possess certain facilities.

Graph XIV



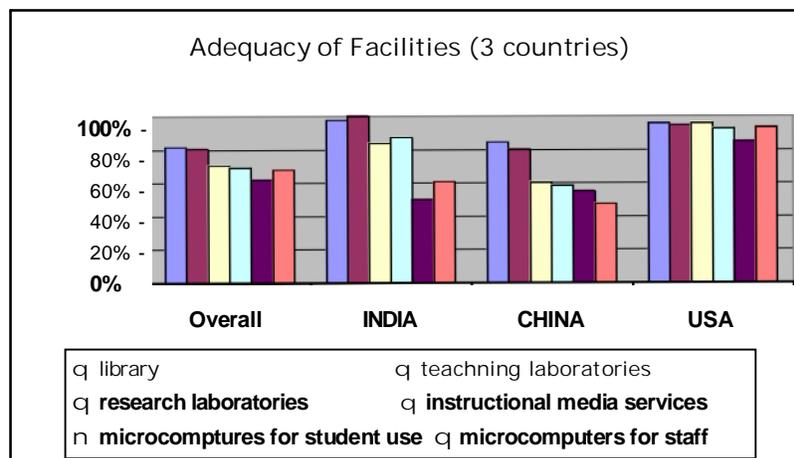
n GRAPH XV (838 schools) indicates whether these facilities are considered adequate.

Graph XV



n GRAPH XVI shows data on whether these same facilities are considered adequate in three countries — China, India and the USA — with large numbers of medical schools.

Graph XVI

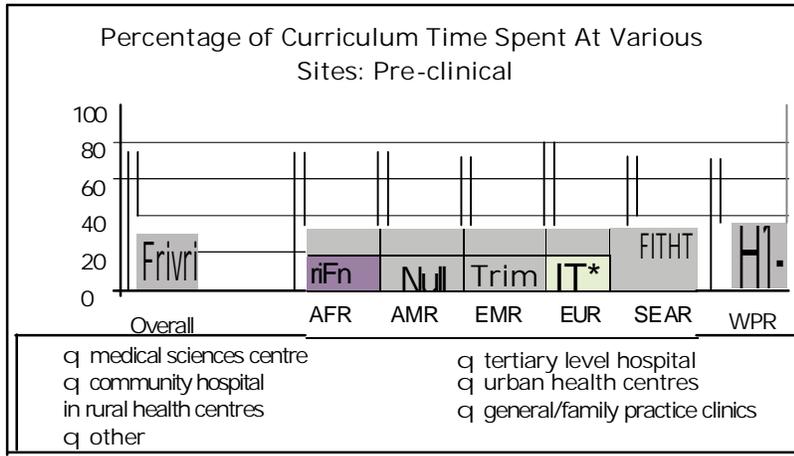


Teaching and Research Sites

Accessible sites for instruction are an important part of teaching and research programmes during medical training. These sites should reflect the health problems of the community and are an essential part of an institution's "facilities".

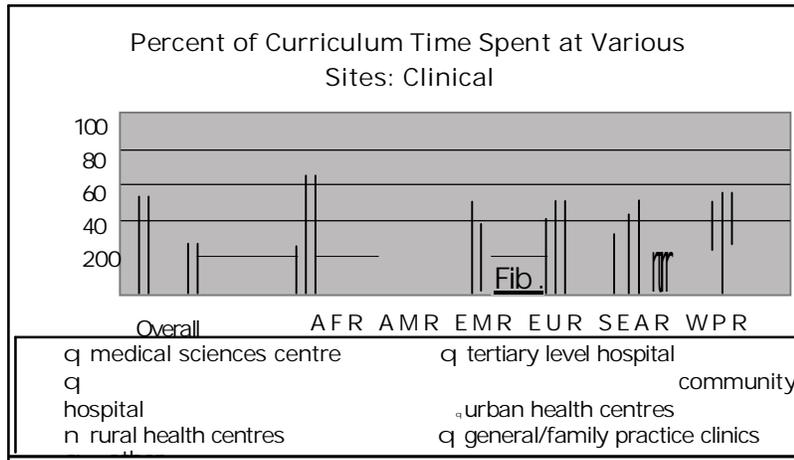
n GRAPH XVII (551 schools) presents information on the percentages of curriculum time spent at various sites during the PRECLINICAL years.

Graph XVII



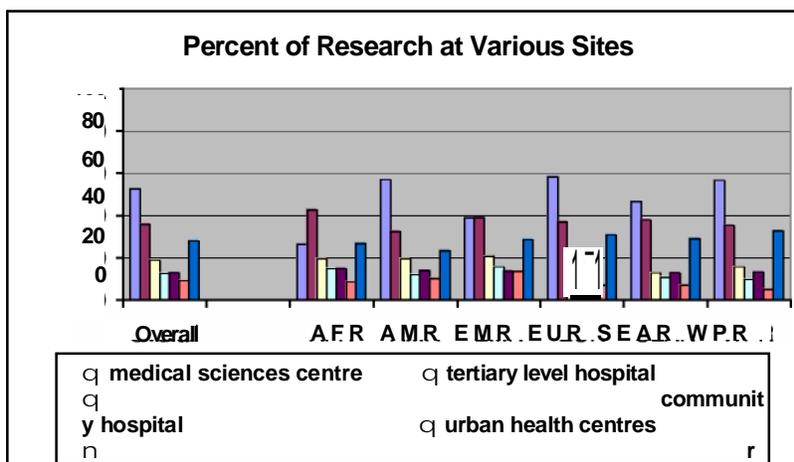
n GRAPH XVIII (516 schools) illustrates the percentages of time spent at various sites during the CLINICAL phase of medical training.

Graph XVIII



n GRAPH XIX (607 schools) indicates the percentage of school RESEARCH carried out at various sites.

Graph XIX



COMMENT

The existence of adequate teaching and research facilities is important in assuring the quality and breadth of the medical school experience. Although the majority of schools report that they have essential teaching equipment, many indicate that these facilities are inadequate. This is especially true in computer services. Computer systems are playing an increasing role in knowledge transfer — especially in terms of literature access, publication and distance learning — and no school can afford to have inadequate facilities.

Schools are frequently criticized for focusing their educational efforts within medical centres and tertiary care hospitals. Although the use of these sites has the advantages of bringing together qualified teachers, competent researchers and expensive, modern equipment in a cost-effective environment, this concentration tends to emphasize the importance of the newest technologies and to highlight the care and cure of very sick patients whose illnesses may not reflect the range of a community's health problems. For years the argument has been made that the complexity of medical conditions at tertiary care hospitals allowed students to better understand all kinds of routine problems. The hospital training experience, it was argued, best prepared new physicians to deal with simple health concerns. This bias was reinforced by the fact that many academically-based physicians downgraded the abilities of community-based physicians. As a result, many students had little experience with common health problems or appreciated the expertise of community-based caregivers. In truth however, students who work outside major hospitals may be better equipped to deal with the kinds of health problems encountered in most people. Despite the public's per-

ception, most patients do not present complex or unusual health issues and many can be best cared for by generalists and in physician's offices, at community sites or in their homes. Of even greater importance is the fact that hospital -based students see the patient in isolation from his or her community. Unless students are at least partially trained in the community, they have little opportunity to see the full interaction between the individual and his or her environment. A review of the adequacy of any medical school's facilities should include a consideration of the availability of non -hospital sites for student instruction and research.

THE MEDICAL SCHOOL CURRICULUM

The nature of the medical curriculum is one of the best indications of a school's commitment to educate practitioners in both a relevant philosophy of health and in the skills necessary to serve individuals and communities.

All medical curricula are characterized by both form and content; these two aspects will be reviewed.

The first component — the form of the curriculum — gives some measure of the kinds of skills, the breadth and the quality of what the medical school academic experience offers. Is the course of study comprehensive? Is the curricular plan coherent? Are the subjects well taught? Does the process use modern educational techniques? Does the curriculum transmit information effectively? Are students and faculty evaluated? If so, how are they evaluated? Can graduating students pass examinations? Do the schools require research projects and/or is time allotted to pursue electives?

The second aspect of curricular evaluation — the content of what the medical school offers — deals largely with the school's philosophy of health and the social relevance of the academic experience. Given that medical schools are theoretically designed to serve the health needs of the public, this assessment asks primarily if the general educational programme and the research goals are germane to the needs of the constituency that the graduates are supposed to serve. Are the skills that the graduates learn relevant to the priorities of real people and real communities?

The two kinds of evaluation — form and content — are obviously interrelated and a review of each component looks at two different aspects of the same, very complex, academic process. But the two types of assessment are not the same. We might, for instance, use the newest and best possible learning techniques to acquire skills which might have little value for the priority needs of today's world. The form would be excellent but the content of only marginal worth. There is no merit in teaching irrelevant material well and, conversely, there is little value in teaching relevant material badly. All medical schools must assure that they use the RIGHT educational approaches for the RIGHT subjects.

In terms of the form of the medical curriculum, the survey indicates that most of today's medical schools offer a fairly standardized curriculum that probably varies in quality. Assessment of the actual content or the relevance of the curriculum however, indicates that relatively few schools have adapted well to changes

in the health system environment. Many medical schools have excellent curricula and courses which are well taught, but the World Health Organization evaluation indicates that too many of these institutions may not have designed educational programmes that prepare today's graduates with the skills necessary to best serve either the health of individuals or the health of the public.

DATA

The Form of Medical Education

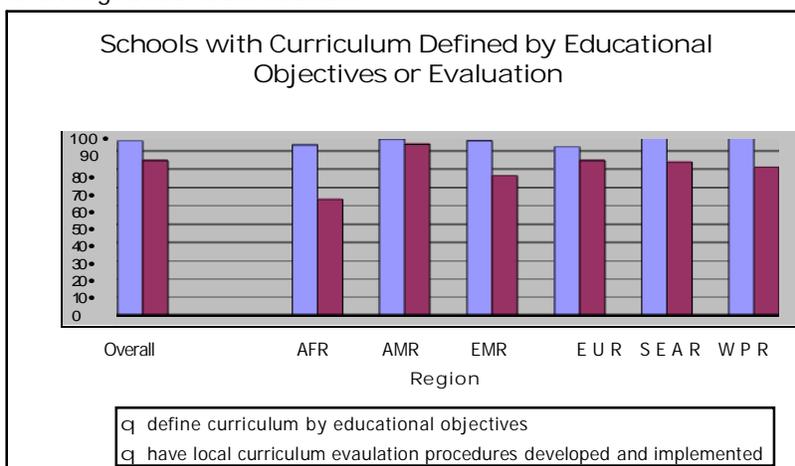
Objectives and Evaluation

A majority of medical schools claim to use rigorous curricular planning methods as illustrated by the fact that most of them — over 80% — have written mandates or mission statements, and a high percentage define their educational objectives and use curriculum evaluation procedures.

n GRAPH XX (860 schools) indicates the percentages of schools that define their curricula by educational objectives and have developed and implemented evaluation procedures.

