

Thoughts & Reflections
by
MEDICAL TEACHER



Prof. Dr. Tehseen Iqbal

Head of Physiology Department
DG Khan Medical College, Dera Ghazi Khan
MBBS; M Phil (Physiology); CHPE;
PhD (Medical Physiology)
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Published by : **Reyyan Printing Solution,
Dera Ghazi Khan**

Composed by : **Muhammad Anwar Aslam**

Quantity : **500**

Price : **Rs.200/-**

PREFACE

Being a medical teacher is a dream for any doctor as it is a symbol of dignity and responsibility. A senior medical teacher is an institution in himself. His thoughts and reflections are precious guidelines for his juniors to follow and need to be preserved and propagated. Same has been done by Prof. Dr. Tehseen Iqbal, Senior most member of teaching fraternity and medical researcher. On the twilight of his teaching career at DG Khan Medical College, he has diligently recapitulated, in this book, his editorials published on current issues of medical profession.

Vast experience in the subject and art of writing have been blended. This has made many aspects of the subject of Physiology easy to understand even for a lay man. Centuries long history of Physiology, contributions of Muslim Scientists and evolution of the subject to the modern level has been elaborated exquisitely. The concept of Medical Physiology among numerous other branches, demands of the subject and need of medical physiologists as subject specialists has been highlighted beautifully. Other important issues like attitude and ethical training of medical students, critical analysis of UHS curriculum and different PMDC related issues, have also been addressed with valuable suggestions. Prof. Dr. Tehseen Iqbal has been the voice of many who couldn't speak about many burning issues of medical education, top of these is restoring the due status of M. Phil degree which is comparable to any national or international superior degree in basic medical sciences.

I recommend all the senior and junior colleagues to have best wishes for the author and pray the good work continues.



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ABOUT THE BOOK

This book is based on the editorials published in the ‘Pakistan Journal of Physiology’ since 2015. Some of them were conceived when I was teaching a topic of Physiology to my students. For example, when I was teaching the Immune System, I came to know that, apart from using antibodies, many components of the immune system have therapeutic potential. So, I wrote what I studied. Teaching and research are my duties as a medical teacher. I found that research ‘generates knowledge’ and education ‘propagates’ knowledge. So, the editorial ‘Research and Education Are Inter-related and Inter-dependent’ was written. While dealing with the medical students over a period of about last thirty years or so, I felt the decline in the professional character and professional attitude of students and doctors. So, was the editorial about ‘how to develop professional attitude among undergraduate medical students’ was written.

The idea to re-publish these editorials as a book was i., to compile them in one place for record ii., to convey to my reader’s thoughts and reflections of a medical teacher over a period of his career, while facing different challenges of professional life. This was also to convey to my fellow teachers and colleagues that they can and should write what they feel and reflect about their work. This is also to show how ideas are perceived for some write-up and research. Multicolor title represents the diversity of thoughts and reflections presented in the book.

Dated: April, 2021

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**BASIC MEDICAL SCIENCES:
THE BACKBONE OF A MEDICAL COLLEGE**
Pak J Physiol 2019;15(1)

Medical MPhil (Pak) is a special degree totally different from MPhil in general education. One very important difference is the time for completion of study. A medical doctor spends 24–25 years of education and compulsory service to get this degree, while MPhil in general education subjects can be earned in 18 years only. The second important difference is in the course content of these degrees. To get admission to Medical MPhil, prerequisite was 2–3 years' teaching experience as lecturer in the relevant basic medical science subject. At that time, the highest merit doctors selected by the Public Service Commission were posted as demonstrators in medical colleges. The Medical MPhil, at Basic Medical Sciences Institute (BMSI), Karachi is a research degree with the same syllabus followed at Indiana University USA at that time. Medical MPhil course included a compulsory Research Orientation Course. MPhil degree holders have supervised FCPS trainees in their disciplines. Many MPhil degree holders have been awarded Honorary FCPS. Medical MPhil is not a lower level degree compared to FCPS. Instead of disregarding and disrespecting, the services of Medical MPhil teachers must be recognized because they served and supported the medical education system of the country for many decades.

Keywords: Medical, MPhil, Research, Degree, FCPS, Medical Education, Fellowship, Pakistan

A recent advertisement for Principal of Medical Colleges mentioned that ‘only Level III qualification holders are eligible to apply’ meaning that most of the basic medical sciences teachers, who are Medical MPhil (Pak) degree holders, are not eligible for the post of Principal. This is alarming and creates a sense of insecurity and disgrace among MPhil degree holder medical teachers. Basic Medical Sciences are the scientific basis for medical practice. Without knowledge of basic medical sciences, medical practice is mere quackery. Basic Medical Sciences are more than 50% of MBBS curriculum.

Further insult to the injury is that without any scientific calculation and foresight, Pakistan Medical and Dental Council (PMDC) has restricted M Phil degree holders to become Professors after 2020. So they will never become Principal or Vice Chancellor of a medical institution in future. Unfortunately, PMDC is considering only the duration of Medical MPhil (Pak) course while completely ignoring the duration of years spent to earn this prestigious degree and its extensive and comprehensive course content. PMDC is also ignoring the universal fact that University degrees are considered higher than a Fellowship and basic medical science teachers are far better researchers as compared with the Clinicians. Without research there is no progress in scientific knowledge. Unluckily, the universities awarding Medical MPhil are not coming forward to defend their granted degree.

This is very important to note that Medical MPhil (Pak) is a

special degree which is totally different from MPhil in general education. One very important difference is the duration of years spent to earn this degree. A medical doctor spends 24 to 25 years of education and compulsory service to get this degree, i.e., 12 years for F.Sc., 5 years in MBBS, one year in house job, two years of rural area service, 2–3 years of experience as demonstrator to get admission to MPhil, and at least two years of MPhil course. While MPhil in general education subjects can be earned only in 18 years, i.e., 16 years to get Masters and two years for MPhil. The second important difference is in the course content of these degrees. Medical MPhil degree is a vertically and horizontally integrated programme in which 3 basic medical subjects are learnt and a research thesis with external examiners evaluation and full public defense is essential. The MPhil in general education is not that much extensive and comprehensive.

Historically there was no post-graduate medical institute in basic medical sciences for MPhil or PhD, during British regime in areas comprising Pakistan now. Anticipating the need of basic medical science teachers, the National Assembly of Pakistan, in August 1954, authorized the Basic Medical Sciences Institute (BMSI) to undertake meaningful research in clinical and basic medical sciences. The prime purpose of this institution, in addition to treating patients, became training and research in basic medical sciences. The Indiana University (USA) with its staff embarked on the establishment of BMSI. Dr. Paul A. Nicoll, Professor of Physiology headed this Institute.¹ The BMSI with six departments and laboratories,

including Anatomy, Biochemistry, Microbiology, Pathology, Pharmacology and Physiology, was thus established as the most updated medical institution of its time for training of medical teachers. The first class of students was inducted on 1st June, 1959.²

The Medical MPhil (Pak), at BMSI, Karachi, was a research degree with the same syllabus as was being followed at Indiana University USA at that time. To get admission to Medical MPhil (Pak), prerequisite was two to three years' teaching experience as demonstrator in the relevant basic medical science subject. At that time, the highest merit doctors selected by the Public Service Commission were posted as demonstrators in medical colleges. Important components of the Medical M Phil (Pak) course were: i) Research Orientation Course consisting of Biostatistics (required for analysis of research results), Animal House (to teach animal keeping and handling for research), and Instrumentation (scientific background of functioning of research equipment). All these components were essential elements to complete any research project. Students who failed this three month's orientation course, were expelled from the MPhil program; ii) Basic Medical Subject 'the Major' in which the MPhil degree was awarded; iii) Two other basic medical subjects as 'Minor Subjects'; and iv) Research and Thesis in area of 'Major' Subject with public defense.

In the meantime, government provided scholarships to many doctors to get PhD from foreign countries. Only a few returned but because of lack of infrastructure, their expertise could not be utilized

to produce more PhD teachers and Pakistan had to rely upon indigenous MPhil teachers for the next four decades. For fifteen long years, BMSI remained the only institute that provided basic medical science teachers to Pakistani medical colleges. After that, on nearly the same pattern, the Post-Graduate Medical Institute (PGMI) Lahore was established in 1974.³ BMSI Karachi and PGMI Lahore provided great teachers of basic medical sciences in the country for many decades. These MPhil teachers served in Pakistani medical colleges and produced doctors of worldwide repute. Even now majority of basic medical science teachers are MPhil degree holders and one cannot expect to replace these teachers with PhD teachers for at least a decade to come!

MPhil teachers were already worried about PMDC decision of placing MPhil degree at a lower level as compared with FCPS. By dint of their ability and hard work, MPhil degree holders have supervised FCPS postgraduates in their disciplines. Many MPhil degree holders were awarded Honorary FCPS in their disciplines. No *vice versa* example can be quoted. How then, Medical MPhil is a lower level degree compared to FCPS? Throughout the academic world, research qualifications are considered superior as compared with fellowships. The research qualification adds prestige, enhances clinical acumen and understanding and becomes a perfect combination for entering into medical academic career. The dissertation (as in FCPS) is also a good way in terms of research related report but lack the quality of solid research in view of its scope.⁴

Medical MPhil was somewhat degraded when in 2005 University of Health Sciences (UHS) Lahore and other Universities started Medical MPhil on the pattern of MPhil in general education. They omitted the prerequisite of having two years' experience as demonstrator for admission. They admitted students on the basis of entry test only. They also omitted the Research Orientation Course for M.Phil. So the special nature and importance of Medical MPhil (Pak) was lost and now after passing MPhil one has to get two years' teaching experience as demonstrator to become eligible for the post of Assistant Professor while previously just after passing Medical MPhil (Pak) one could directly be inducted as Assistant Professor. No doubt experience of teaching as demonstrator is just like postgraduate training as it is for clinical FCPS.

