

Knowledge, attitude and practice the three pillars of excellence and wisdom: a place in the medical profession

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المعارف والمواقف والممارسات أركان التميز والحكمة؛ وموقعها في مهنة الطب

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تشكل المعارف والمواقف والممارسات ثلاثية من العوامل المتفاعلة تتميز بالديناميكية والاعتماد المتبادل علي نحو فريد. وقد تم التوكيد في هذا المقال، فيما يتعلق بكل واحد من مكونات هذه الثلاثية، على قيمة السلوك الأخلاقي في السمو إلى الذروة بتطبيق هذا المكون. وقد عالجنا المقالة بصورة خاصة عددا من العوامل المهمة التي تؤثر في مسار ممارسة المهنة الطبية أو تتحكم فيها. وتناولت بشيء من التعمق جوانب الإعلام والتعليم والاتصال وتنمية الموارد البشرية، والعناصر الاجتماعية الانسانية للممارسة الطبية والتكنولوجيات الحديثة ونظم نقل التكنولوجيا، والعوامل البيئية، والقدرة على التنبؤ والتقدير في مجال العلم والتكنولوجيا.

Knowledge, attitude and practice constitute a triad of interactive factors characterized by dynamism and unique interdependence. Emphasis is laid, for each component of the triad, on the value of ethical conduct in raising the application of the component in real life to a peak. Special treatment is given to several important factors that can influence or control the course of practice in the medical profession. We consider in depth the conglomerate of information, education, communication and human resources development; the sociohumanistic elements of practice; modern technologies and technology transfer systems; environmental factors; and the capability of science and technology for forecasting and assessment.

Connaissances, attitudes et pratiques - les trois piliers de l'excellence et de la sagesse: leur place dans la profession médicale

Connaissances, attitudes et pratiques constituent une triade de facteurs interactifs caractérisée par le dynamisme et une interdépendance unique. Pour chaque élément de cette triade, l'accent est mis sur la valeur de la conduite éthique pour porter au summum l'application de l'élément dans la réalité. L'article traite en particulier de plusieurs facteurs importants qui peuvent affecter l'exercice de la profession médicale, en influençant ou contrôlant son cours. Le conglomerat information, éducation, communication y est examiné à fond, de même que le développement du personnel, les éléments socio-humanistes de la pratique, les techniques modernes et les systèmes de transfert de technologie, les facteurs environnementaux, et la capacité de prévision et d'évaluation de la science et de la technologie.

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Introduction

Since time immemorial, medicine as a profession has been accorded a place of consecration of the highest order, and those who profess it have been held as bearing a holy responsibility. It was practised only by priests, the elite and the most trustworthy citizens; it being an immense value-laden profession. This ethical dimension continues to this day. The place of medicine lies somewhere between God's will to end life and His mercy, which encompasses cure or alleviation of human suffering. This is the arena of the medical profession, where it battles with disease and deterioration and—sometimes—gains the upper hand.

And before and during the struggle for health, knowledge is acquired and transmitted by the physician with efficiency and skill (practice) and blended with measures of wisdom, ethics and faith (attitude). These latter qualities are perceived by patients as the healing touch of an efficient doctor.

Definitions

Knowledge

Knowledge is the capacity to acquire, retain and use information; a mixture of comprehension, experience, discernment and skill.

The possession of knowledge requires, following David Hume, complementarity between two basic ingredients: the *concept* through which an object is thought of at all, this requiring intellect; and the *perception* by which the concept is acquired, this requiring power of sense.

The nature of knowledge rests on the different modes of acquisition of ideas: perception, imagination, memory, judgement, abstraction and reasoning. Knowledge criteria centre around the sense that allows us to distinguish between right and wrong, as studied by logic (deductive reasoning) and scientific method (formulating and testing hypotheses).

That is what we know as *exact science*. The pinnacle aim of knowledge is the *truth* and is studied by that branch of metaphysics known as epistemology.

Education is the prerequisite of knowledge. It is the raising of a child or adult so that he or she a) acquires intellectual and manual skills; b) develops moral qualities; and c) demonstrates to others good manners and behaviour.