Graph XX

The Integrated Curriculum

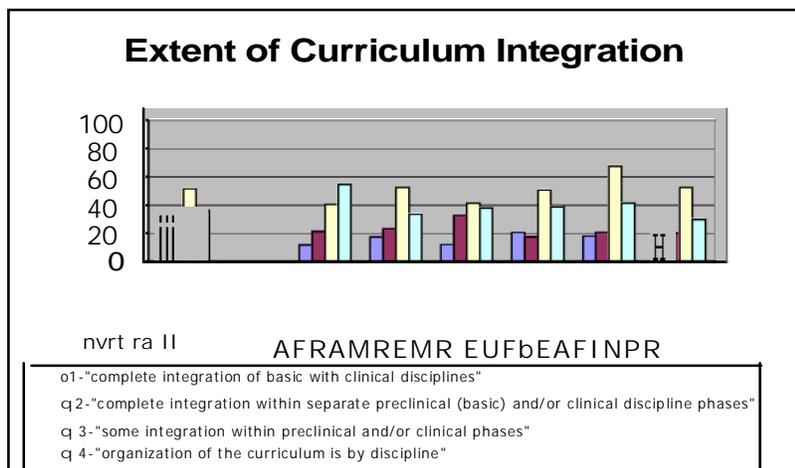


Despite the fact that many schools have introduced newer instructional techniques, the teaching pattern appears to follow a relatively traditional format. In the past, individual subjects — both basic (preclinical) and clinical — important

to an understanding of illness in the individual, i.e. anatomy, physiology, paediatrics, surgery, etc., were taught as discreet disciplines. The student was expected to integrate information by his or her own efforts and experience. Over the last three decades, a number of schools have adopted some kind of "integrated" approach to curriculum development, in which disciplines are taught together in terms of organ systems, target groups or specific health problems.

Graph XXI (860 schools) indicates the extent to which integrated courses are part of the medical school curriculum.

Graph XXI



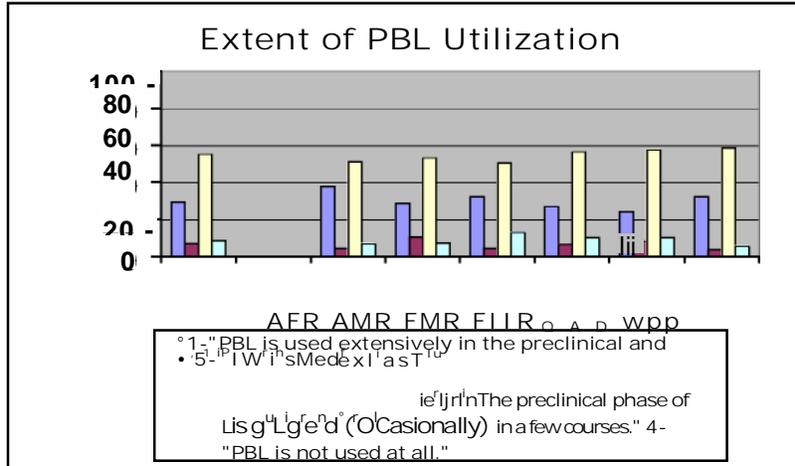
Many medical schools have initiated teaching programmes which encourage some integration of courses, but over one third of schools still teach all courses as separate disciplines. In the United States, while over three-quarters of the schools report "some" integration, over 10% of schools teach all courses as separate disciplines.

Problem based Learning

Problem-based learning (PBL) is another new instructional mechanism which uses priority health problems that medical practitioners are likely to encounter as the stimuli for improved student instruction. This approach emphasizes active, self-directed learning in small groups.

Graph XXII (886 schools) indicates the extent to which PBL is currently used in medical school curricula.

Graph XXII

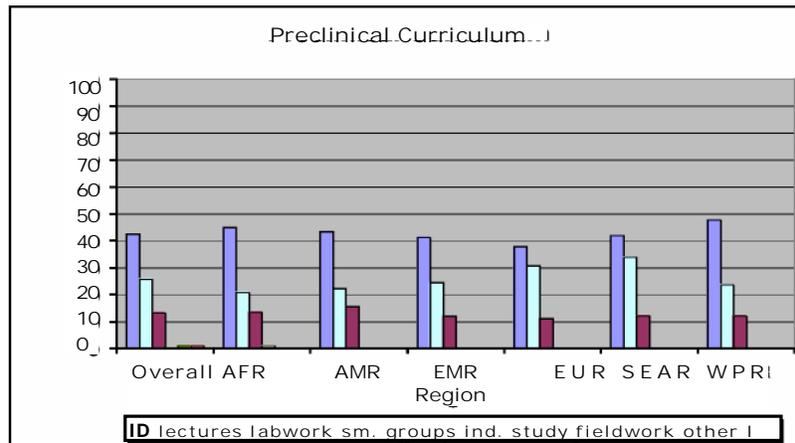


Instructional Methods

Despite the increased use of new techniques, it is apparent that many schools remain committed to traditional forms of instruction.

GRAPH XXIII (418 schools) indicates the percentage of time devoted to various instructional methods of during the preclinical years. The lecture/laboratory method of teaching predominates. Small group sessions and fieldwork make up a very small proportion of basic (preclinical) instruction time; independent study and preclinical fieldwork programmes are virtually non-existent in many regions.

Graph XXIII



As noted earlier, more than one third of all medical schools (36.5%) teach basic (preclinical) courses by discipline. While it is difficult to get an accurate picture of the actual amount of time devoted to each specific subject within schools, a rough breakdown of courses into "individually-oriented" (anatomy, biochemistry, physiology, pathology, microbiology, immunology and pharmacology) as opposed to "population-oriented" courses (epidemiology, biostatistics, community and preventive medicine) indicates that there are 6.5 times more hours given to the study of "individually-oriented" courses than to "population-oriented" ones.

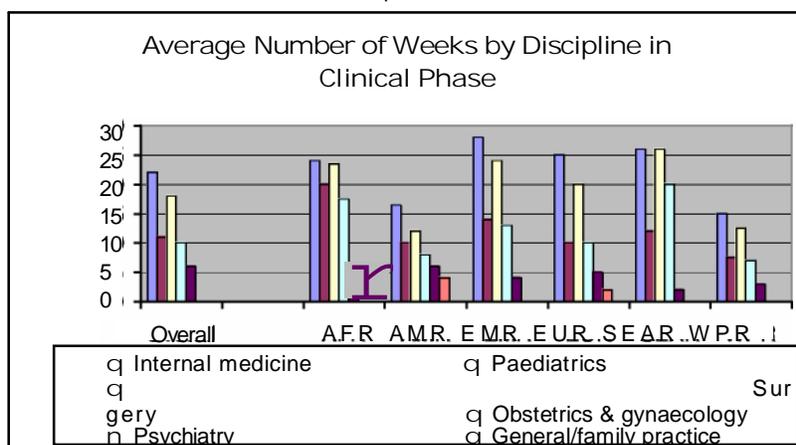
During the preclinical years a number of schools offer courses with titles that include words such as "culture", "philosophy", "social", "legal", etc. indicating that there may be more emphasis on population-oriented subjects than appears from the data.

Clinical Training

During the clinical phase of medical school instruction, the majority of teaching is speciality-oriented.

GRAPH XXIV (693 schools) indicates the median number of weeks devoted to instruction in the seven major specialities; internal medicine and surgery account for the bulk of clinical education at most medical schools. Neurology, ophthalmology and dermatology are other disciplines taught during the clinical years. In certain regions, general/family practice receives virtually no instructional time.

Graph XXIV



During the clinical phase of medical school, the teaching of population-oriented material which includes instruction in general practice, community medicine, epidemiology and geriatrics, accounts for less than 10% (9.6%) of teaching time.

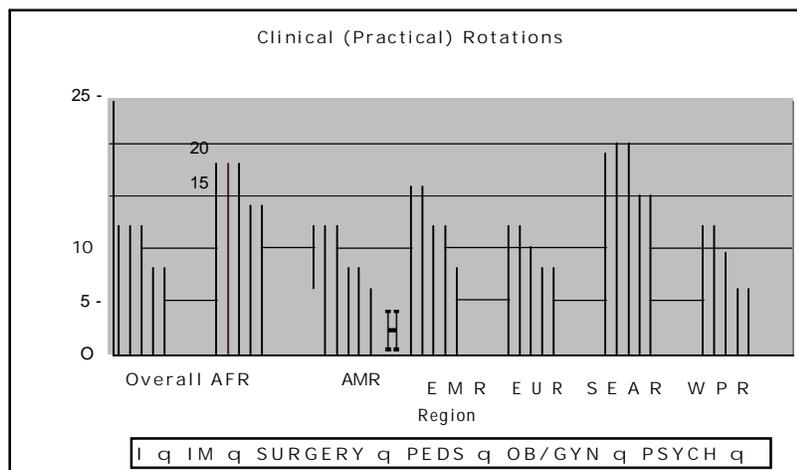
The percentage of time allocated to these courses ranged from 5.7% (WPR) to 15.4% (AFR).

Practical Training

An important component of the clinical years of medical school is the clinical rotation — often referred to as the "clerkship", or "practical" aspect of training. Students, under the direction of an experienced practitioner, are assigned responsibility for patients in various medical specialities including internal medicine, surgery, paediatrics, obstetrics and gynaecology, psychiatry, general practice and emergency medicine. Students may also elect or be assigned to practical rotations in other specialities. (i.e., neurology, orthopaedics, anaesthesiology, etc.).

n GRAPH XXV (766 schools) shows the average number of weeks spent during clinical rotations in seven different specialities. Rotations in internal medicine and surgery represent the largest blocks of time allocated to practical work.

Graph XXV



Although data from the United States cannot be taken as indicative of practical rotation patterns in other parts of the world, a recent report (20) indicates that a median of 25.3 weeks in US schools is allocated to clinical training in internal medicine (11.6 weeks), and to surgery/surgical subspecialties (13.7 weeks) during years three and four. A median time of 5.7 weeks is required in family medicine.