This is the need of the hour that instead of disregarding and disrespecting the MPhil degree and MPhil teachers, authorities should acknowledge the services of these teachers because they served the country during hard times and supported the medical education system of the country for many decades and possibly will continue to do so for another decade to come because medical universities are producing PhD scholars at a very slow pace. Higher Education Commission (HEC) of Pakistan, Pakistan Medical & Dental Council and representatives of associations of basic medical science teachers should sit together to address different issues of categorization of degrees, problems of shortage of teachers in basic medical sciences and to allow MPhil degree holders to be appointed

as Principal and Vice Chancellor to restore the prestige and honour of basic medical science teachers in the country. Making rules without consulting the stakeholders only creates unrest and hue and cry which is not beneficial for anyone.

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Basic Medical Sciences are the scientific basis for medical practice. Without knowledge of basic medical sciences, medical practice is mere quackery.

Every medical subject should be taught by a subject specialist doctor.

MEDICAL PHYSIOLOGY HAS ITS OWN IDENTITY AS A SEPARATE SUBJECT

Pak J Physiol 2019;15(2)

Medicine is the art and science of healing human diseases. Any branch of biological sciences when comes to help and is related to understanding, preventing, alleviating and curing human diseases becomes 'Medical'. Medical Physiology deals with how the human body works, depending upon how the individual body systems function, which in turn depend on how the component cells function, depending upon the interactions among subcellular organelles and countless molecules. Graduating medical students believe that physiology is highly relevant and important to their clinical training. About 150 years ago, many authors started writing important Physiology books keeping in view the special needs of medical students, and that established medical physiology as a separate subject.

Keywords: Medical, physiology, undergraduate, medical education

Medicine is the art and science of healing human disease. Any branch of biological sciences when comes to help and is related to understanding, preventing, alleviating and curing human disease becomes 'Medical' and because of this fact there are books having titles like Medical Biochemistry, Medical Pharmacology, Medical Microbiology, Medical Parasitology, Medical Embryology, Clinically Oriented Anatomy etc. present in the market. So comes the Medical Physiology which is now the most important and the most robust branch of Human Physiology. The great beauty of physiology is that

it seeks to integrate the individual functions of the cells, tissues and organs into an understanding of the function of the entire human body, which is much more than the sum of its parts.¹ Medical Physiology deals with how the human body functions, which depends on how the individual body systems function, which depends on how the component cells function, which in turn depends on the interactions among subcellular organelles and countless molecules. Thus, medical physiology takes a global view of human body, but in doing so, requires the integrated understanding of events at the level of molecules, cells and organs.² Every year the American Association of Medical Colleges asks graduating medical students about how well the basic sciences have prepared them for clinical training, and every year physiology is at the top. Therefore, graduating medical students believe that physiology is highly relevant and important to their clinical training.^{3,4}

Association of Physiology and Medicine was known since the time of Hippocrates around 420 BC. Only about 150 years ago, it was appreciated that the need of medical students and physicians, as regards the physiology concepts, is different from the physiologists. So, many authors wrote important Physiology books keeping in view the special needs of medical students. In the modern era, to quote a few examples, possibly the first known book of Physiology written for the medical students was '*A Compend of Human Physiology: Especially Adapted for use of Medical Students*' written by Albert P Brubaker in around 1880 published by P. BLAKISTON, SON & CO.,

1012 Walnut Street Philadelphia. '*A Text-Book of Physiology for Medical Students and Physicians*' was written by William H Howell of Johns Hopkins University Baltimore in 1905. '*Applied Physiology: A Handbook for Students of Medicine*' was written in England by Robert Hutchison published by EDWARD ARNOLD, London in 1908. In 1926, physician Samson Wright published a textbook entitled '*Applied Physiology*' that was intended for both medical students and the medical profession. Eleven years after the publication of Wright's textbook (1937), two physicians and professors of physiology located at the University of Toronto, Charles Herbert Best (1899–1978), and Norman Burke Taylor (1885–1972), published '*The Physiological Basis of Medical Practice*', a University of Toronto text in Applied Physiology'.⁵ The book which remained teachers' and students' favourite for decades. '*Textbook of Medical Physiology*' by Arthur C Guyton was written in 1956. In Pakistan, Mushtaq Ahmad wrote '*Essentials of Medical Physiology*' which was first published in 1980. Now-a- days, '*Medical Physiology*' written by Walter F Boron and Emile L Boulpaep (1st ed. 2002, and 3rd ed. 2017) is important textbook for medical students. These books are sufficient proof of the fact that Medical Physiology has a separate identity as a subject!

Physiology is the stem from which many branches sprout and flourish, each having its own jurisdiction and scope. Plant Physiology, Microbial Physiology, Molecular Physiology, Animal Physiology, Space Physiology, Sports Physiology, Comparative

Physiology, Neurophysiology, Electrophysiology, all have their specific identity. Likewise, Medical Physiology is a branch of Human Physiology which is related to the understanding and treatment of human diseases. Saying that Human Physiology and Medical Physiology are one and the same subject is not true because till about 30 years ago, in Pakistan, Physiology and Biochemistry were a single subject and were taught by Physiologists or Biochemists. Now Medical Physiology and Medical Biochemistry are accepted as separate subjects and Medical Biochemistry is having equal importance as Physiology and Anatomy in medical curricula in Pakistan.

Medical Physiology nurtures upon many branches of biological sciences and uses this knowledge to the understanding and treatment of human diseases. Most of the times doctors treat diseases in a way that they are converting the pathological states into physiological states. For example, treating fever, hypertension or hyperglycaemia is just to bring these parameters into physiological limits. Comparison of diseased condition with the normal, healthy condition (the physiological condition) is one of the best tool for diagnostic process for doctors. So, Medical Physiology provides a deeper understanding of human physiology at a level required for clinical medicine.⁶

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Every year the American Association of Medical Colleges asks graduating medical students about how well the basic sciences have prepared them for clinical training, and every year physiology is at the top.

PHYSIOLOGY IS A COMPLETE SUBJECT IN ITS OWN RIGHT

Pak J Physiol 2015;11(2)

Physiology is a branch of biology. It is the study of functions of the living matter. Living matter on earth is present in three forms, i.e., plants, animals and microbes. So physiology may be plant physiology, animal physiology and microbial physiology.¹ The oldest branch of Physiology is human physiology. Hippocrates, the father of medicine, was possibly the first physiologist around 420 BC. When scientific methods of observation and experimentation were used to study the movement of blood in the body, in the 17th century, that was the dawn of modern physiology.² One branch of human physiology is medical physiology which deals with the understanding and treatment of human diseases. Other branches of human physiology are sports physiology, space and aviation physiology, foetal or developmental physiology, environmental physiology, integrative physiology, practical physiology and comparative physiology.³ Each branch may further be divided into many subdivisions.

The history of physiology is as old as the Greek natural philosophy. The study of anatomy revealed functions, i.e., physiology. Physiology is study of functions of cells, tissues, organs, systems, to the whole organism.⁴

A prominent Muslim scientist and physician Abu Bakar Al-Razi in the 8th century AD described some key physiological

principles of human body. Another Muslim scientist Al-Kindi wrote a paper on human physiology. In the 17th century, William Harvey described the human blood circulation, with this the new era of experimental physiology started. Another prominent figure in the history of physiology is Herman Boerhaave. He is often called the father of physiology. He was a teacher of physiology and also wrote a book named '*Institutiones Medicae*'.⁵

In medical schools, different teaching methodologies are being used to teach physiology. These methods place physiology at different levels of importance in their curricula. Physiology in some schools is taught in a traditional and systematic manner while in others it is diluted in a way that physiology becomes unidentifiable in the whole curriculum. Setting aside the teaching methodology, important point is to ensure that the students are provided the basic principles and concepts of physiology at appropriate depth of understanding.⁶ In context of our country, multiple teaching methodologies should be encouraged. A flexible implementation programme should allow the constraints of staff, faculty and resources.⁷

A great many number of students find it 'hard' to learn physiology. In a survey, physiology teachers reported that the students are not learning physiology at the level that their teachers expect. Many teachers discovered that students need help of their teachers to master concepts that would have been easily mastered.

Howard Kutchai reported that over the years, first-year medical students have diminishing ability to understand physiology. Physiology teachers believe that the nature of the physiology subject and the students' effort to learn physiology are the most important determinants of physiology being hard.⁸

In Pakistan, currently we are facing a great dearth of physiology teachers and there is a tendency to teach physiology by non-physiologists in medical schools. We, the physiologists, should emphasize that physiology is a complete subject in its own right and should be taught by a physiologist. Allowing non-physiologists to teach physiology is just like promoting quackery in the field of medicine.