Attitude

Attitude refers to inclinations to react in a certain way to certain situations; to see and interpret events according to certain predispositions; or to organize opinions into coherent and interrelated structures.

Values are inextricably related to attitudes. Value can connote a) the price attached to intellectual or moral status; b) a way of appreciation of merits; and sometimes c) the description of a set of "ethical actions".

Ethics feature highly among the whole gamut of ingredients that make up attitude.

Practice

By practice we mean the application of rules and knowledge that leads to action. Good practice is an art that is linked to the progress of knowledge and technology and is executed in an ethical manner.

The practice of research on human subjects (or on animals) merits special attention because of the attendant risks. Such practice should therefore follow or be guided by a special ethical code, which could comprise the following:

- there should be (in the case of humans) informed consent
- there should be competent research design
- there should be competent investigators
- there should be a favourable balance between anticipated benefit and potential risk

- there should be an equitable selection of subjects and/or volunteers
- there should be fair compensation for research-induced damage to humans.

Discussion

The triad of knowledge, attitude and practice in combination governs all aspects of life in human societies, and all three pillars together make up the dynamic system of life itself. It is in this context that the ensuing discussion builds up a thesis which focuses on the three pillars and their relevance to health service and medical care.

Health can be viewed from many angles, and accordingly different definitions can be forged. Thus, concerning the human individual, health is bound in its coverage by the integrity of the body, both physically and mentally. When it concerns the community, however, health deals with a person as being socially adaptable and productive. Health, therefore, should be viewed as a lever, indeed a powerful instrument, for economic development.

Knowledge and health

It has become a matter of general agreement nowadays that medical knowledge alone cannot, and indeed does not, influence people's health. An equally important partner is the state of basic education and public knowledge, which influence health at the threshold level of awareness about the meaning of self-protection and personal hygiene, and taking seriously the advice rendered by a doctor. Knowledge, in general, grows through public education, and the latter constitutes a cornerstone and a point of departure in any development process.

For education and health, the nonfinancial costs to society must be taken into account. The economic aspect of the cost/benefit bal-

ance and the necessity of being prudent on what is to be sacrificed are important. We also refer to the institutional aspect—who is to pay for it all—and also the technical aspect—pragmatic decision-making on the inputs needed and the outputs expected.

The outcome for investment in education and health is projected by the ability of the citizen to become socially and economically productive, the return from the process is gauged by, and becomes manifest through:

1. physical and mental well-being, overall activity and perception of the individual's increased employment opportunities
2. enhanced earning capacity and better incomes
3. excellence in labour market performance.

Thus the value of investment in knowledge and in health care and education opportunities can be summarized by the following:

1. It influences intellectual abilities, thereby improving professional standards and earnings.
2. It has decided repercussions on the parameters of fertility mentality and efficiency and consequently influences family structure.
3. It inevitably raises the overall relative level of income and thus reduces the absolute level of poverty.
4. It helps to open new opportunities, which lead to all-round betterment of social conditions, while arresting (and hopefully reducing) income discrepancies among social groups.
5. It helps, additionally, to bring about a greater level of social peace and harmony, through higher taxation for the better-income groups and more subsidies for the needy groups of the society, especially in the area of health care.

Just as knowledge, medical or otherwise, offers the community a sure-effective lever for

economic development, it is also the indispensable basis for better health and health policy formulation. The exercise of policy formulation in its entirety is knowledge-intensive, and profoundly so. In actual practice, it will not merely pursue development of physical and natural sciences, but also will explore the implication of social sciences and the humanities, as well as of all ethical and moral aspects, without disregarding the legal and administrative issues and their impact.

Attitude and health

I can see no role for attitude in health care development and medical practice that can circumvent the philosophy that human life supersedes all calculations of cost-effectiveness. At the operational level, this translates itself to mean that a health service should satisfy five attitude-governed prerequisites: equity, relevance, acceptability, effectiveness and affordability.

1. The role of attitude in policy-making

Experience has shown that attitude in policy-making and implementation is conditioned largely by specific value assumptions, which include the following important features:

- The ever-present question of the few and their demands and the many and their needs imposes an attitudinal stand which distinctly favours directing the resources, especially if they are limited, to those who need them most.