Despite a strong commitment to the care of specific patients in the "individually oriented" specialities, clinical training rotations worldwide also offer opportunities to pursue population-based work. While the traditional options (medicine,

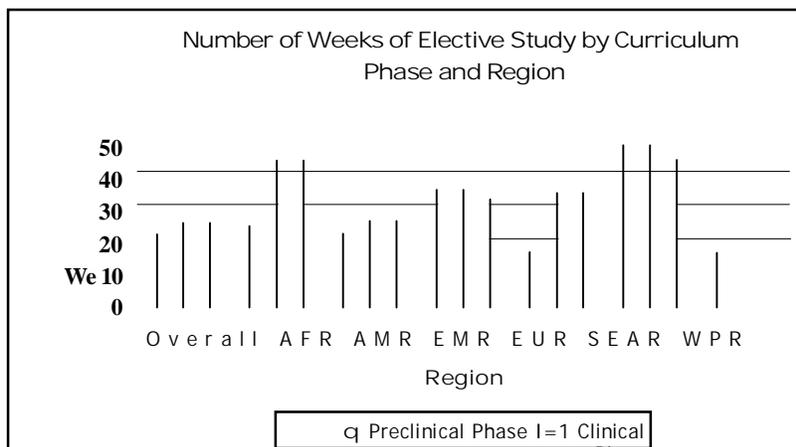
surgery, paediatrics, obstetrics and gynaecology, etc.) predominate, schools report a substantial number of clinical opportunities which include words such as "clinical epidemiology", "community medicine", "community health", "family", "health systems", "public health", and prevention. Fifteen schools list the opportunity for practical training in geriatrics. Other rotations offered include dermatology, ENT, neurology, ophthalmology and radiology. Few medical schools appear to offer clinical rotations in chronic care, ethics, family planning, medical humanities, or social, occupational, or preventive medicine.

Electives

Most schools offer elective options to students in training.

GRAPH XXVI indicates the mean number of weeks allocated to elective study during both the basic (preclinical) (297 schools) and clinical years (507 schools).

Graph XXVI



While the provision for elective programmes indicates a willingness on the part of medical schools to expand and diversify learning opportunities, some medical schools may over-allocate learning time in this activity. Schools in the regions of Southeast Asia (SEAR) and Africa (AFR) allot almost 43 weeks during the clinical years to independent work and India assigns 63 weeks for elective study. Unless independent work is monitored by experienced teachers, there is a danger that some students may not, in fact, be either studying relevant material or being accurately assessed on the value of their elective rotations.

In summary, the data indicates that in terms of length of study, division of teaching into basic (preclinical) and clinical areas, the general curriculum, the types of courses undertaken, and methods of student evaluation, most medical schools

follow a traditional pattern. The schools emphasise courses and practical experiences which focus on the care of the individual patient. There is little overt attention paid to experiences which stress population-oriented health or the social relevancy of the medical profession.

There is evidence of the increased use of new techniques (PBL and integrated teaching), but most material is taught in traditional ways.

The Content of Medical Education

The actual content of the curriculum — the extent to which students are being instructed in a health philosophy and in the academic subjects relevant to society's needs — is an essential consideration for all medical schools. The concept of "what" is taught, rather than "how" it is taught is of paramount importance. The design of educational programmes should be inspired by the proper mix of aptitudes that future doctors are expected to demonstrate once they are practising in the community and the academic activities of medical schools should be influenced by both the local epidemiology and the needs of the societies that they are supposed to serve.

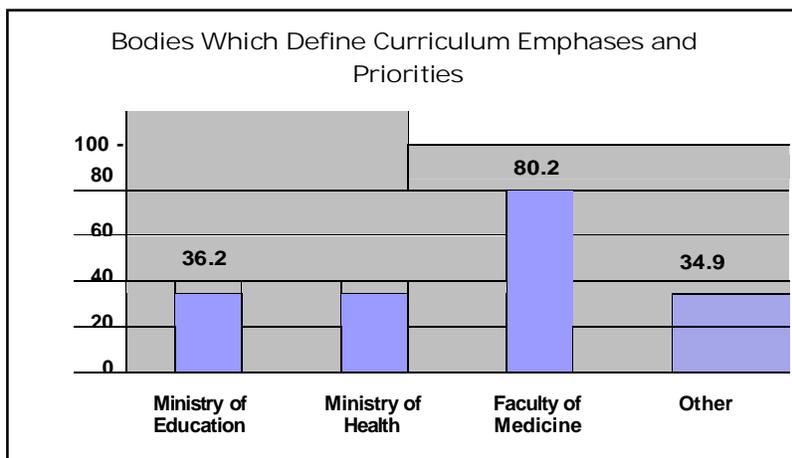
Certain schools are particularly conscious of their own deficiencies in certain teaching areas and of the need to adapt their philosophies and programmes to changes in society. These institutions have modified their view of the nature of the school's health mission and consequently, the content of their curriculum. Unfortunately, however, too many of the world's schools — despite the fact that they enroll the best students, use advanced educational methods, upgrade their knowledge base constantly and certify the qualifications of their graduates — do not necessarily produce practitioners whose learned skills are most relevant to people's priority health requirements and expectations. The nature of their curricula tends to indicate that their philosophy of health may not encompass the teaching of subjects needed by the public. Our society may currently be committing large resources towards the support of an educational enterprise whose goals and performance needs to be significantly modified to serve the public more effectively.

Curricular Responsibility

Who currently defines each medical school's goals and objectives, outlines the form of the curriculum, allocates resources and determines the philosophy of health underlying the teaching and research programmes of the institution?

n GRAPH XXVII (874 schools) shows the various bodies responsible for defining academic directions.

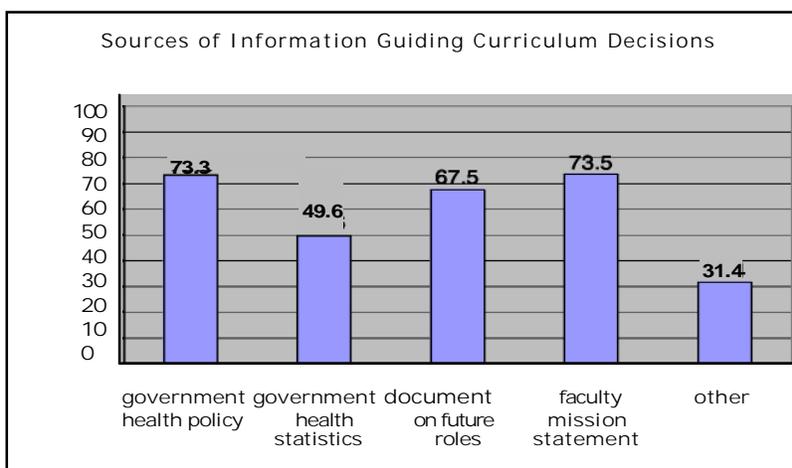
Graph XXVII



The Faculty of Medicine is mentioned most frequently (80.2%) as having responsibility for defining curricular emphases and priorities. The Ministry of Health and the Ministry of Education play lesser roles. 47.5% of the schools note that only one body defines curricular direction; the remainder indicate that two or more bodies are responsible.

Graph XXVIII indicates the sources of information used by schools to guide the process of determining curricular content.

Graph XXVIII



Eight hundred and sixty-one schools reported that the faculty mission statement is the most important source for determining the direction of the educational process. Fifty percent of the schools listed government health statistics as being an important source of information and 73.3% indicate that government health policy is crucial in guiding decisions. Over 65% of the schools report the existence of documents relating to "Future Roles of Doctors" as being of importance.

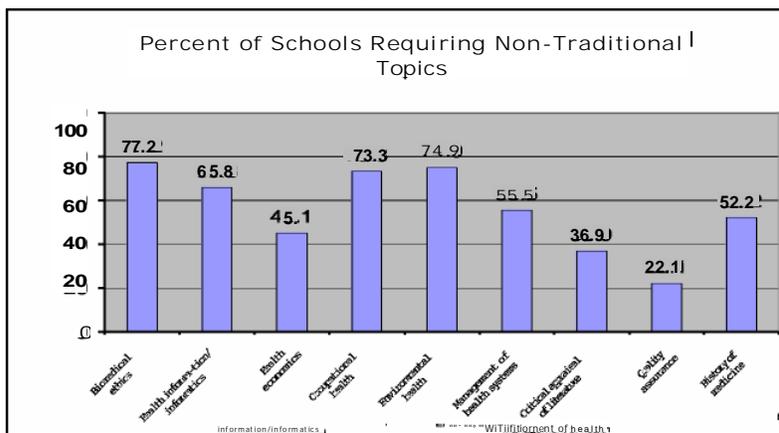
Curricular Directions

While the input of various bodies and/or the use of statistical information into curricular decision-making appears to be essential in determining the form and content of educational programmes, the nature of the courses required and those offered as electives give the best indication of a school's orientation. In general, it appears that most of the curricular material deals primarily with the understanding, diagnosis and treatment of physical illness in the individual patient. Much of the curriculum is devoted to specialized subjects. This does not mean that students cannot receive instruction in other, more population-based disciplines, but the educational thrust is overwhelmingly towards traditional, specialized, individual patient-oriented medical subjects.

There are opportunities to sample specific community-oriented electives, to investigate public health issues, to work in primary care, become associated with a family practitioner, work in teams with other health professionals and take responsibility for the health of a family. Some medical schools allow students to work in areas — occupational health, ethics, health economics, and population-based research etc. — which have classically fallen outside the traditional areas of medical study.

n GRAPH XXIX indicates the percent of schools requiring instruction in certain "non-traditional" areas.

Graph XXI X



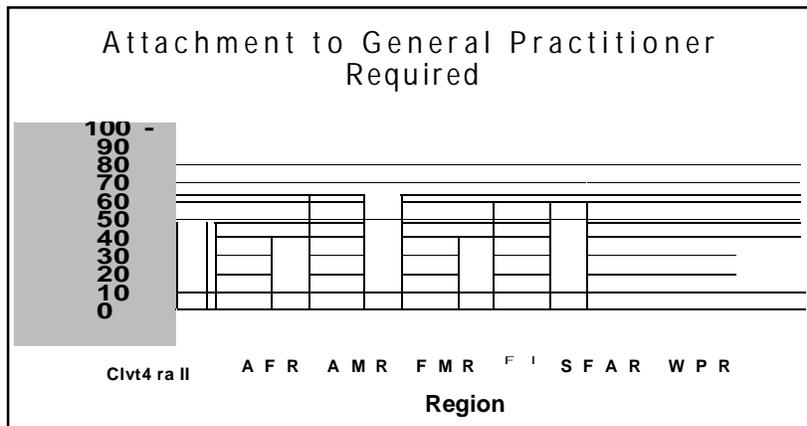
While expertise in a number of these "non-medical" subjects is increasingly seen as essential in the creation of competent, modern physicians, too few schools offer them as part of their curriculum.

Communitybased training

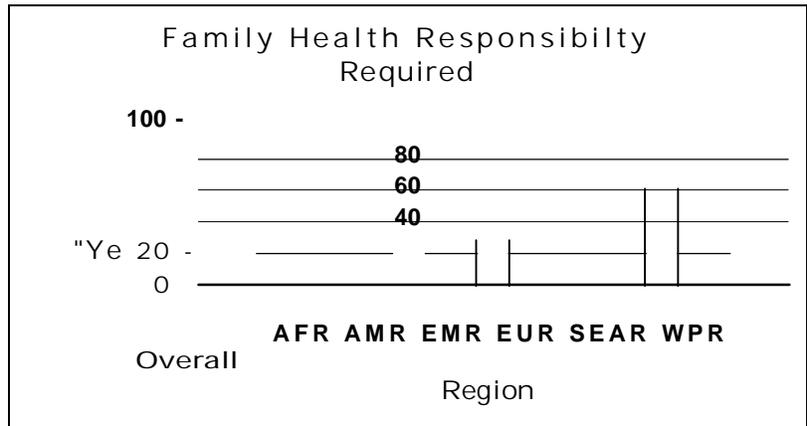
Three specific areas of emphasis are believed to be of importance in the training of doctors for the future. These include: 1) the opportunity to learn from family practitioners, 2) the need to help provide care for entire families during the student experience, and 3) the importance of working in teams with other health professionals.