Future of physiology lies in research studies conducted by the physiologists. A unique strength of physiologists is that they make use of the latest technological and conceptual advances. The latest concepts and techniques in cellular and molecular biology are increasingly being used by physiologists as part of their research tools. The research goal of physiologists should be to solve problems of human interest, and they can use molecular and cell biological techniques as the means rather than the end. Although molecular biologists have a reductionistic approach, many of them are becoming increasingly aware of the need to apply their knowledge to elucidate physiological phenomena. It is only through this approach that the significance of physiology is established.⁹

Physiology is the scientific background of medicine and is not only providing a strong base to the medical or life sciences but it is also playing a significant role in developing a more scientific reasoning in the society. Physiology defines the boundary between quackery and the scientific medicine. Physiologists should be proud of being physiologists because there is no medicine without physiology. Physiology broadens the vision and enlightens the minds of its learners towards life. It produces a more logical thinking about life processes and so helps to ward off superstitions from the society. We recommend that physiology may be included in the curricula of secondary, intermediate and undergraduate levels as an optional subject.¹⁰

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While we teach, we learn.

Seneca

**I don't know what I think
until I write it down.**

Joan

FALLING STANDARD OF UNDERGRADUATE MEDICAL EDUCATION IN PAKISTAN

Pak J Physiol 2019;15(4)

Pakistan is not only producing doctors for its own people but is also providing efficient doctors to all parts of the world. Unfortunately, standard of medical education in Pakistan is deteriorating. This is not the story of one day, it has a long history of ignoring this field for many years by many successive governments. Discussed here are some of the reasons and their solutions. Lack of political will of Governments, lack of proper hierarchy to control Medical Education, lethargy of training institutions for Medical Teachers, lacunas in examining bodies and examination system, easy going and shortcut seeking behaviour of medical students and their study from substandard medical books are some of the reasons. Establishment of an independent Medical Education Commission and medical education hierarchy, improving the medical teachers training, removing lacunas in the examination system, developing the writing skill of students, reviving the habit of reading standard books by the students can improve our medical education.

Keywords: medical education, Medical Education Commission (MEC), examination system.

The medical education provides the workforce for the noble medical profession. Pakistan is not only producing doctors for its own people but is also providing efficient doctors to all parts of the world. Unfortunately, standard of medical education in Pakistan is

deteriorating and a recent report of the Accreditation Council of Graduate Medical Education (ACGME) in the US also expressed its concerns over the falling standards of medical education in our country. The past decade has seen a massive decline in the demand for Pakistani doctors in foreign countries. Only 127 Pakistani doctors could get jobs last year in the United States training programme. This is much lower than 800 jobs grabbed by Indian doctors.¹ Decline in medical education in Pakistan is not the story of one day, it has a long history of ignoring this field for many years by many successive governments. Let us discuss some of the reasons and their solution for this burning issue.

Lack of political will of governments:

Health has never been a priority of any past government. Unfortunately, there is lack of political will of all governments to improve medical education in the country. No national policy is ever formulated for medical education. Medical education is lumped with general education and no separate budget is allocated for it. A national level body, i.e., Medical Education Commission (MEC), is required for medical education, just like Higher Education Commission. It should be empowered with separately allocated budget which may be distributed to provincial level bodies, i.e., Provincial Medical Education Commissions (PMEC). Medical Education Commissions at national and provincial levels should comprise of medical education experts of the subjects taught and examined at undergraduate as well as postgraduate level.

Proper hierarchy should be developed to control medical education:

Pakistan Medical and Dental Council (PMDC) was responsible for both the undergraduate and postgraduate medical education. It remained suspended and non-functional for many months and its future is still uncertain. Lack of continuity in government policies is creating uncertainty which damages the whole health system including the medical education. PMDC's role may be restricted to registration of health care providers (allopathic, homeopathic and hakims) and registration of healthcare delivery institutions and related matters only. Educational matters such as curriculum development and course designs and medical research should be deputed to the Medical Education Commission. Medical Education Commission should register medical teachers (both pre-clinical and clinical) and teaching institutions (medical colleges, and medical universities). Only those doctors having some Medical Education teaching degree should be allowed to teach in medical colleges and medical universities. Medical teachers should not be allowed to do private practice; in return, they may be given incentives so that they should devote their energies only for medical education and research.

Training institutions of medical teachers:

Training institutions of medical teachers training should be monitored for their work by the Medical Education Commission so that the deficiency of medical teachers is replenished. They should

have clearly defined roles. Medical universities may be assigned the duty of training of medical teachers of both pre-clinical as well as clinical sciences. Course content of medical teachers in pre-clinical sciences may include large group teaching, small group teaching, laboratory work, basic research, and assessment techniques. This will certainly increase the duration of postgraduate degree like M. Phil to three to four years. Course content of medical teachers in clinical sciences may include, apart from clinical training, large group teaching, bed-side teaching, teaching clinical skills, clinical research and clinical assessment techniques. No doctor should be allowed to become a teacher without proper knowledge of medical education skills. It is need of the hour to efficiently train teachers, recruit good teachers, authorize, trust, and respect teachers.³

Examining bodies and examination system:

Current examination system is based on MCQs and SEQs. This tests the breadth of knowledge and does not test the depth of knowledge. Undergraduate medical students should be examined through a comprehensive assessment system so that students' writing skill is also developed. For this purpose, long essay type questions should also be included in the final assessment examination of the undergraduate medical students. Developing writing skill in undergraduate medical students will help students in their history taking and writing daily progress report of patients. This will certainly help in writing postgraduate thesis or dissertation as well as

writing their research papers.

Ultimate outcome of medical education is producing a doctor who has knowledge, skills, and professional attitude. In the current assessment system, there is no place for teaching, developing and assessment of professional attitude. No doubt our good teachers are individually trying hard to inculcate professional behaviour in our students, we should develop proper instruction and assessment techniques to assess this very important aspect of training of our medical professionals. Medical education reforms also include heavy emphasis on professionalism and professional identity development.⁴

Medical students and medical books:

Essential requirements of a good medical education programme are standardized books and highly qualified, well-trained and hardworking teachers. Movement from novice to master in medicine (medical expert) cannot be rushed. Time, experience —and yes, repetition— is necessary for maturation. This maturation needs to be built on a solid foundation in biomedical sciences. The time and place to inculcate the core of this foundation is the first two years of the undergraduate medical education. There are many years for learning and perfecting clinical skills and evidence-based medicine. This will not happen effectively without a sound foundation in biomedical sciences.⁴

In the start of a medical course, the student is required to attain a high level of knowledge of basic medical sciences which are the scientific basis of clinical practice. In Pakistan, there is a problem of

substandard and spurious⁴ medical books available in the market. They are popular among students, because these books are actually exploiting the loopholes present in our examination system. They are helping students to memorize facts through rotting; a memorization skill well known to our students. No doubt passing the examination is an immediate goal of students but this should not dominate the long term goal of becoming a good doctor. Conceptual knowledge and integrating concepts are essential for medical doctors as they have to analyze facts to diagnose and to use their knowledge to solve problems of their patients.

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**WRITING IS AN IMPORTANT BUT NEGLECTED
COMMUNICATION SKILL FOR MEDICAL GRADUATES**
Pak J Physiol 2021;17(2)

Abstract

Medical students are required to communicate knowledge, understanding, interpretation, inferences, arguments, deductions and predictions by the appropriate use of clear and concise written English. The doctor who knows English is better aware of current trends in medicine, can get or continue medical education abroad, can participate in medical conferences abroad, can work in a team with foreign specialists, English allows the doctor to have an appointment with foreign patients in private clinics. Academic writing is extensively acknowledged as a key skill for students to boost their educational performance at higher education level. Assessment through essay write up answers should be encouraged. Guessing by students is eliminated as in essay examination, there is no option to select from the given possible choices and they have to provide the answer rather than selecting the good response.

Key words: *Communication skill, Writing Skill, Essay questions*

BIOMEDICAL ADMISSIONS TEST (BMAT) of Cambridge Assessment Admissions Testing (For assessments from August 2020 to July 2021) requires medical students to communicate knowledge, understanding, interpretation, inferences, arguments, deductions and predictions by the appropriate use of clear and concise written English.¹ Medical Schools Council (UK) describes in its “Statement on the core values and attributes needed to study medicine” the core competence of students to have effective communication skills in all four areas of communication i.e., reading, writing, listening and speaking.² English Fluency is vital for communication in the healthcare field. When compared with other fundamental skills such

as listening, speaking and reading, writing is the most difficult skill. The English language may become very important when it comes to communicating with co-workers, bosses, and patients in a hospital or other medical setting.³ The doctor who knows English is better aware of current trends in medicine, can get or continue medical education abroad, can participate in medical conferences abroad, can work in a team with foreign specialists, English allows the doctor to have an appointment with foreign patients in private clinics.⁴ In India, Singapore and Pakistan English is used as a functional first language in the professional medical domain. English language is expanding as an instrument of international communication and education in medicine. Domestic and internationally distributed journals of medicine are published in English. The ability to write accurately in English will be a growing need but recognition of these linguistic needs must be developed in the early stages of medical education.⁵