- In all parameters of health service delivery, namely in the preventive, curative, rehabilitative and promotive fields, there should be a sustained respect for the moral values of equity and social nondiscrimination.

- With ever more sophisticated (and expensive) techniques and technologies to add to the armamentarium of the practitioner, a socially favourable balance with the need for the most basic and low-cost services must be es-

tablished. The dynamism of this balance is its chief advantage, since shifts in the basic orientations may be desirable with changing economic situations.

- While ensuring the widest scope of popular participation in decision-making in a democratic environment is a sure guarantee of the stability of policies, the involvement of politicians and political leadership provides much-needed support in phases of planning and implementation and the allocation of resources for the relevant programmes and projects.

- Central and institutional attitudes should be developed in order to guide the process of selection of human resources in the various health service facilities, and particularly at the levels of leadership and high responsibility.

- The policy-affecting attitudes should take due account of the multidisciplinary and intersectoral issues which influence, or are influenced by, health-related considerations such as food, nutrition, water supply, housing, sanitation, physical environment, waste treatment and disposal, protection from and prevention of traffic and home accidents and work hazards, etc.

- Health policy-related attitudes should also be developed *vis-à-vis* specific issues and situations, such as lifestyle and pattern of morbidity.

2. The role of attitude in health and medical services

The attitude that governs relations between doctor and patient is a consecrated pronouncement in the Hippocratic Oath and other sayings that are held by the medical profession in highest esteem. This attitude represents an express embodiment of a set of sublime (and yet very earthly) values. Values do not exist as physical objects in space and time, true enough. Yet they can be self-instilled as a result of personal experience, or inculcated to

become a social attribute as a result of education. Just think of what we know as "moral law" or "morality", which have evolved with time and sharpened with civilization; now we regard them as the ultimate abstraction of human experience, with biological, psychological and social variables.

It is here that we should find answers to the basic ethical questions that physicians should adhere to while professing their art; questions such as:

- What *ought* we do?
- What is the meaning of *good*?
- Are we *able* to do the good that we ought to do?

The credibility of values in this context, and even their workability in real life, rests upon, and to a large extent is conditioned by the following constants:

- cultural background
- religious, moral and ethical basis
- the whole gamut of ideological beliefs and political stands held at a particular point of time.

The moral responsibility of the physician, when translated to specific actions in medical practice, must necessarily derive from the following elements [1]:

- the physician is the patient's advocate
- the physician is the resourceful consultant to policy- and decision-makers
- the physician is the skilled performer in the transfer of technology of health care delivery to his or her own community
- the physician is a citizen able to demonstrate the realism of virtue
- the physician is the prime implementer of any health policy
- for all the above and more, the physician is a unique agent of socioeconomic progress.

3. *The role of attitude in shaping relations*

The person-to-person interactions which involve the physician occur only at two levels: with a fellow physician and with a patient [2].

• Relations between doctor and doctor

The essentials of these relations comprise, but are not limited to, the following:

1. To maintain respect and fraternal attitudes towards fellow companions in the noblest profession: *and help one another in charity and piety* (Holy Koran).
2. To uphold responsibility, individually and collectively, for the health of any one patient or group of patients or of the community at large, through cooperation and complementarity of contributions.
3. To respect fellow doctors in their absence and never to extend a harming hand to a fellow, but not to absolve a colleague when giving legal testimony according to the dictates of the law.
4. Never to withhold medical data or knowledge concerning a patient from a professional colleague.
5. Always to avail juniors of the fruits of one's experience, knowledge and acumen.

It is pertinent to recall at this point a saying of the Prophet Muhammad: "When a son of Adam dies, he becomes completely cut off except for three ties—a running charity, knowledge that he had taught and continues to be put to good, and virtuous progeny praying to God for him".

• Relations between doctor and patient

It is prudent to remember that the patient is the master—the "client"—and that the doctor is at the patients' service, no matter who or what they are, or when they come seeking help. By and large the *raison d'être* of the whole medical profession is to help humanity in distress, and certainly not to exploit their need.

The manifestations of a doctor's benevolence and tolerance can be countless, but they should be extended also to the patient's relatives and loved ones. A patient should never be denied attention even if he cannot afford the fee.