Graphs XXX, XXXI, and XXXII indicate the extent to which these experiences are available to medical students worldwide.

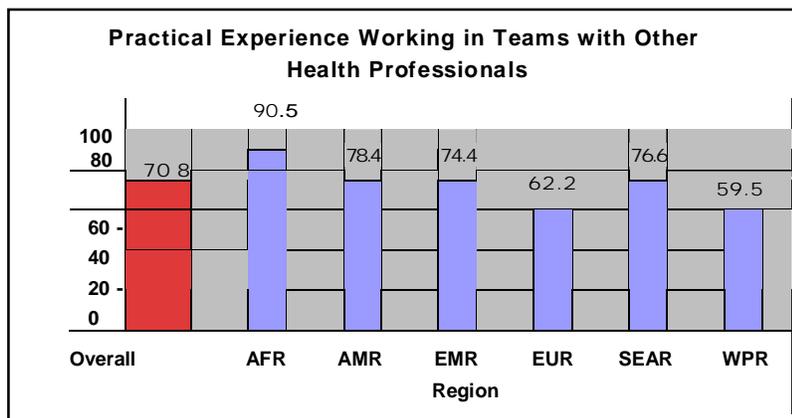
Graph XXX



Graph XXXI



Graph XXXII



The data indicates that — with the exception of the experience of working in teams — these areas are accorded relatively low priority by medical schools.

COMMENT

The data from the WHO survey offers a large amount of specific information on the curricular patterns of individual schools. Certain general points are summarized here.

Government agencies in most countries provide a substantial portion of medical school funding and supply significant information as to the health priorities of the public but the form and content of the curriculum of most schools continues to be largely dictated by school-based, medically-oriented professionals.

If the health goals of those who currently guide the philosophies and curricula of medical schools are essentially the same as the goals of the public, it is reasonable to place curricular direction in the hands of academics. However, when the interests of medical educators and the needs of the public diverge substantially, the graduates produced by the school may be poorly prepared to address the expectations of most people. Why have so many societies been unable to create a health education system better able to serve the public? Despite the fact that an educational system based on the health needs of both individuals and populations is more acceptable from a practical, ethical, social and economical point of view, few medical schools have committed themselves to such a system.

The world's formal medical education system assumes — with some regional modifications — a prescribed medical curriculum with a period of didactic training in biology, physics and chemistry and some instruction in other subjects of im-

portance in a particular region or country. The medical curriculum then begins with preclinical or basic instruction — largely through the lecture/laboratory format — in anatomy, biochemistry, physiology, pathology and a variety of other courses usually designed to give students an understanding of the natural workings and pathological perturbations of the human body.

The clinical phase allows students to learn about specific medical problems — again usually physical and organic — encountered in the individual patient. The clinical years require rotations in internal medicine, surgery, paediatrics, obstetrics, and often in family or general practice. Students have some latitude to pursue periods of elective study. Most schools show evidence of a strong bias towards speciality training and much teaching is based on the need for the student to understand the disease process itself rather than encouraging an understanding of the disease in relation to the needs of the patient or the functioning of the community.

The sites for learning experiences vary from country to country (see Facilities) but they are overwhelmingly centred within tertiary hospitals despite the fact that — for the majority of patients, — these venues are less and less important.

Some medical schools encourage students to interact with other health care providers and/or deal more directly with patients in their own communities, but few institutions place much emphasis on a population-based or community-oriented approach to health problems. Schools do not encourage teaching outside traditional hospital-based sites, such as at health centres, district hospitals or in primary health care settings (see Facilities).

New instructional techniques — specifically PBL and curricular integration — are thought to be more effective in transmitting knowledge but the majority of teaching continues to be by traditional methods (lectures and laboratories).

There has been a growing movement to modify both philosophical and educational approaches in medicine but most current innovations are directed towards improving "how" students should learn and teachers teach. Only minimal effort — usually in areas outside the traditional medical curriculum — has been directed towards issues surrounding the question of "what" should be taught in order to improve physicians' ability to effectively influence the overall well-being of individuals and communities. Any significant re-orientation in medical education will probably occur only if issues related to the actual societal impact of the instructional process prevails over attention to issues related to changes in the mechanics of teaching.

Evaluation of graduates is largely based on successful completion of some type of school-designed comprehensive examination (see Students). Few schools measure the knowledge of their matriculants based on successful completion of any kind of national or international certifying examination designed by some

unbiased body. There is currently no minimum, worldwide standard of competence for medical school graduates.

A review of the curriculum — supplemented by other material contained in the survey — underscores the need for a better evaluation of the role of medical schools in relationship to societal needs.

Does the current medical education process offer the best health benefits to the public? If a complex web of social, cultural and environmental determinants of health and disease — in addition to purely medical factors — is important for human well-being why does our medical education system not spend more time educating practitioners to understand and cope with them? If some of the leading causes of disability in the world are mental illness, road traffic accidents, protein energy malnutrition, and falls (15, 20), why do they not receive greater curricular attention? If an understanding of bioethics, health economics, environmental health, the management of health services, and working with teams are areas that are having the greatest impact on human health, should not more instructional time be allocated to these subjects?

Who should decide what philosophy of health is best suited to guide any given medical school? Who decides which skills should be taught to students to prepare them for the realities of practice in the outside world? If many health-related problems are non-medical, should not graduates be taught to work together with other health professionals and with communities to solve them? If medical schools are designed to serve the public, should not government policies and societal agencies have greater input into determining goals and objectives?

The public is entitled to an academic process that creates graduates possessing needed knowledge and skills. It seems reasonable for each individual nation to set certain standards for its medical school graduates but all schools should also consider supporting the creation of some kind of universal accrediting process that certifies both the basic quality and social responsiveness of the institution as well as the qualifications of graduates. With the increasing mobility of physicians and new trends in globalization, some international set of standards should be considered.

CREDENTIALS AWARDED BY MEDICAL SCHOOLS

Throughout the world, medical schools award a bewildering array of letter designations to indicate acquisition of a first degree in medicine. Many of these varied designations are the legitimate result of linguistic or cultural differences between countries. However, it is often difficult for those who must evaluate the nature and quality of these credentials to make any accurate assessment of their meaning.

DATA

A total of 1649 letters, letter combinations or short titles are listed as indicating completion of a first medical degree in the medical schools (807) reporting. The largest single group (251) used the designation of "M.D." (for medical doctor) to indicate completion of the course of study.

A number of institutions include "MD" after the graduate's name but also add other titles or letters.

COMMENT

While the diversity of credentials awarded often reflects important historical and/or cultural specificities, there may be value in considering measures designed to award some common, worldwide designation to indicate completion of a medical degree, particularly considering the large number of schools and the increased mobility of graduates. Such an international designation could be considered in conjunction with other efforts relative to global standard setting and accreditation.

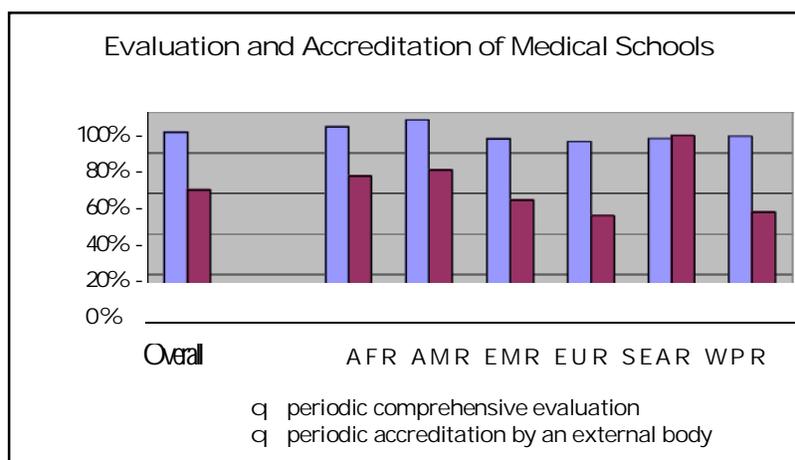
ACCREDITATION OF THE WORLD'S MEDICAL SCHOOLS

Some type of unbiased determination of the effectiveness of any given medical school's programmes is important to ensure both the quality and direction of the educational and research processes and to stimulate needed changes. Theoretically, all current medical schools are reviewed periodically to validate that their administrative functioning, financial well-being, curricula and research programmes meet certain standards. How and by whom are medical schools worldwide currently evaluated?

DATA

Graph XXXIII shows that the majority of schools carry out regular reviews of their educational programmes. Recommendations from university/faculty groups (comprehensive evaluations) generally direct the nature and quality of most school's teaching programmes. A smaller percentage of schools is accredited by an external body.

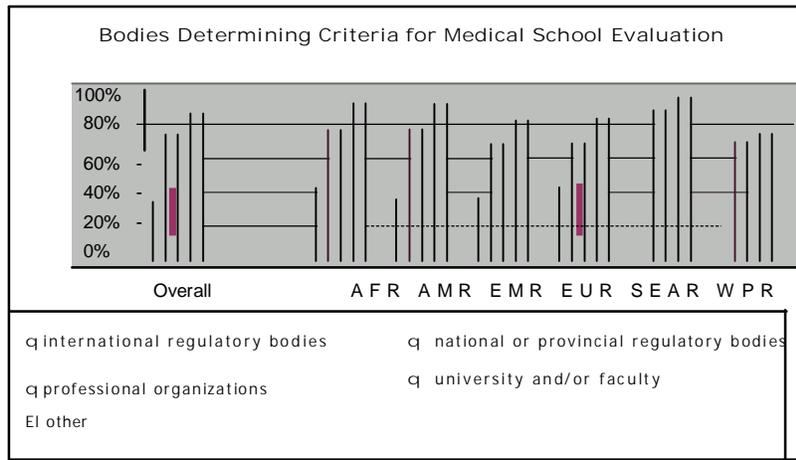
Graph XXXIII



Virtually all medical schools in China (95.5%), India (89.1%) and the USA (100%) indicate that they are routinely evaluated, usually by some national or provincial regulatory body. Less than 25% of schools in these countries are reviewed by international regulatory bodies.

n GRAPH XXXIV shows the percentage of the world's schools subject to periodic accreditation by various bodies, both internal and external. Up to two-thirds of the world's schools are accredited by some external body. Nearly 100% of schools in India and in the USA are subject to external accreditation.