The process of writing requires writers to have a clear understanding of the subject matter and make use of cognitive abilities. Specifically, writing helps students develop higher-order thinking skills that involve three cognitive processes - analysis, evaluation, and creation. These higher-order thinking skills are needed for medical students to grow as successful medical professionals.⁶ In Pakistan, the writing skills of the students are alarmingly weak and substandard. Writing is a cognitive process that tests memory, thinking ability and verbal command to successfully express the ideas; because proficient composition of a text indicates successful learning.⁷

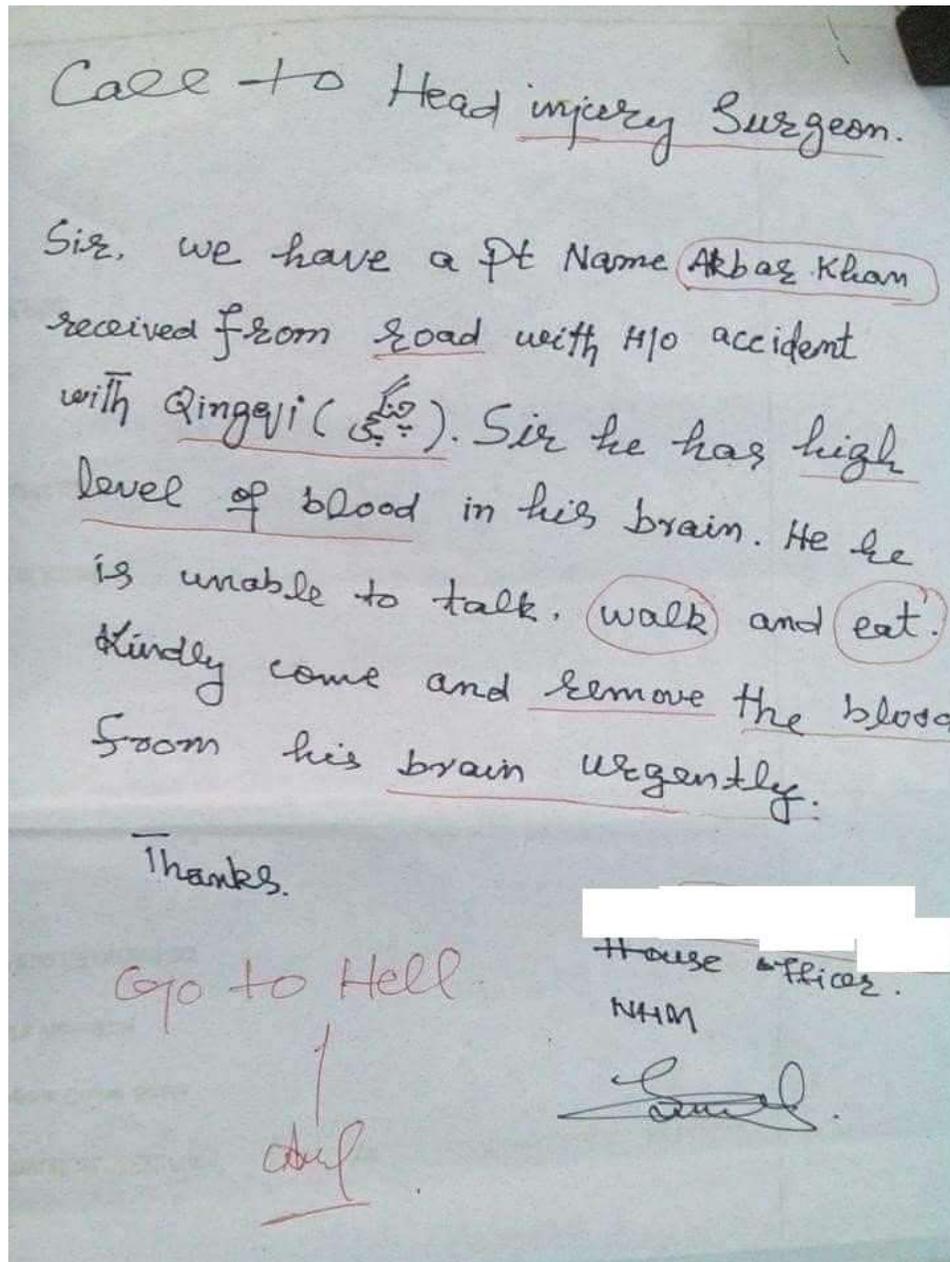
Throughout his training and medical practice, a doctor has to write down i, a good and elaborate history of patient's illness, ii, investigation orders, iii, call letters to other departments/doctors and iv, referral letters. For acquiring post-graduation, doctors write thesis or dissertation. For promotion, he has to write many research papers. Almost all postgraduate students are anticipated to have developed

English language proficiency, especially, in academic writing to show mastery over the application of linguistic and communicative capability with sound grammatical knowledge and academic vocabulary in order to produce quality text likely to be published in an impact factor research journal.⁷ For all these endeavors, good writing skill is needed and we know that good writing skill needs practice.

Academic writing is extensively acknowledged as a key skill for students to boost their educational performance at higher education level.⁶ During undergraduate studies, students are taught these skills through assignments, and attempting SEQs or SAQs during examinations. Examination is the most powerful motivation for students to learn writing skills. Some medical universities are offering MCQs only examinations to their medical graduates. This type of examination requires that students just tick the right answer and they will not be asked to write down anything. This will be disastrous for medical profession and will drastically undermine the writing skills of our doctors. Our doctors will become non-competent for international medical world and this will adversely affect the flow of foreign exchange to Pakistan.

The examination system does not encourage learners' creative writing; it does not encourage our students to be analytical or critical.⁸ Most of our medical universities offer examinations which contain MCQs and SEQs or SAQs. This is also fact that MCQs test the superficial knowledge of students. Therefore, assessment through essay write up answers should be encouraged. Guessing by students is eliminated as in essay examination, there is no option to select from the given possible choices and they have to provide the answer rather than selecting the good response. Therefore, it is expected that a primary role of long essay write up would create synthesis skill in students. Therefore, medical educationists should at least revise the pattern of assessment proportion or develop alternate tool to develop

the writing skills in students.⁹ Physiology paper of University of Health Sciences (UHS), Lahore has 45 MCQs and nine SEQs. To prevent the irreparable loss to our doctors' writing abilities, we should add a long essay type question, in place of two SEQs, from Cardiovascular System or Respiratory System in First Professional paper and form Nervous System or the Kidneys in Second Professional paper to inculcate the habit of good writing in medical students.



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ساوتھ افریقہ میں ایک یونیورسٹی کے دروازے پر لکھے فکر انگیز جملے

”کسی قوم کو تباہ کرنے کیلئے ایٹم بم اور دور تک مار کرنے
والے میزائلز کی ضرورت نہیں، بلکہ اس کے نظام تعلیم
کا معیار گر ادو اور طلباء و طالبات کو امتحانات میں نفل
لگانے کی اجازت دے دو، وہ قوم خود تباہ ہو جائے گی۔“

ہاتھوں میں بیض مرتے رہیں گے۔
انجینئرز کے ہاتھوں عمارات تباہ ہو جائیں گی۔
معیشت دانوں کے ہاتھوں دولت ضائع ہو جائے گی۔
مذہبی رہنماؤں کے ہاتھوں انسانیت تباہ ہو جائے گی۔
حجز کے ہاتھوں انصاف کا قتل ہو جائے گا۔

اس ناکارہ نظام تعلیم سے نکلنے والے ڈاکٹرز کے

نظام تعلیم کی تباہی قوم کی تباہی ہوتی ہے

MEDICAL STUDENTS' E-LEARNING DURING COVID-19 LOCKDOWN

Pak J Physiol 2020;16(1)

E-Learning is 'learning utilizing electronic technologies to access educational curriculum outside of a traditional classroom'. During COVID-19 lockdown, the idea of e-learning is being debated rigorously to guide the medical students at their homes. In Pakistan, many believe it to be simply providing the instructional material to the students on college website which they can access through internet. It is a very efficient way of delivering courses online. Due to its convenience and flexibility, the resources are available from anywhere and at any time. Everyone can take advantage of web-based learning. Medical faculty try to transform a student in to a 'self-learner', i.e., one who can read the book comprehensively and can extract what is relevant and important and inculcate this knowledge into his or her behaviour. Apart from economic restraints and other limitations like unavailability of internet in remote areas, our teachers are not well-versed with this instructional methodology. A doctor has knowledge, attitudes and skills which he applies to treat patients. What we can or want to impart through e-Learning is 'Knowledge' and the other two traits, attitudes and skills, cannot be imparted through e-learning. Other aspects of a medical students' training like interpersonal skills and teamwork, communication skills and behavioural skills cannot be learnt through e-learning or tele-learning. Nevertheless, e-learning

modalities are widely integrated in medical education. During the lockdown due to COVID-19, whatever type and to whatever extent e-learning is used, it is a better alternative.

Keywords: Medical students, e-Learning, COVID-19, Teaching methodology, Medical education

E-Learning is a type of distance learning. By definition e-learning is 'learning utilizing electronic technologies to access educational curriculum outside of a traditional classroom'.¹ There are different types of e-learning: Computer Managed Learning (CML), Computer Assisted Instruction (CAI), Synchronous Online Learning, Asynchronous Online Learning, Fixed E- Learning, Adaptive e-Learning, Linear E-Learning, and Interactive Online Learning. Advantages of e-learning are: It is a very efficient way of delivering courses online; Due to its convenience and flexibility, the resources are available from anywhere and at any time; Everyone, part time students or working full time, can take advantage of web-based learning.² Students are usually attracted to this type of learning experience and according to teachers practicing this mode of instruction report a very high percentage of attendance of students although making online lessons and assignments are extra burden on teachers.