Practice and health

"One of the troubles of our age is that habits of thought cannot change as quickly as progress of techniques, with the result that as skills increase wisdom fades." I can see how this saying of Bertrand Russell so aptly fits into the situation of medical practice today: the physician becoming a master of modern technology while the patient becomes a blip on a computer screen.

Health status may be viewed as an expression of the result of interplay between endogenous factors (biological and genetic) on the one hand and exogenous factors relating to the physical and social environment on the other. Variations in health pattern occur as a result of differences in location (i.e., geographical), in societies (reflecting the standard of living) and in time (past, present and future patterns).

It can be taken that changes in lifestyle in some developing countries, resulting from recent rapid growth and development of industry and the economy at large, are expected to add to the factors of deficiencies and hazards to create a mixed pattern of disease.

It has become customary to identify the areas of action in health care delivery according to the following four attitudinal bases:

1. to preserve, enhance and promote health; i.e., maintenance of normal life
2. to prevent disease before onset; i.e., preventive care
3. to cure ailment after onset; i.e., curative care
4. to predict possible changes in health patterns, both through the discovery of new

diseases or new causes of disease and through the development of new methods and technologies that combat disease.

Because of the specific, though widely varying, nature of disease and approaches to confronting it, the practice of medicine is largely influenced, and its course may even be radically altered, by factors and inputs such as the following:

1. Information, education, communication and human resources development

Collectively, these fields constitute an area of action that opens up boundless latitudes for improved and more advanced health service delivery, such as the following [3].

- Availability of knowledge through medical and non-medical periodicals, and also through the advanced technology means such as computer aided-programmes, telecommunication of data and teleconsultations.

- Continuing education programmes for upgrading knowledge and introducing new skills. The role of professional societies in this respect is evident and needs no emphasis.

- Teamwork in health care delivery, which is a feature of the medical practice in our contemporary world.

- Multiprofessional education and training that is oriented towards priority health needs of the population, which is another praiseworthy development that merits every favourable consideration.

2. Sociohumanistic attitudes in medical practice

What we have come to know as "tender loving care" in medical services is more of a practical demand than a romantic call. Disease usually strikes humans in their most vulnerable state: while an infant, elderly, weak or needy. It has thus become an imperative of the practice of medicine to respond to such situa-

tions with the spirit of a "soldier defending life only", and doctors must exert the best of their ability for the sake of life's defence and preservation.

The costs of health care delivery have been rising at an alarming rate in recent years. Advances in technology bear much of the responsibility for this state of affairs.

An outlet from this dilemma would seem to be possible through:

1. cost-sharing, implying subsidies by government
2. an upgraded insurance system, and/or a social arrangement in which the sharing occurs between the haves and the have-nots
3. adapting expensive technologies through development of cheaper tools and equipment.

3. *Benefiting from health care technologies*

The emphasis here lies on the new ways and physical means, methods and procedures, tools and equipment, and drugs and biological preparations that are used individually or in combination with health-related research, diagnosis and treatment [4].

The newcomers in the arena of health care delivery (new technologies, drugs or procedures) can be looked upon as a blessing or a curse. Accidents and complications arising from exposure to radiation hazards and isotope carriers, iatrogenic effects of manipulations and drugs—these constantly confront the medical practice. They invariably become the subject of careful consideration, to weigh their impact and scope of damage; and, in most cases, they become the subject matter for new research with the object of devising means to eliminate their effects, making the game in health care delivery, to the extent humanly possible, a safe one.

4. *Environmental factors*

It cannot escape notice that in more advanced societies, the development of urban infrastructure, housing, water supply, sanitary drainage, waste disposal and suppression of pollution have all influenced the health care status of the population to a greater extent than did advances in preventive or curative medical attention. Later, with modernization and in spite of all modern scientific developments, there has been much affliction from pollution of the "human milieu interieur" by the changing "substance of man". Rural areas, urban slums and developing countries suffer much more [4].

While the substance of man is polluted by modernization, statistics show gains in GNP side-by-side with decided symptoms of loss, the indicators of which are to be found in data on crime, drug addiction, vandalism, mental and family breakdown and rebellion.