Graph XXXIV



COMMENT

In some respects, the data on medical school evaluations should be reassuring; it appears that most schools are routinely assessed for quality and mission by some group — either internal or external. In most cases, the process of evaluation is the responsibility of medical school faculties or of the university itself. One could assume that these faculty/university groups — while concerning themselves with the quality and cost-effectiveness of the institution — are also interested in their medical school being aware of the importance of their institution's social role. However, this survey and other sources show that many medical schools are only modestly interested in being evaluated for "social accountability" on the basis of their education, research and service delivery programmes.

While internal bodies should periodically review all aspects of school functioning, it is also essential that schools be evaluated regularly by some external, disinterested body. Such a group would be primarily concerned with both an evaluation of the school's social role and the quality and relevance of the curriculum. Based on the accrediting group's evaluation, the school would be given authority to function or be asked to upgrade certain areas. If medical schools are designed to serve the public it is important to assure people that quality education programmes prepare competent practitioners to serve them.

Improvement of both individual and community health should be a major focus of all medical schools and any service-oriented institution should also meet some standards agreed upon by society. Schools should go beyond current and conventional rhetoric and provide strong evidence — through data and appropriate assessment mechanisms — that they are addressing the priority health concerns of individuals and the community in significant ways.

MEDICAL SCHOOL INTERACTIONS WITH GOVERNMENT ENTITIES, COMMUNITY AND SCHOOL GRADUATES

Universities in general and medical schools in particular have traditionally been labelled as "ivory towers" — usually accused of failing to interact with local communities and too often perceived as divorced from the needs and priorities of the real world. Are these valid criticisms? The WHO data tends to confirm other information that there are relatively few linkages between medical schools today and other important stakeholders within the health system, including governmental agencies, health service organizations, professional associations, communities and even medical school graduates themselves. As the institutions primarily responsible for creating and developing educational health teaching and research agendas and as essential components of the health care system designed to serve the public. Medical schools have generally not assumed leadership roles in activities related to the performance of the health system, particularly regarding the reference values of quality, equity, relevance and cost-effectiveness in service delivery. Despite substantial public support for their operations, the schools have not used their potential to create relevant models of health services or — as institutions — sought community input to improve the health of society.

To what degree should medical schools interact with other organizations and work to fulfil a social mission consistent with the public's health priorities? In their mandates most medical schools claim that they have responsibility for the needs of the public. But while many individuals within schools collaborate with outside groups on health needs and population



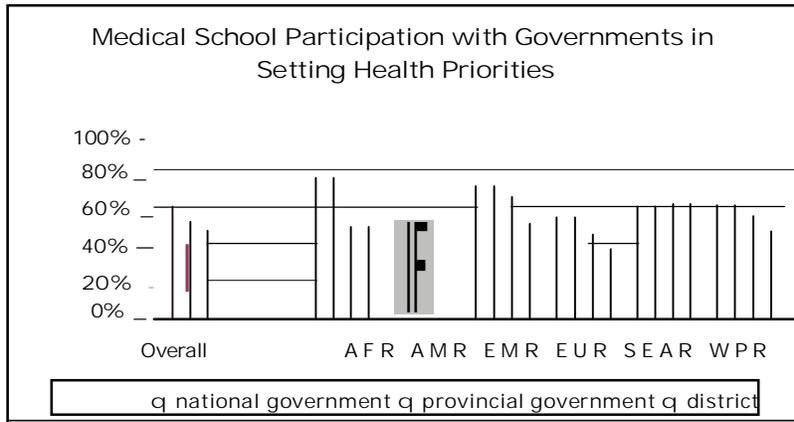
problems, there is a substantial discrepancy between what most schools say about the extent of their community interactions and what the institution as a whole actually does. For too many in academic centres, terms like "interaction" and "collaboration" are limited to professional exchange, particularly in relation to referral of patients; too rarely do these "linkages" cover joint ventures in community health and health system improvement.

DATA

Medical schools reported on cooperative efforts with national, district and/or provincial governments in three priority areas — health, research, and higher education.

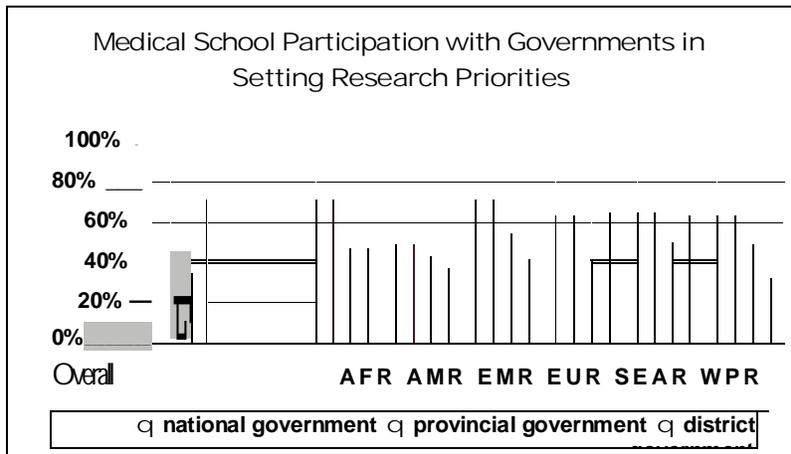
n GRAPH XXXV indicates the degree of cooperative efforts in concert with governmental groups in setting HEALTH PRIORITIES.

Graph XXXV



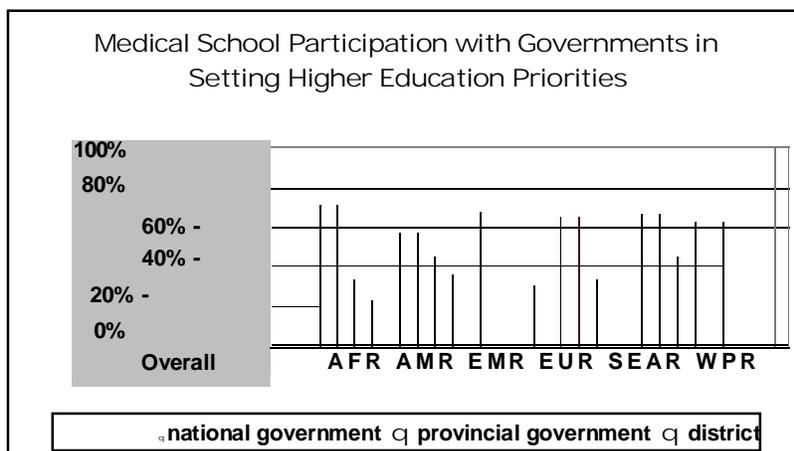
n GRAPH XXXVI indicates the degree of cooperative efforts with governmental groups in setting RESEARCH PRIORITIES

Graph XXXVI



n GRAPH XXXVII indicates the degree of cooperative efforts with governmental groups in setting HIGHER EDUCATION PRIORITIES

Graph XXXVII



In countries with high numbers of medical schools — China, India and the USA — over 69% of schools reported cooperating with governmental agencies in one of the above three areas.

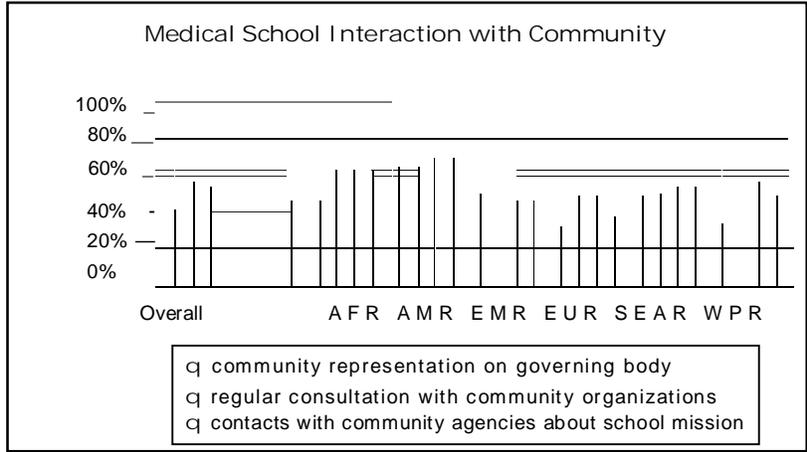
In keeping with their responsibility to educate practitioners to serve the public, medical schools should interact more often and more closely with the community and develop collaborative projects with other stakeholders in the health system.

n GRAPH XXXVIII indicates the extent of community/medical school interactions in three areas — community representation on the school's governing body, regular consultations between school and community organizations and school/community interactions designed to facilitate achievement of the school's social mission.

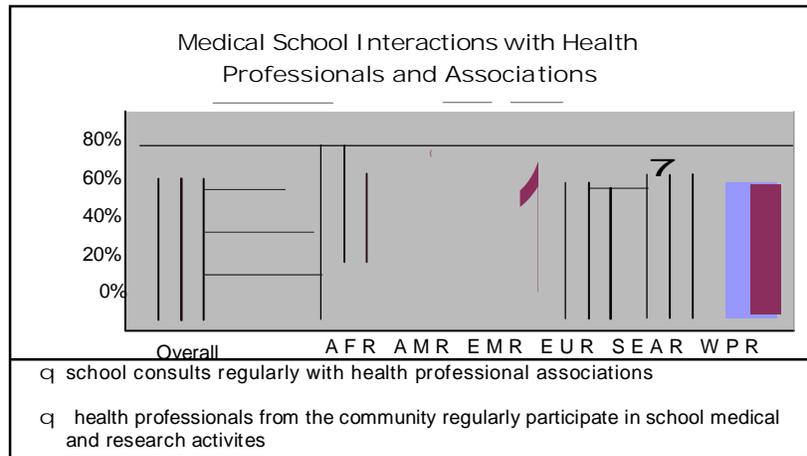
n GRAPH XXXIX indicates the degree to which medical schools regularly consult with health professional associations and the extent to which health professionals from the community participate in the school's education and research activities.

In China, India and the USA, interactions between medical schools and professional groups are reported as higher than average; in the United States over 90% of schools claim that community health professionals play significant roles in school activities.

Graph XXXVIII



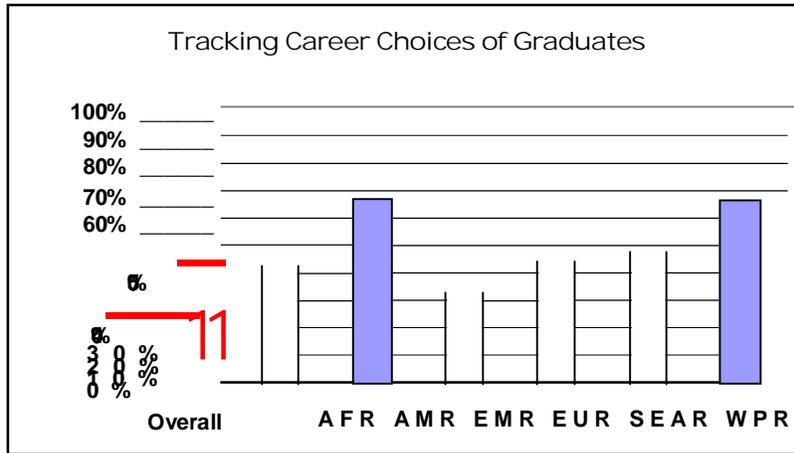
Graph XXXDC



Medical school graduates represent an often untapped potential for identifying medical education priorities and for facilitating the school's educational and social mission. Despite the fact that graduates are often able to advise as to how well the school is fulfilling its educational and research goals few schools follow the career choices of their graduates or encourage their participation in school-related activities.

n GRAPH XXXX indicates the percentages of medical schools that follow the career choices of their graduates.