In these days of COVID-19 lockdown, the idea of e-learning is being debated rigorously to guide the medical students staying at their homes. Although, in Pakistan many believe it to be simply providing the instructional material to students on institutional website

which they can access through internet, there are a wide range of e-learning modalities used in medical education. E-learning is not a course delivered via a DVD or CD-ROM, video tape or over a television channel; it is interactive in that the learners can also communicate with the teachers or other students in the 'classroom'.¹ Many new software's like Blackboard System, Microsoft Team, Zoom and Edmodo can convert your virtual learning environment into a classroom or a one-to-one experience. Other technologies are available like simulated patients, simulated operation theatres and Mini-Clinical Evaluation Exercises (Min-CEX) to guide and assess clinical performance.³ Online technologies are very useful in taking assignments from the students. Conduction of examinations with the help of Question Mark and Edmodo software's have made the examinations practically devoid of cheating because of time barred questions and automatic randomization of questions. So, in expert hands these technologies can work wonders in this lock down period.

Although e-learning is very effective, there are certain limitations also. A student entering a medical school is a 'student', i.e., one who studies under the supervision of a teacher. We try to transform this student into a 'self-learner' i.e., one who can read the book comprehensively and can extract what is relevant and important and inculcate this knowledge into his or her behaviour. Self-learning is a very important characteristic of a doctor which converts a doctor into a lifelong learner. To emphasize this lifelong learning of a doctor, we, time and again, heard the phrase 'doctor remains One very

important point to note regarding ultimate outcome of medical education is a doctor who has knowledge, attitudes, and skills which he can apply to real world situations (patients).⁴ This is also the ultimate outcome of a spiral curriculum.⁵ What we can or want to impart through e-learning is 'Knowledge', and the other two traits, attitudes and skills, can only partially be imparted through e-learning as they need a supervisor or a teacher. Apart from economic restraints of our students and other limitations like unavailability of internet in remote areas, lazy, resistant and non-believers are everywhere. Lastly, majority of our 'traditional' teachers are not well-versed with this instructional methodology.

Regarding attitudes, we know that students entering medical college have their characters or attitudes partly formed, yet they are still malleable and can improve their professional attitude during the course of their professional training. Students, primarily, learn professional attitude from the faculty. They also learn from the policies and decisions of college administration, college traditions and ceremonies, and the scientific, technical and ethical atmosphere created in unison by all staff and administration of the institution.⁶ Parameters to assess the unprofessional attitude (misconduct) of students may be repeated absenteeism, dishonesty, e.g., marking proxy, unreliability, e.g., not submitting assignments on time, disrespect to others (students, faculty, or other staff), disobedience to administration or teachers.⁷ Hence teaching and assessment of attitudes need direct student-teacher interaction and supervision.

Likewise, medical-lab skills and clinical skills cannot be perfectly taught through e-learning or tele-learning means. The laboratory skills in pre-clinical subjects, and clinical skills in clinical subjects, are usually taught in a three stage process of observation of a demonstration, practice under supervision, and independent practice until perfect.⁸ All this needs a direct supervision in addition to a simultaneous background theoretical knowledge. Other aspects of a medical student's training like interpersonal skills and teamwork, communication skills and behavioural skills (student-teacher, student-student, student-staff, and student-patient) cannot be learnt through e-learning or tele-learning.

In spite of all limitations mentioned above, during this lockdown period due to COVID-19, whatever type, and to whatever extent e-learning is used, it is a better alternative because 'something is better than nothing.' This situation also uncovered the need to include these modern technologies to be included in the training programmes of medical teachers.

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ASSESSING AND DOCUMENTING PROFESSIONAL ATTITUDE AMONG UNDERGRADUATE MEDICAL STUDENTS

Pak J Physiol 2021;17(1)

Father's most important gift to his child is good manners.
Prophet Muhammad

Abstract

Ultimate outcomes of undergraduate medical education is a doctor who has knowledge, skills, and professional attitude. Medical students had already partly formed professionalism attitudes before they started studying medicine. We, at medical college, just have to apprise or remind students that they have learned basic ethics/attitudes in premedical years. A scoring system is proposed to assess Professional Attitude of MBBS students. Positive or negative professional attitude/professional behavior during the session will be closely monitored by the faculty. Positive behaviours increase the score; negative behaviours decrease the score. On the basis of this score, proper word will be entered in the relevant sentence on DMC or Character Certificate. Total Five year Marks: More than 85% = Excellent, 75.1 to 84.9 = Very Good, 75% = Good, 70-74.9% = Fair, 65-69.9% = Satisfactory, Less than 65% = Poor. Assessment drives learning, so assessing students will guide their learning.

Key words: Professional attitude, behavior traits, MBBS students, PAS-Pak.

Professional values, ethics, and attitudes are the characteristics that identify a professional as member of a profession. The relevant ethical requirements ordinarily set out five fundamental principles i.e., integrity; objectivity; competence and due care; confidentiality and professional behavior.¹ Medical education produces a doctor who has knowledge, skills, and professional attitude. A graduate should be

polite, considerate, trustworthy and honest, act with integrity, maintain confidentiality, respect patients' dignity and privacy, and understand the importance of appropriate consent.² General Medical Council reviewed its 'Outcomes for Graduates' in 2018 and put "Professional Values and Behaviours" at number one³ which were previously placed at number three in its document of 2009 i.e., Tomorrow's Doctors.

A professional student is punctual (to class and laboratory meetings), follows the teacher's instructions; respects private and public property; arrives appropriately dressed and ready to work, armed with his/her tools. A professional is observant and sees what needs to be done; is responsible and helps maintain a safe workplace with a civilized atmosphere. A professional always acts in a manner that reflects favorably on that community. A professional asks a question rather than risk making a serious mistake with an unfamiliar scientific instrument.^{4,5} Medical students had already partly formed attitudes toward professionalism before they started studying medicine. These attitudes were largely based on their own experience with the health care system and physicians.³ They develop their professional attitude further in medical college.⁶ We, at medical college, just have to apprise or remind students that during twelve years of pre-medical education and five years of family training, they have developed basic behavioral/ethical traits. These behavior traits were taught to them at school.⁵ When students' behavior assessment is instituted they will learn ethical and social skills of a good medical student and law abiding citizen as "assessment drives learning". Extracurricular activities such as sports, debates, hospital voluntary service, politics, the arts or community service can build skills in leadership, responsibility, and cooperation.⁵

There is no formal system for assessing and documenting professional attitude of undergraduate medical students in Pakistan. We are proposing a system of Professional Attitude Score for

Pakistan (PAS-Pak) for MBBS classes. While preparing this scoring system, important points considered were: 1, It should be simple to use. 2, It should clearly convey to students which behaviours are considered ‘positive’ and which behaviours are considered ‘negative.’ 3, It should not increase the burden on faculty. 4, To decrease the inter-personal bias and to ensure inter-rater objectivity, all faculty of particular session will be involved to evaluate the students. 5, It can be utilized to clearly elaborate the words (Excellent, Very Good, Good etc.) in the existing ‘Character Certificate’ and/or the ‘Detailed Marks Certificate (DMC)’ issued by the college.

Professional Attitude Score (PAS-Pak)

Twenty Marks for each Professional year; hundred in total for five years’ MBBS course. Twenty Marks each are allocated for all subjects in a Professional year. Head of the Department of each subject will calculate PAS-Pak for each student of the class during the session according to the given tables. The scores are then forwarded to the “In charge HoD” of the session (Senior most HoD of the session or as designated by the Principal of the College) who will calculate average of the session and report it to the Principal Office. On the basis of the total five year marks/score, proper word will be entered in the relevant sentence on DMC or Character Certificate. A Red Entry will be for: 1, Misbehaving with some teacher (Head of the department is authorized to give a red entry to student after investigation). 2, Punishment by the Disciplinary Committee. Each red entry will deduct 20 marks from the cumulative score at the end of the five-year session.

Total Five year Marks: More than 85% = Excellent, 75.1 to 84.9 = Very Good, 75% = Good, 70-74.9% = Fair, 65-69.9% = Satisfactory, Less than 65% = Poor.

“During his/her stay at medical college, his/her professional attitude score was

Calculation for first year MBBS Class. At the start of the first year MBBS class, each admitted student will have fifteen (15) marks

which can be increased or decreased on the basis of their positive or negative professional attitude/ professional behavior/ ethical behavior during the session, as mentioned in Table 1 and Table 2. . Students will be closely monitored by the faculty and will report to the head of the department about their attitude/ behavior/ ethics. Positive behaviours increase the score more than fifteen; negative behaviours decrease the score less than fifteen. Positive behaviours not covered in the tables given can be covered under the heading “Behaviour befitting of a good medical student” and negative behaviours not covered in the tables can be covered under the heading “Behaviour unbecoming of a good medical student”.