5. *Forecasting future developments and their repercussions*

One of the dictates of successful health care delivery and service is the progressive outlook that should characterize the individual practitioners and the medical community at large in a given society. While every effort must be made on the part of a developing society to attempt technological catching up, the least that can be expected of every society is to cultivate an alert attitude towards newly introduced technologies and maintain a national capability for the evaluation and the assessment of their potential impact. Equally important, for health service purposes, is the establishment of an ability to forecast developments worldwide and predict their possible repercussions. The importance of these technology assessment and forecasting functions lies in preparing a nation, or at least its medical community, to interact prudently and pragmatically with the new developments.

Future expectations

Possible changes that are likely to occur and have impact on the state of health worldwide include the following [5].

1. Disease prevention and health promotion

- Research on life and work styles. Such researches must necessarily extend and pay special attention to at-risk groups in society.
- The development of new vaccines for parasitic and viral diseases.

2. Nutrition

- Significant advances are anticipated in promoting healthy diet, with more fibres and less fat and meat; in identifying risky methods of preparing food; and the health-hazardous ingredients of preserved and canned foods.

3. Community and social welfare

- The most important interventions are likely to be targeted to avert population explosion.
- Another development is likely to occur by learning ways and means to overcome (or live with) stress and thus avert accidents of breakdown and suicide.
- Self-care health technologies, home-based medical care and rehabilitation of the disabled are other areas where important advances are likely to be forthcoming.

4. Mental health and behavioural sciences

- A far-reaching impact will most likely result from identification of the genetic predisposition factors and the practical applications of genetic engineering in mastering neurological conditions.
- Transplantation of neurotransmitter-producing cells in otherwise hopeless diseases (an example is recent applications in Parkinsonism).

5. Reproduction and fetal and child health

- Progress in contraception methodologies and new drugs, and perhaps the development of specific vaccines.
- Research on *in vitro* fertilization, freezing germ cells and embryos, and surrogate motherhood.
- Screening pregnant women for deformed fetuses through routine amniocentesis in at-risk groups.

6. Diagnostic techniques

- The integration of imaging procedures, which embrace *inter alia* the techniques of nuclear magnetic resonance, radiolabelling and positron emission tomography.
- The use of monitoring systems utilizing biosensors, tumour markers and flow cytometry.

7. Biotechnology and genetic engineering

- Progress in monoclonal antibodies and their role in genetic diagnosis and screening, and the use of DNA probe in detecting genetic diseases; human gene therapy involving excision, modification and insertion of specific genes; and the discovery of oncogenes and its implications in handling the problems of malignancies.
- Contributions from genetic engineering methods to the production of human growth hormones and cheaper vaccine preparations.

8. Biologicals and pharmaceuticals

- Remarkable progress is being made in the development of new drug delivery systems.

9. Blood banking

- Isolation of different plasma factors and conquering congenital deficiency syndromes.

- Development of haemoglobin solutions that can act as oxygen carriers to tissues, thereby replacing blood transfusion.

- Phoresis techniques by cycling blood where harmful bodies are removed, and developing lymphocytic activated killers (LAK) in the treatment of cancer.

10. Artificial organ transplantation

- Miniaturization technologies.
- Potential use of solar batteries in the development of prostheses and robotic implants.

11. Lasers

- Multifaceted applications of laser technologies are currently being explored in a variety of health conditions, and they hold special promise in the field of eye diseases.

12. Surgical practice

- This occurs *inter alia* in the architecture and equipping of facilities; upgrading instruments and machines; through research to promote healing of tissues; to assure safe

anaesthesia and monitoring; and in extracorporeal shockwave lithotripsy in the management of stones.

13. Radiotherapy

- Intraoperative radiotherapy and the use of isotopes together with monoclonal antibodies appear to be particularly promising.

14. Computers

- The age of computers is also extending invaluable services to the field of health care delivery and medical practice at large, in the areas of diagnosis treatment; organization; control and feedback; and education and training.

15. Basic sciences

- Advances in basic sciences have in store, as always, accomplishments that can be translated into practical applications and find their way to actual use within a span of time that has become shorter than ever before.

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