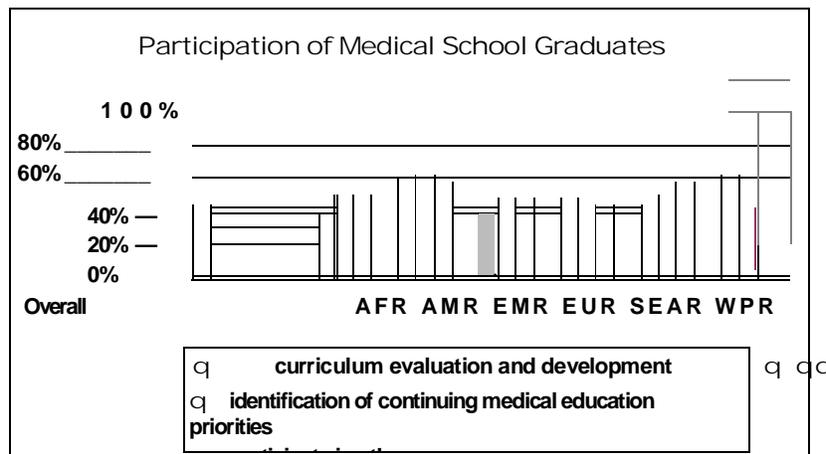
Graph XXXX



Barely 50% of medical schools follow the careers of their graduates. 97.9% of United States schools keep track of their graduate's careers.

n GRAPH XXXXI shows the extent of graduate participation in curriculum evaluation and medical education priority setting.

Graph XXXXI

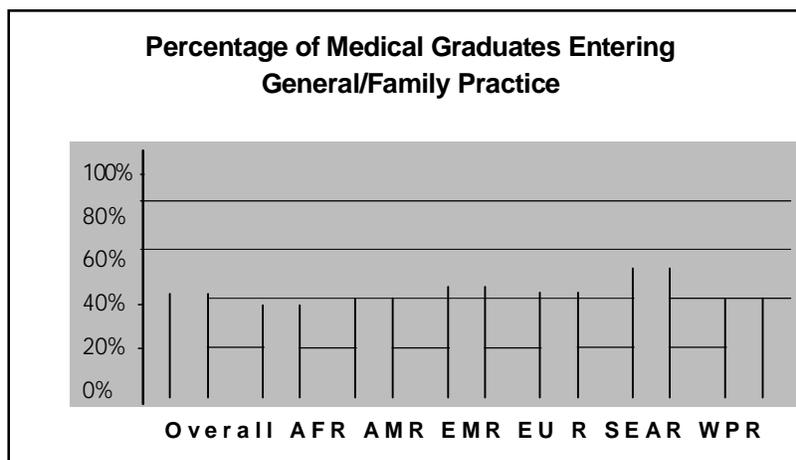


Chinese and United States' medical schools report a relatively high degree of interaction with their graduates.

Medical schools have a profound capacity to influence the career choices of their students. Most graduates elect further specialized education despite the fact that this type of training may not have the highest priority in terms of community priorities. An illustration of the situation today is the number of graduates currently entering the field of general/family practice — an area of substantial need throughout the world.

n GRAPH XXXXII indicates the percentage of medical school graduates entering general/family practice worldwide.

Graph XXXXII



The percentages of graduates entering general/family practice are similar in from countries with large numbers of medical schools (China, India, USA).

COMMENT

The WHO data highlights two major medical school problems with regard to the relationship of the schools and the populations that they are supposed to serve. First, despite the fact that a substantial number of individuals within medical schools interact with health professionals in the community, only about half of the world's medical schools — as institutions — interact with community agencies or cooperate with the community about commonly held visions and objectives. The communities input into medical school governance is modest and it appears that school/community interaction is rarely a school priority. The major -

ity of community-oriented programmes are usually the result of the efforts of specific faculty members. Although schools accept governmental and other external funding, they tend to avoid governmental or community efforts to influence their programmes to better serve the needs of the people. Most outside interactions are determined by the school's needs rather than based on health criteria selected by the community.

The extent to which an academic institution should assume some obligation for the health of the community can be argued, but there seems to be a discrepancy between the rhetoric found in many school mission statements and their degree of interaction with external groups. At a time when many professional institutions are actively seeking input from communities, many medical schools have remained aloof from such liaisons.

A second area where many schools have been less than responsive to social needs is in their apparent commitment to helping direct the career paths and goals of their graduates. In general, medical schools have not taken a proactive role in either influencing their students to serve population needs or in following the careers of their graduates to see what type of work they are pursuing. Despite the fact that nearly one half of medical schools worldwide claim to consult their graduates and take advantage of their advice to reorient and improve their educational programmes, it appears that graduate input into academic directions is not generally a school priority.

Better information on career choices and specialization needs would be of value in advising graduates, modifying curricula, and keeping students and governmental groups abreast of changes in health care patterns.

The situation with regard to increasing the number of generalist¹ physicians is a case in point. It is commonly believed that the world currently needs more generalist physicians and fewer specialists. Yet less than 45% of students choose this path and even this percentage may not reflect a predetermined career choice; some enter general/family practice almost by default rather than by conscious commitment. There are many social and economic reasons to account for this low percentage, but the nature of the medical school curriculum, the perceived economic rewards of speciality practice, the teaching sites selected for training, the influence of peers and senior physicians, the bias of press and public opinion and the general academic emphasis within most medical schools obviously influence the choices of many students. If generalist physicians are to be leaders of future health care teams, care providers, decision makers and community integrators, the medical schools should take active roles in promoting the creation of such physicians.

¹The terms generalist and family practitioner are used interchangeably.

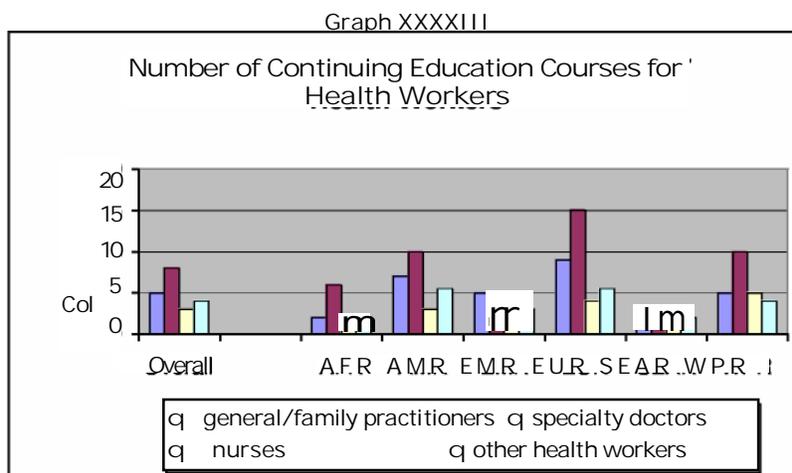
THE MEDICAL SCHOOL'S ROLE IN CONTINUING EDUCATION

Rapid advances in medicine and health now require that schools provide educational opportunities long after the years of formal medical education are completed. It is no longer possible for medical schools to accept that their training mission is complete when the student graduates. In addition, because of the collaborative nature of many aspects of health care today, all medical schools must take steps to provide continuing education opportunities for other health professionals.

DATA

The majority (75.8%) of the world's medical schools responding (827) report that they provide continuing education courses to health workers in the community. This figure varies from 64.4% (African Region) to 80.8% (Region of the Americas).

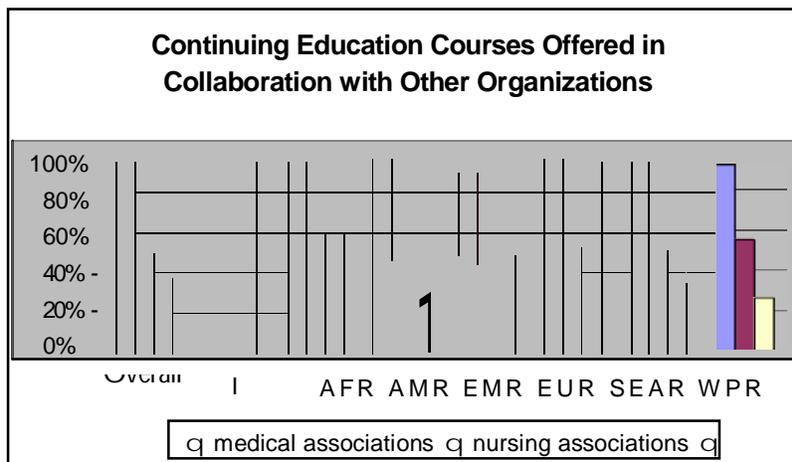
Graph XXXXIII indicates the median number of continuing education courses given by medical schools yearly to various health professionals.



Schools in the European Region (EUR) and the Region of the Americas (AMR) tend to offer greater numbers of continuing education courses than those in other WHO regions. China and the USA offer large numbers of courses (approximately 20/year) for general practitioners.

n GRAPH XXXXIV indicates the percentages of medical schools offering continuing education courses in collaboration with medical, nursing and other associations. A total of over 850 different organizations were listed under the designation "other".

Graph XXXXIV



COMMENT

Medical schools have made substantial progress in providing continuing education opportunities for physicians and other health professionals. However, when one reviews the number of physicians and other health workers who take advantage of the courses offered, it is apparent that many health professionals do not — or cannot — use the opportunities. The survey data indicates that in a given year only 5500 speciality doctors, 4500 general practitioners and 2000 nurses take medical school-sponsored courses worldwide. This is a small proportion of the world's total health professionals. It appears that, for many medical schools, so-called "life long learning" is still not a major part of the ongoing educational process. The data also indicates that the majority of hours of continuing education instruction is primarily directed towards the needs of speciality doctors. In addition, most courses are not offered in collaboration with other health professionals.

Medical schools should play a more active role in the constant quality maintenance of health services and in upgrading health professionals' performance. They should contribute through an expanded continuing education component. Their participation in the design, adaptation and dissemination of new techniques in auditing, re-certification and distance education for all health workers is recommended.

CONCLUSIONS AND RECOMMENDATIONS

The report provides information — albeit incomplete and dependent on survey replies — about the world's medical schools and the degree to which they are educating physicians to serve individual and community health needs. The results largely confirm known information and provide a basis for recommendations which may be useful to individual schools in reviewing their educational and research programmes.