Calculation for 2nd, 3rd, 4th and Final Year Classes. At the start of the session, all students passing in first attempt will have baseline of 15 marks. Students passing in supplementary examination will be at 14 (minus one), students passing as detained students will be at baseline marks 13 (minus two

Table:1 Positive Behavior traits/Attitude

University position in last professional exam.	2 marks		
Published a research paper during the session.	One mark		
Class tests; First position 2 marks; second one marks; third 0.5 mark.	0.5 to 2 marks		
Worked in arranging college convocation 1 mark	One mark		
Respecting and behaving according to the local cultural traditions	One mark		
Took position in Qirat, Na'at or Debate competition 1 mark	One mark		
Served in the hospital volunteer service for helping the students	One mark		
Donated blood during this session	One mark		
Attendance more than 85%; 2 marks; 76% to 84% one mark.	1 to 2 marks		
Behaviour befitting of a good medical student (HOD)	Plus 1		
At the start of the Session	15 marks		

Table:2 Negative Behavior Traits/Attitude

At the start of the Session	15 marks	
Behaviour unbecoming of a good medical student (HOD)	Minus 1	
Misbehaved with a teacher or college staff	minus one	
Missing one test minus one; two tests minus 2	1 to 2 marks	
Delay in vacating hostel room after new allotment.	minus one	
Throwing waste in college premises.	minus one	
Punished by a teacher on breaching discipline in the classroom etc.	minus one	
Quarreled/misbehaved with fellow students.	minus one	
Caught cheating in a test minus one.	minus one	
Damaged college property minus one.	minus one	
Not respecting and not behaving according to the local cultural traditions.	minus one	

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بات کردار کی کرتا ہی نہیں ہے کوئی
لوگ کہتے ہیں بتا کتنا کما لیتا ہے؟

DOCTORS' TRAINING IN A MEDICAL PHYSIOLOGY LABORATORY

Pak J Physiol 2019;15(3)

Practical physiology laboratory is to provide the students with necessary practical understanding of physiological principles that will enable them to become good practicing physicians. In Pakistan, laboratory curriculum of Medical Physiology has been updated extensively. Experiments using animals have been replaced by the experiments based on clinical examination of normal, healthy, human subjects. Physiology teachers integrate pre-medical subjects with the basic medical sciences and then to clinical sciences and ultimately to the professional practice. Student learns basic manual skills when he palpates arterial pulses and learns clinical skills of palpation and percussion. After that he learns to use some instruments on normal, healthy, human beings and then on the patients. Finally, the student is taught medical ethics of dealing with human beings. Laboratory curriculum should be revised after every few years to include the latest medical equipment and therapeutic techniques. Medical student is meticulously trained before handling the patients.

Keywords: medical students, medical physiology, laboratory curriculum

Laboratory practical work increases students' interest, motivation, practical skills, problem-solving abilities, and understanding of the nature of science. Undergraduate medical students experience difficulties with basic and complex topics in

human physiology. These difficulties increase the importance of using practical approaches to help students in understanding physiology. Practical activities are an interactive method of teaching and they associate theory with its application.² The aim of teaching practical physiology curriculum in a medical college is to provide the students with necessary understanding of physiological principles that will enable them to be good practicing physicians.³ Practical activities are important for elucidating and improving students' understanding of physiology principals. Although, alternatives to lab work like computer simulations, Videos etc. are valid and help students' learning, they do not actually replace practical work.⁴

In Pakistan, laboratory curriculum of Medical Physiology has been updated extensively during the last few decades. Experiments using animals have been abolished and experiments based on clinical examination of human subjects have been included. Following practical assignments are included in the first year MBBS course: Study of Microscope, Estimation of Hb, Determination of ESR, Study of the Neubaur's chamber, WBC (TLC) Count, RBC Count, Platelet Count, ABO & Rh Blood Groups, DLC Slide Preparation and DLC Count, Examination of Arterial Pulses, Examination of Jugular Venous Pulse, Recording of Blood Pressure, Bleeding Time and Clotting Time, ECG Recording and ECG interpretation, Determination of Vital Capacity, Examination of Chest, Triple Response, Recording of Body Temperature, Performing CPR. Many of the following practical experiments are included in second year MBBS laboratory

course: Examination of superficial and deep reflexes, Brief examination of the motor and sensory system, Examination of the cranial nerves, Measurement of the field of vision, Demonstration of light reflex, Ophthalmoscopy, Colour vision, Hearing tests, Testing taste and smell, Measurement and interpretation of body temperature.⁵ In spite of major shift toward human experiments, students still feel that many experiments are not clinically relevant and should be discarded. This is only because of their limited knowledge about training of a doctor, For example, they consider that RBC, WBC and Platelet counts using microscope, Haemoglobin estimation using Sahli's haemoglobinometer, Determining Packed Cell Volume, Testing taste, smell and for Colour vision, Measurement of the field of vision etc. are clinically irrelevant.

While deciding what should be taught to the medical students in general and in the laboratory in particular, medical physiology teachers should consider the whole educational continuum of the students from pre-medical classes to basic medical sciences to clinical sciences and ultimately to the professional life. A student coming to physiology teachers is having background knowledge of physics, chemistry and biology. First responsibility of Physiology teachers is to integrate basic sciences (Physics and Chemistry) with the basic medical sciences (Physiology and Biochemistry etc.). The second level integration is also the responsibility of basic medical science teachers, especially the physiology teachers, that is to integrate basic medical sciences with the clinical sciences and the

doctor's professional practice. The first year student has no or practically little knowledge of laboratory work. He has no manual skills and no knowledge of using instruments manually. On the other hand, a doctor uses his hands and other body parts very skilfully and uses different instruments very efficiently for the benefit of his patients. Just recall a doctor doing a venepuncture, lumbar puncture or CPR (cardio-pulmonary resuscitation) or doing a surgical operation, or operating through a laparoscope.

In the physiology lab, a medical student learns basic manual skills by first using inanimate objects such as laboratory equipment, e.g., determination of ESR and Haemoglobin. He learns basic manual skills when he palpates arterial pulses and learns clinical skills of palpation and percussion. After that he learns to use some instruments manually on normal, healthy, human beings, e.g., recording blood pressure by using a BP apparatus or recording body temperature by using a clinical thermometer in the physiology lab. In the skills lab, he is then trained to inject and suture on limbs made of artificial material; he also learns clinical skills, e.g., Performing CPR or delivering a baby by using manikins (the artificial humans). Finally, the student is taught medical ethics of dealing with human beings. Only after that much training he is allowed to touch the patient. So, the student is meticulously and rigorously trained before handling the live human beings, the patients. This may explain why a first year medical student is not allowed to handle the patients directly. This can also explain why some laboratory methods and

experiments are still being used in physiology and other basic medical sciences labs which at first sight seem irrelevant or outdated. Those experiments are included to provide manual skills to the students.

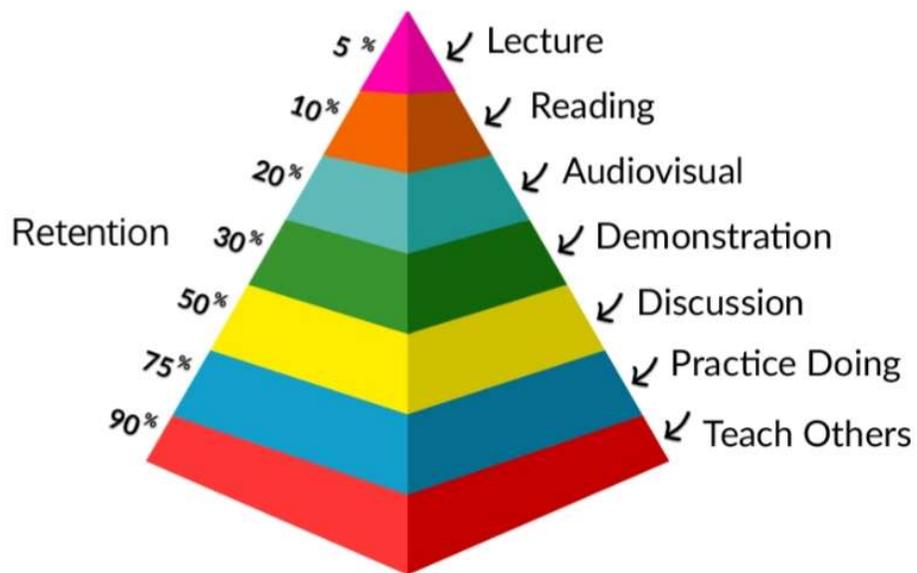
In spite of all above discussion, we believe that physiology laboratory curriculum should be revised after every few years to include the latest medical equipment and therapeutic techniques to teach physiological concepts to medical students. Any non-invasive investigation may be part of physiology laboratory like ultrasonography, echocardiography, audiometry, Spirometry and computerized data acquisition system. These may be included to show and explain physiological mechanisms to the medical students on a living human. Medical universities should take a lead in this process of curriculum revision by organizing physiology teachers' meetings and conferences. Pakistan Physiological Society can also share the responsibility by making a core group of medical physiologists.

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INTEGRATED MEDICAL CURRICULUM: A REVIEW OF UNIVERSITY OF HEALTH SCIENCES CURRICULUM

Pak J Physiol 2018;14(3)

“To study the phenomenon of disease without books is to sail an uncharted sea, while to study books without patients is not to go to sea at all.”