The survey itself gives a mixed picture of the world's formal medical education process. At first glance, the majority of medical schools appear remarkably healthy. There are over 1600 schools worldwide and most have mission statements, admissions processes, curricula, instruction in the care and cure of human illness, accepted evaluation systems, competent graduates and, in general, a complete academic process which trains young men and women to provide health care for people. There is consensus on the length and content of the learning experience and the system appears to educate future caregivers through apparently well conceived and relevant programmes.

There is, however, increasing evidence from a variety of sources, — including this survey — that many medical schools could profit by seriously re-evaluating both their goals and educational methods so as to improve their training and research efforts to fit the needs of society. Despite their position at the centre of the health care system and the infusion of substantial public and private funds, the majority of schools rarely question our medically-oriented definition of health, their own social purpose, or the goals and functioning of the health care system as it exists today. It appears that many schools are training graduates who are less than responsive to the actual health priorities of the public and relatively few schools take a proactive role in assessing, or responding to individual and population health needs.

One result of a review of research and educational strategies could be a substantive redirection of current institutional methods and goals. Suggestions merely to modify teaching techniques, experiment with the current mix of medical courses or seek new instructional sites are not real substitutes for change. Medical schools must reassess their goals in relation to the community and the efforts of other care givers and explore better methods to initiate real improvements.

Based on the data from the report, the following conclusions are presented:

General conclusions

- n Medical schools, as important stakeholders in the system that provides health care to individuals and communities, are generally not proactive in assessing priority health needs, in organizing teaching and research programmes to improve health system functioning and in acting as advocates to improve the health status of all people — especially the most vulnerable. The schools have tended to validate the biomedical model of disease and have not taken leadership roles in either initiating change or instituting new ways to improve health. Despite evidence that a myriad of factors — not only biomedical influences — determine the health of the public and a dramatic shift in the world's conception of what constitutes both individual and community pathology, most schools have been slow to initiate steps to produce graduates better fitted to the needs of all people.
- n Although virtually all medical schools meet general criteria in terms of admissions policies, faculty competence, student selection, curricula programs and assessment of graduates, many of the standards and procedures underlying these criteria are outdated, insufficiently evaluated by society and rarely subject to outside review.
- n Medical schools as health institutions have not taken leadership positions in interacting with community groups, graduates or other health professionals to solve health needs of individuals and the public. Despite mission statements which stress the importance of school/community interactions institutional policies have, in general, not encouraged alliances with outside organizations.
- n Many medical schools are deficient in their use of rigorous, objective procedures to monitor student admissions, the quality and relevancy of the courses they offer, faculty competence, research programmes or the actual degree to which the institution itself meets accepted standards of service to society.

Specific conclusions

n Mandate/Mission Statement

While most medical schools have mandates or mission statements which acknowledge an institutional commitment to serve the health of the public, there is evidence that few schools actually foster an active institutional policy of service to the community. There appears to be a difference in what medical schools say and what they actually do.

n Financial support

Public resources, administered by government agencies are the most significant revenue for most institutions. Student tuition continues to play an important financial role.

n Admissions

Requirements for admission to medical school vary widely. Community involvement in the admissions process is minimal.

n Student Body

There are substantial differences in the number of students at each school, the ratio of male to female students and the ratio of students to faculty. There are marked differences in the ways that student competence is evaluated.

n Faculty

While the many medical school faculty are full-time, a substantial percentage are part-time. Student teaching does not take up the majority of faculty time. Most teaching takes place at academic health centres or tertiary hospitals. Evidence of competence in teaching, research or community involvement is not necessarily a condition for either faculty appointment or promotion.

n Facilities

The majority of schools have libraries, teaching and research laboratories, instructional media services and microcomputers for students and faculty but a significant proportion of schools do not regard these facilities as adequate.

n Curriculum

Medical schools tend to offer traditional "Western-style" curricula with a standard format in terms of courses and time in training. There is an emphasis on instruction in subjects designed to stress the importance of the health profile of the individual. Although a number of schools use newer teaching techniques (integrated courses and problem-based learning), the time allocated to traditional teaching techniques is substantial. Student evaluation processes vary and curricular emphases are largely defined by internal, medical school criteria. There is relatively little exposure to practical, community-oriented experiences. Instruction on the importance of the influence of non-medical factors on medical problems is minimal.

n Credentials

Schools award a vast variety of letter credentials to indicate completion of basic medical training.

n Accreditation

Although the curricula and research programmes of the majority of schools are reviewed periodically by internal groups, there is no worldwide, objective, external system for evaluating medical schools.

n Interactions with other Bodies

Good human health requires more than the adequate provision of quality medical care but medical schools tend not to interact with graduates, other health professionals or other community-oriented groups to improve overall population health.

n Continuing Education

The majority of medical schools offer continuing education courses to physicians and other health professionals. However, the number of professionals able to take advantage of these is relatively small.

RECOMMENDATIONS

Based on the data from this report and from many other sources, the following recommendations for re-orienting medical education are presented:

SOCIAL RESPONSIVENESS

- n Medical schools should not lose sight of the fact that they exist primarily to serve the health needs of society. The data lends weight to the view that, in practice, concern for the health of the public may not necessarily be a principal orientation for many medical schools. Service to the needs of society should be the primary goal of the medical school education process.
- n Each school should review its tangible commitment to public service and create both educational, service delivery and research programmes that underscore a concern for society. Schools must be important actors on the national health scene, understanding the challenges and the opportunities within the health system and both initiating change and responding appropriately to public needs.
- n Schools of medicine should be more proactive in facilitating proactive alterations in national health systems. Educational institutions can play important roles in initiating needed changes and responding to public concerns. Medical schools have both a long-standing knowledge of human health and substantial expertise in research design and management which

gives them an important social advantage over most other institutions. They should experiment with innovative health service delivery models, keeping in mind the internationally accepted values of quality, equity, relevance and cost-effectiveness. Programmes which stressed the integration of an individual and a population perspective in the development of health models would be important contributions in preparing graduates and other health professionals for their future practice environment.

n Schools of medicine currently have little direct institutional involvement with community-based agencies, yet many of these outside agencies deal daily with major health problems of society. The nature and extent of the relationships with community-based bodies should be reviewed by all medical schools so as to encourage productive and sustainable partnerships with stakeholders such as governmental entities, health service organisations, professional associations, etc. For many schools, such a review would mean moving from purely rhetorical commitments to actual practical contractual arrangements.

n Many current medical school educational and research programmes reflect the priority needs of physicians themselves or of the current health care system itself. The schools should actively address critical issues in population health and in social development, such as poverty alleviation, social justice, human rights, ethics, tolerance, respect for individuals and confidentiality. A school's involvement in the promotion of these issues could be done in different ways: through public advocacy, support for specific research and development projects, integration of social priorities within educational programmes and rewards to students and staff for outstanding contributions in these areas.

n Medical schools appear to take little interest in the career choices of their graduates and do little to help ensure a proper mix of skills within the medical and health workforce. The schools should develop incentives which would help graduates choose professional tracks needed by society. The necessity to provide basic care in under-served areas is paramount. These efforts could be made in collaboration with local governmental agencies and communities.

EDUCATIONAL STRATEGIES

n Despite the fact that many schools have introduced a variety of innovative educational strategies to improve the relevance and the efficiency of learning processes, there is a definite need to expand and make a better use of

available methodologies and techniques in computer-assisted learning and communication sciences so as to enhance autonomous learning, self-auditing and distance education both for students and for professionals in practice. Attractive and relevant continuing medical education programmes — using advanced techniques and primarily designed to serve the needs of society — should be an important part of what is offered by a medical school. However, it is important for schools to understand that technical improvements alone — without an overriding concern for the health needs of society itself — will not ensure a continuing and important role for the institutions.

- n An increasing openness towards community-oriented medical education and research programmes should be a major focus of the entire school. Currently most efforts at instilling a population perspective into the training of graduates is limited to individuals, specific departments or disciplines. Community concern should reflect the dedication of the entire institution.
- n Although many medical schools claim that their education and research objectives are designed to respond to the health priorities of the people, there should be a more rigorous and consistent institutional effort to review the content and the form of the teaching process and ensure that the **curriculum** actually meet the needs of society. Such a review would include better methods to encourage community involvement, modify admission policies and assess how schools and students are evaluated. It is important to ensure that student performance is reviewed to reflect these orientations and priorities.
- n The choice of educational programmes and sites for teaching should be consistent with the overall institutional goal of service to the public. Schools should have adequate facilities and there should be greater emphasis on learning in communities, greater involvement with other professionals as members of a health team, attention to the general health problems of families and the selection of teaching sites that reflect the burden of disease within a given community. Student learning experiences that encourage community-oriented exposures to health problems should be highlighted.
- n Schools should take more active measures to ensure faculty competence. Rewards should be given to faculty for accomplishments in socially-oriented medical education programmes, and in community health development. Of particular importance is the recognition of efforts to measure whether school investment in these areas is having an impact on graduates' behaviour in their practice environment.

THE IDEAL DOCTOR

- n While a majority of schools have mission statements emphasising their commitment to both social and professional values, few institutions have actually devised appropriate mechanisms to prepare physicians with the necessary aptitudes to best serve the public. Based on the concept of social responsiveness and on the basic educational strategies outlined above, schools should foster programmes that create an "ideal" doctor (i.e. the WHO "five star doctor" — see box below). Creation of these health professionals should be the principal product of the institution.

- n There should be a process to ensure that all educational endeavours by the schools — basic, clinical and continuing education — should clearly contribute to the acquisition by all learners of the essential aptitudes as outlined in the ideal doctor profile. Particular attention should be paid to issues related to quality of care, humanism, social justice, empathy and respect of the person.

- n The concept of the ideal doctor should be actively promoted by the medical school. In this process, the institution should collaborate with medical and other professional associations in building a positive image of doctors, with a particular effort to enhance the status of family physicians or general practitioners. The school should take pride in the creation of physicians to serve society.

The five-star doctor

- « **Care provider**, who considers the patient holistically as an individual and as an integral part of a family and the community and provides high-quality, comprehensive, continuous and personalized care within a long-term relationship based on trust.

- « **Decision-maker**, who chooses which technologies to apply ethically and cost-effectively while enhancing the care he or she provides.

- « **Communicator**, who is able to promote healthy lifestyles by effective explanation and advocacy, thereby empowering individuals and groups to enhance and protect their health.

- « **Community leader**, who, having won the trust of the people among whom he or she works, can reconcile individual and community health requirements and initiate action on behalf of the community.

- « **Manager**, who can work harmoniously with individuals and organizations inside and outside the health care system to meet the needs of patients and communities, making appropriate use of available health data.