Sir William Osler (1849–1919)

‘Integration’ can be defined as ‘integration of content within a single lecture’ or ‘integration of a medical school’s curriculum’. MBBS curriculum of University of Health Sciences seems to be on the basis of ‘Z-shaped curriculum model’. Pakistani medical schools are unique in the sense that all teachers of basic medical sciences are physicians having MBBS degree and Faculty have additional post-graduate qualification in the relevant basic subject. Horizontal integration takes place when students prepare for annual examination, when all subjects are learned at the same time. During their lectures, these physician-teachers cross reference for horizontal integration and relate basic concepts with clinical situations for vertical integration. In the UHS curriculum, clinical modules and clinical skills are taught to further facilitate vertical integration. We propose a simple scheme to rationalize integration in the annual assessment. In the first year class only 10% questions may be integrated, clinical scenario based; subsequently 20% increase each year will give the ratios of 30%, 50%, 70% and 90%. To improve medical education in the country,

the only way forward is to efficiently train teachers, recruit good teachers, authorize, trust and respect teachers.

Keywords: Integrated medical curriculum, physician-teachers, Z-shaped curriculum model.

Students first learn basic and biomedical sciences and then move to clinical sciences in traditional method of teaching medicine. The students do not experience the relevance of basic and biomedical sciences as applied to clinical practice. Preferably the students should be encouraged to think as doctors from their day one in the medical school.¹ The popularity of the term ‘integrated curriculum’ has grown immensely in medical education over the last two decades, but what does this term mean? ‘Integration’ can be defined as ‘integration of content within a single lecture’ or ‘integration of a medical school’s curriculum’.²

Integration views learning and teaching in a holistic way and reflects the real world, which is interactive. An interactive or integrated curriculum helps students apply their knowledge to their work and to their personal development.³ The curriculum integration in the field of medical education is of three types: Horizontal integration, i.e., integration across disciplines but within a finite time period; Vertical integration, integration across time, trying to enhance education by overcoming the traditional formats between the basic and clinical sciences; and Spiral integration defined as a combination of both horizontal and vertical integration that unifies integration across time and disciplines for both basic and clinical sciences. It refers to

combination of basic and clinical sciences in such a way that the traditional divide between preclinical and clinical studies is broken down.²

University of Health Sciences (UHS), Lahore is the largest medical university in Pakistan. MBBS curriculum of UHS is analyzed through ‘mapping’ technique to see its level of integration and to find out ways and means to improve its efficiency. ‘Curriculum mapping is concerned with what is taught (the content, the areas of expertise addressed, and the learning outcomes), how it is taught (the learning resources, the learning opportunities), when it is taught (the timetable and the curriculum sequence) and the measures used to determine whether the student has achieved the expected learning outcomes (assessment)’.²

The UHS curriculum seems to be designed on the basis of ‘Z-shaped curriculum model’ proposed by Wijnen-Meijer *et al*⁴ in 2009. This model outlines a progressive introduction to clinical practice while maintaining a persistent basic science component throughout all years of a curriculum. This is an example of vertical integration. This model is modified, and rotated to the right (Figure-1).

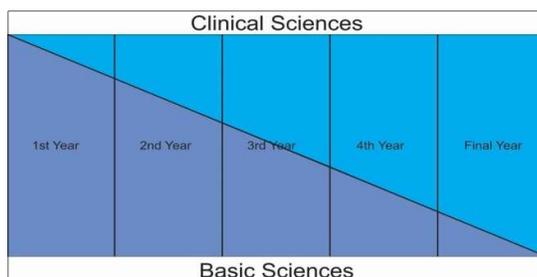


Figure-1: Vertical Integration in UHS Curriculum

Basic to clinical (vertical) integration is the problem of medical schools where basic medical sciences are taught by non-medical teachers. Pakistani medical schools are unique in the sense that all teachers of basic medical sciences are physicians having MBBS degree and Faculty have additional postgraduate qualification in the relevant basic subjects. During their lectures, these physician-teachers cross-reference to other basic subjects for horizontal integration. Horizontal integration also takes place when students prepare for final examination, when all subjects are learned at the same time. Physician-teachers are also fully capable of relating basic concepts with clinical situations for vertical integration and they always do so. Clinical modules are included in theory and clinical skills are taught in the laboratory to further facilitate vertical integration. Small group teaching (tutorials) polish verbal and communication skills of the students in which physician-teachers share their personal clinical experiences with the students. During the lab-work, students learn manual skills and learn handling of clinical instruments. They examine healthy subjects to note down the pulse, record blood pressure, examine breath and heart sounds etc. They learn to use basic diagnostic instruments like stethoscope, ophthalmoscope, thermometer, perimeter, spirometer, ECG machine etc. They also learn to examine Histology/ Histopathology slides, Radiographs (X-rays), learn to test urine and blood specimens for simple diagnostic tests. Students note down their findings and relate them to different

diseases and clinical situations. In all basic subjects, topics and concepts are taught and discussed with their clinical relevance for vertical integration. Horizontal integration takes place when during lectures there is cross referencing.

In the first two years of MBBS course, students learn Medical Physiology, Medical Biochemistry and Basic and Clinical Anatomy. In third and fourth years, they learn Drugs (Pharmacology), Diseases (Pathology), Social, Behavioural and Ethical aspects of medical field (Behavioural Sciences), Legal aspects of Medicine (Forensic Medicine) and Community Medicine. In all these basic subjects, students learn from lectures, books and other electronic resources. Their lab work, field tours, hospital duties and community interaction, train the students for their future work and assignment as physicians. Some of the fourth year subjects and all final year subjects are purely clinical.

Integrated curriculum should have integrated assessment also.⁵ Although in UHS curriculum integration is facilitated throughout the MBBS course, the ratio of integration between basic and clinical aspects during each year is not mentioned especially at the assessment level. So, in the annual paper, the ratio of basic concept questions and clinical scenario based (integrated) questions is not always balanced. For example, in first year paper, sometime there are three scenario based questions while at some other time there are six questions. We propose a simple scheme to rationalize this integration in the final assessment test of each year. As the first year class is novice to this

concept of integration, only 10% questions may be integrated, clinical scenario based. After that 20% increase each year will give us the ratios of 30%, 50%, 70% and 90% in the subsequent years (Figure-2).

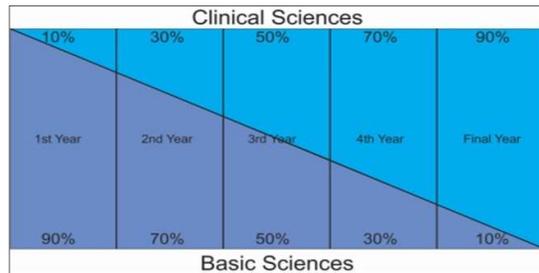


Figure-2: Proposed Percentage of Basic and Clinical Sciences in MBBS Curriculum

As a final word, whatever the curriculum design or instructional methodology may be, the man behind the gun ultimately matters. If we want to improve the medical education in the country, the only way forward is to efficiently train teachers, recruit good teachers, authorize, trust, and respect teachers!

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Add a long essay type question, in place of two SEQs, to increase the writing skill of students.

DIFFERENCE BETWEEN A TEACHER AND A PROFESSOR

Keith Parsons
Professor of Philosophy,
College of Human Sciences and Humanities
University of Houston – Clear Lake



Parsons explained the difference between high school teachers and university professors:

First, I am your professor, not your teacher. There is a difference. Up to now your instruction has been in the hands of teachers, and a teacher's job is to make sure that you learn. Teachers are evaluated on the basis of learning outcomes, generally as measured by standardized tests. If you don't learn, then your teacher is blamed. However, things are very different for a university professor. It is no part of my job to make you learn. At university, learning is your job — and yours alone. My job is to lead you to the fountain of knowledge. Whether you drink deeply or only gargle is entirely up to you.

Your teachers were held responsible if you failed, and expected to show that they had tried hard to avoid that dreaded result. I am not held responsible for your failures. On the contrary, I get paid the same whether you get an "F" or an "A." My dean will not call me in and ask how many conferences I had with your parents about your progress. Indeed, since you are now an adult, providing such information to your parents would be an illegal breach of privacy. Neither will I have to document how often I offered you tutoring or extra credit assignments. I have no obligation whatsoever to make sure that you pass or make any particular grade at all.

https://www.huffingtonpost.com/entry/message-to-my-freshman-st_b_7275016

SOME IMPORTANT SOCIETIES DEDICATED TO PHYSIOLOGY

Pak J Physiol 2016;12(1)

“I honour, and shall always honour, everyone, who advances the noble science of physiology.”

Charles Darwin

There are several professional organizations in the world which are dedicated to the cause of physiology. They are the custodians of the subject and are working to advance the different fields of physiology through research, education, scientific conferences, scientific journals and books. They also provide opportunities for young physiologists for networking with their seniors and mentors to progress in the field. Apart from the professional growth of its members, these societies enhance regional harmony and cooperation. Many of them are working locally while others are coordinating regional level societies and a few of them work globally.