ACCREDITATION

- n Although the majority of schools carry out regular reviews of their programmes and some are also evaluated by external groups, there is no current worldwide system for defining minimal standards for medical schools. While WHO does not advocate the creation of a single standard for all medical training programmes, some type of external accreditation process is one of the most important leveraging tools to promote institutional change. Support should be provided for the establishment of a system of national accreditation.
- n The concept of social responsiveness should be a major component of any accreditation process. Standards and appropriate indicators should be developed to assess medical schools in this regard. Medical schools should be more accountable for their products, whether these products are graduates, research results or health service interventions. Initiation of a content-orientated accreditation system would mean a shift from a totally process-oriented accounting mechanism to one concerned with the educational and research impact on medical practice, service delivery, the health system and the general health of the public.
- n The institution of an external accreditation system should include a developmental component which would make use of the advice of references and resources to assist in improving the performance of the medical school and the quality of medical education.
- n Capitalizing on the increasing trend towards international health goals and priorities, an organised accreditation endeavour should develop standards that would be of global relevance. Such an accrediting effort would not attempt to dictate universal medical school norms but would respect the efforts of each medical school in relationship to the particular, local situation.
- n The public should have access to information as to how well each medical school performs with regard to educational programmes, research missions, service delivery and health policy functions.

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Credentials

Accreditation

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Conclusions and Recommendations

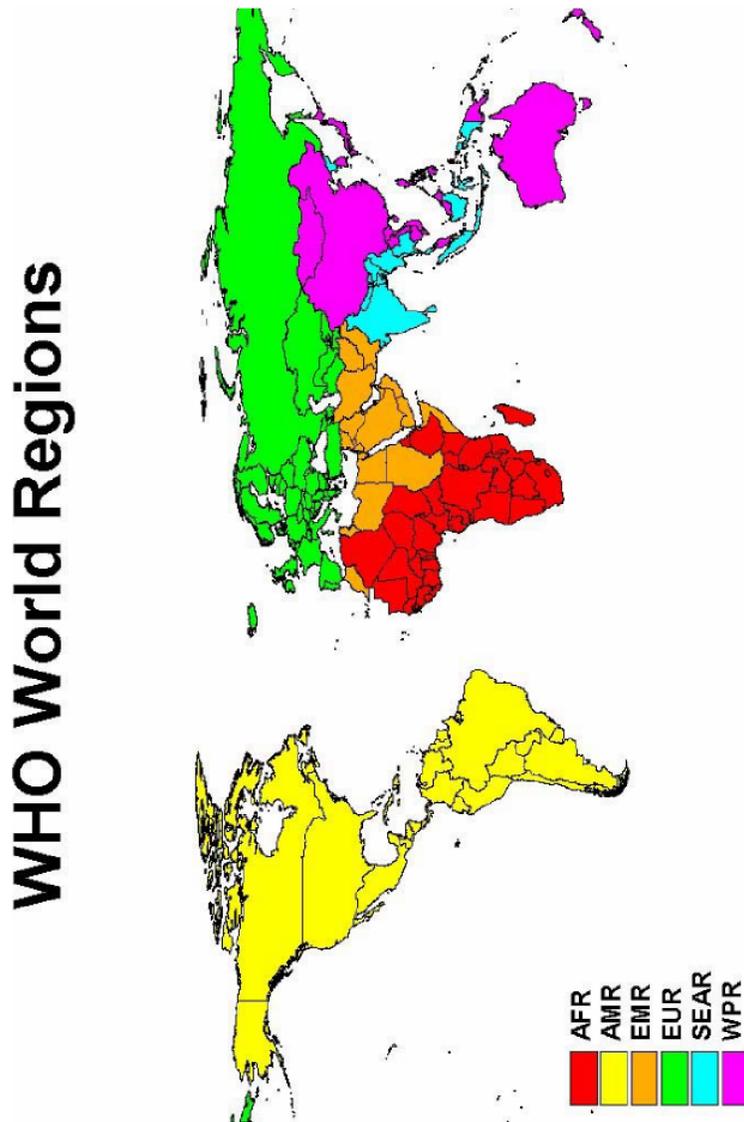
References

Annex

AN

NEX

Map I — WHO Regions



ANNEX

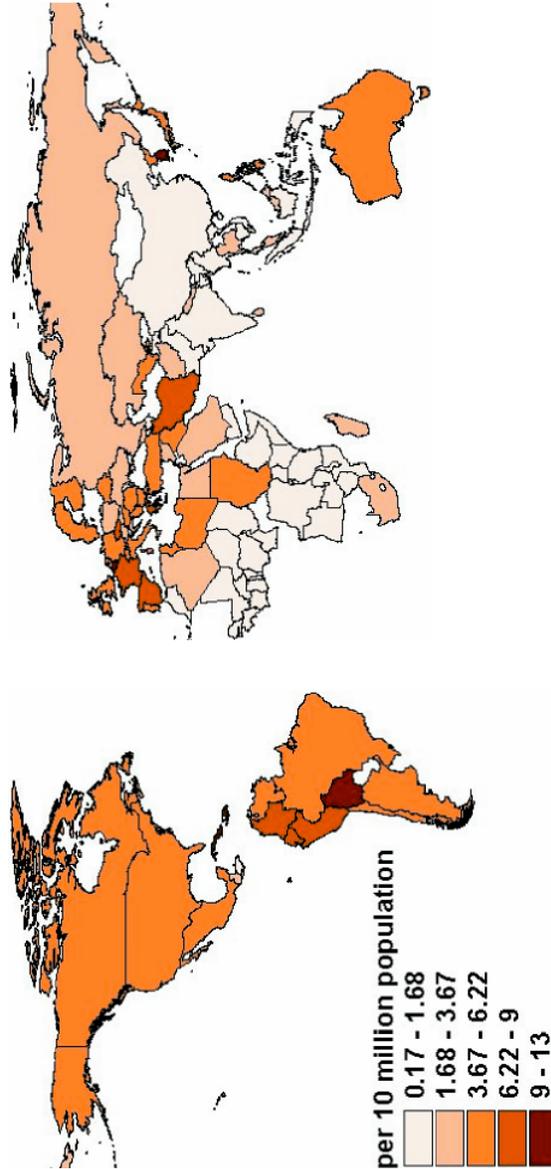
Table I - Countries Listed By Region

AFRO	Uganda	EMRO	Bosnia and
Algeria	Zaire	Afghanistan	Herzegovina
Angola	Zambia	Bahrain	Bulgaria
Benin	Zimbabwe	Cyprus	Byelarus
Botswana		Djibouti	Croatia
Burkina Faso	AMR ()	Egypt	Czech Republic
Burundi	Antigua and Barbuda	Iran	Denmark
Cameroon	Argentina	Iraq	Estonia
Cape Verde	Bahamas, The	Jordan	Finland
Central African	Barbados	Kuwait	France
Republic	Belize	Lebanon	Georgia
Chad	Bolivia	Libya	Germany
Comoros	Brazil	Morocco	Greece
Congo	Canada	Oman	Hungary
Equatorial Guinea	Chile	Pakistan	Iceland
Eritrea	Colombia	Qatar	Ireland
Ethiopia	Costa Rica	Saudi Arabia	Israel
Gabon	Cuba	Somalia	Italy
Gambia, The	Dominica	Sudan	Kazakhstan
Ghana	Dominican Republic	Syria	Kyrgyzstan
Guinea-Bissau	Ecuador	Tunisia	Latvia
Guinea	El Salvador	United Arab Emirates	Lithuania
Ivory Coast	Grenada	Yemen	Luxembourg
Kenya	Guatemala		Macedonia
Lesotho	Guyana	SEARO	Malta
Liberia	Haiti	Bangladesh	Moldova
Madagascar	Honduras	Bhutan	Monaco
Malawi	Jamaica	India	Netherlands
Mali	Mexico	Indonesia	Norway
Mauritania	Montserrat	Maldives	Poland
Mauritius	Netherlands Antilles	Myanmar	Portugal
Mozambique	Nicaragua	Nepal	Romania
Namibia	Panama	North Korea	Russia
Niger	Paraguay	Sri Lanka	San Marino
Nigeria	Peru	Thailand	Serbia
Rwanda	Puerto Rico		Slovakia
Sao Tome and	Saint Vincent and the		Slovenia
Principe	Grenadines	EURO	Spain
Senegal	St. Kitts and Nevis	Albania	Sweden
Seychelles	St. Lucia	Andorra	Switzerland
Sierra Leone	Suriname	Armenia	Tajikistan
South Africa	Trinidad and Tobago	Austria	Turkey
Swaziland	United States	Azerbaijan	Turkmenistan
Tanzania, United	Uruguay	Belgium	Ukraine
Republic of	Venezuela		United Kingdom
Togo			

ANNEX

**Map II - Number of Medical Schools
by Population Density**

**Medical School Density per Country
(per 10 million population)**



ANNEX

Table II - Response Rate by Region

Overall	54.0%
AFRO	60.8%
AMRO	61.2%
EMRO	65.2%
EURO	54.3%
SEARO	36.9%
WPRO	49.1%

Table III - Countries with Response Rates Greater Than or Equal to 50%

Antigua and Barbuda	Fiji	Malawi	Sierra Leone
Argentina	Georgia	Malaysia	Singapore
Armenia	Germany	Mali	Slovakia
Australia	Ghana	Malta	Slovenia
Austria	Greece	Mexico	South Africa
Bahrain	Grenada	Mongolia	Spain
Bangladesh	Guatemala	Montserrat	Sri Lanka
Barbados	Guinea-Bissau	Morocco	St. Lucia
Belgium	Guinea	Mozambique	Sudan
Belize	Guyana	Nepal	Suriname
Bulgaria	Haiti	Netherlands	Sweden
Burkina Faso	Hungary	Netherlands Antilles	Switzerland
Burundi	Iceland	New Zealand	Thailand
Byelarus	Iran	Nigeria	Togo
Cambodia	Iraq	Norway	Trinidad and Tobago
Canada	Israel	Oman	Tunisia
Chad	Jamaica	Panama	Turkey
Chile	Japan	Peru	Uganda
Colombia	Jordan	Philippines	United Arab Emirates
Congo	Kazakhstan	Poland	United Kingdom
Cook Islands	Kenya	Portugal	United States
Costa Rica	Kuwait	Puerto Rico	Uruguay
Croatia	Kyrgyzstan	Romania	Uzbekistan
Czech Republic	Laos	Rwanda	Venezuela
Dominica	Latvia	Saint Vincent and the Grenadines	Vietnam
Dominican Republic	Lebanon	Saudi Arabia	Yemen
Ecuador	Lithuania	Senegal	Zambia
El Salvador	Macedonia	Serbia	
Estonia	Madagascar		

ANNEX

**Table IV — Language of Instruction at
Medical Schools**

Language	Frequency	Percent
English	421	45.17
Spanish	135	14.48
Chinese	62	6.65
French	54	5.79
Japanese	50	5.36
Russian	47	5.04
Persian	40	4.29
Portuguese	37	3.97
Indonesian	28	3.00
German	27	2.90