The oldest society is The Physiological Society (TPS) of the United Kingdom.^{1,2} It was founded in 1876 by a group of only 19 physiologists. Initially its membership was offered to only males. Women were given membership in 1915. This was the time when the sun did not set in the empire of the United Kingdom. Charles Darwin was one of the two first honorary members of the Society. This society is now having more than 3,500 members from over 50 countries. Fourteen of its members were the Nobel Laureates. The ‘Journal of Physiology’ and the ‘Experimental Physiology’ are published by The Physiological Society. Its official address is

Hodgkin Huxley House, 30 Farringdon, London, United Kingdom, and their website is located at <http://www.physoc.org>

The American Physiological Society (APS) was founded in 1887.³ Initially it had only 28 members; now it has more than 10,500 members. The Headquarter of the Society is based in Bethesda, Maryland, on the campus of the Federation of American Societies for Experimental Biology (FASEB). Its official website is <http://www.the-aps.org>. APS is regularly publishing its newsletter and 14 scholarly journals that cover every aspect of physiology. APS has published many important books also. APS publications are the most popular, the most cited, and respected publications throughout the world.

Federation of European Physiological Societies (FEPS) was founded in 1991.⁴ This organization represents the physiological societies in the European region. FEPS is an international, non-governmental, scientific organization which is exclusively and strictly a non-profit making organization. Its website is <http://www.feps.org>

Federation of Asian and Oceanian Physiological Societies (FAOPS) is working in Asian and Pacific region.⁵ First Congress of the Asian and Oceanian Physiological Societies (AOPS) was held in Bangkok in November 1986 to formulate an international organization of physiologists in Asia and Pacific region. After a few years of serious deliberations, Federation of Asian and Oceanian Physiological Societies (FAOPS) was officially formed in 1990.

Professor Herbinder Jeet Singh is Secretary of FAOPS. Twelve physiological societies are its regular members, and six societies including Pakistan Physiological Society (PPS)⁶ are its associate members.

South Asian Association of Physiologists (SAAP) was founded in Islamabad on 16 November 2008.⁷ The association provides a forum for the physiologists of the SAARC region for exchange of scientific information and collaboration. Within a few years of its creation, SAAP has become an active and productive scientific society in the SAARC region. It has one of the largest memberships as a scientific society in this region. Pakistan Physiological Society is one of its founding members. It publishes a newsletter and its fifth biennial conference (SAAP- V) is scheduled in Kathmandu, Nepal on November 10–12, 2016.

International Union of Physiological Sciences (IUPS)⁸ was officially launched in 1953. Presently, IUPS is possibly the highest ranking organization devoted to physiological sciences. The IUPS is an adhering member of the International Council for the Organization of Medical Sciences (CIOMS) and of the International Council for Laboratory Animal Science (ICLAS). During the past 50 years, the IUPS has activated numerous scientific commissions, published books and the journal ‘Physiology.’ ()

It is important to note that Pakistan Physiological Society (PPS) was founded exactly a hundred years after the American Physiological Society (APS) was founded, i.e., in 1987. So, PPS is

nearer to APS by birth than the TPS. We are celebrating the 29th anniversary of the PPS on 15 April 2016. There is a hundred year gap in the birth

of APS and PPS. Should there be a hundred year gap in their achievements and functioning? Let's hope for better prospects!

“If it was ever true that physiology had moved off centre stage, it is now coming back with a vengeance”. Denis Noble, IUPS President.

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YOU AND YOUR SOCIETY GROW TOGETHER

Pak J Physiol 2015;11(1)

Almost all professions have their corresponding professional societies or associations. Every professional should be a member of some related professional society. That society will represent its members and work for the betterment of their profession. A society or association is a synergistic group. This means that the effect of a group of people is more than just one person. Societies are usually the non-profit organizations that promote a particular profession, promote the members of the profession, and also protect the public interests. Societies protect the interests of the public by maintaining the standards of training and by ensuring the ethical practices in their profession. Professional societies bring together like-minded people who can network, share experiences and learn from each other. Members of the society contribute to meet the expenses for the activities of the society. Membership fees and other contributions members make help support society programs and operating costs. Society programs play a big part in helping the membership grow.

The mission of any professional society is primarily educational and informational. Their influence is evident from their functions, which are: to publish professional journals, to improve professional excellence, to increase the public awareness, and to make

awards to their efficient members. Professional societies help to set standards for their professional fields and so promote high standards of quality in their professions. Many professional bodies also develop and monitor professional educational programs in their fields, and help update skills of their members. Their certification signifies that a person possesses credible qualifications in the related area of expertise. Associations contribute to their communities in a number of ways like providing scholarships for students providing travel grants and CME credits to its members and by supporting important charitable causes in their communities.

Membership of professional organizations is important and worthwhile to you. You are informed of current developments in your fields of expertise. Membership also shows your dedication to the field. It connects you with your peers, mentors, and other field leaders. It keeps you updated with the latest developments and scientific breakthroughs in the field. It also helps your professional development through CME activities. If you are a senior, it provides you an opportunity to find out students for mentoring. It gives you a personal satisfaction to be a part of a respectable community. It provides you the opportunities to foreign tours through conferences and seminars. It helps you to find out the latest jobs and research slots in your field. It is also important as you make contacts with those who share similar interests and goals. Public becomes aware of the importance of your work.

Your membership presents opportunities for healthy

competition, personal recognition and access to educational forums. Membership in a professional society offers their members opportunity to support people involved in research, and other educational programs in their field. Membership provides you with a moral boost. Listening to the experiences of others, you are energized and refreshed with the feeling that you are not alone in the fight to find a respectable place in the field. Organizations and societies have an important political role in the community that far exceeds the presence of individual members.

In short, the networking, the resources and the ideas and advice you get from society's senior members will be an outstanding return on your small, manageable investment of time, money and effort. The society enhances the performance of its members that ultimately will benefit the society in the end. So, help your Society grow, the more you engage yourself in the Society, the more you will receive from your Society.

To physiologists in Pakistan, it is advisable to join Pakistan Physiological Society. Grow up from our respective institutes to the national level through Pakistan Physiological Society (PPS); to the regional level through South Asian Association of Physiologists (SAAP) and Federation of Asian and Oceanian Physiological Societies (FAOPS), and jump to the international level through International Union of Physiological Sciences (IUPS). A PPS member also becomes a member of SAAP automatically. In the present antagonistic international

environment, we can present a true soft image of Pakistan through our international linkages.

It is important to note that you get out of a society as much as you put into it. You and your Society have a symbiotic relationship, both benefiting from each other. The more you engage yourself in the society, the more you will receive from your participation. Become an active member! Do more than simply attending meetings!! There are lots of advantages of becoming a professional member. The true advantage of a professional membership comes from your participation in the Society. When you have made a commitment to join the Society, make a personal commitment to grow your Society. Helping the Society achieve its mission will immediately bear the fruits of your labor.

There are some disadvantages of the societies also. They often act like a cartel, a labour union or a trade union for the members of the profession. They usually get tipped in favour of protecting and defending the professionals rather than to protect the public interests. Nevertheless, advantages to become a member definitely outweigh these disadvantages. So be proud to be a member of your society, shout it from the rooftops. Become an active member and educate others for this excellent, worthwhile investment in future.

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By three methods we may learn wisdom: First, by reflection, which is noblest; Second by imitation, which is easiest; and third by experience, which is the bitterest.

PMDC TRYING TO BUILD ROME IN A DAY

Pak J Physiol 2015;11(3)

Decisions of the dissolved Pakistan Medical & Dental Council (PMDC) Executive Committee had provoked a sense of insecurity and apprehension among doctors in Pakistan. General practitioners were worried to complete certain number of CME/Training hours, especially the doctors of the remote areas who would have to travel long distances and to spend a lot of time and money. They would also have to leave their patients unattended during the CME activities. Medical students were under the onus of taking another (Exit) examination following the completion of MBBS course and the house job to get complete registration, wondering that either they graduated from some foreign medical school or the PMDC has self-acquired the role of an examining body. This was an open mistrust on our medical colleges, medical universities, and the whole medical education system. These decisions are reverted by the new Management Committee of PMDC. Another controversial decision which yet needs to be corrected is allowing clinical postgraduate degree holders to teach basic science subjects. This decision is liable to 'officially' promote quackery in medical education. Under the prevailing situation and the controversies arising, there is possibly no need of a Central PMDC as the health has now become a provincial subject. Decisions of the dissolved Pakistan Medical & Dental Council (PMDC) Executive Committee were as if they were trying to build Rome in a day. Those decisions provoked a sense of

insecurity and apprehension among all sections of the doctor community. General practitioners, specialist doctors, basic medical science teachers, medical students etc., all were edgy and uneasy.¹ Pakistan Medical and Dental Council (PMDC) is a constitutional and independent body that was run by an Executive Committee. Executive Committee of PMDC had eight members, out of whom three, including President, were from Sind; two from KPK; one each from Punjab, Balochistan and Islamabad. What a fair representation that was of the administrative units of Pakistan! It should have been proportional membership from all provinces and one additional member from Azad Jammu and Kashmir.

In a decision, Executive Committee had imposed a condition on doctors to complete certain number of CME/Training hours to update knowledge for renewal of registration to practice. This decision came as a surprise for doctors as no specified system to conduct CME Training was in place. Only universities in few big cities were allowed to conduct the CME activities. No one in the Executive Committee ever bothered to think about doctors working in remote areas of the country who were compelled to travel long distances and to spend lot of time and money to complete these CME hours. They would also have to leave their patients unattended during the CME activities. A good decision implemented in a bad way because of inadequate brainstorming and preparation. CME/CDE halls are still not complete even in PMDC, Islamabad office. PMDC should allow recognized professional

bodies of doctors to conduct CME activities because they have the capacity to approach the far flung areas of the country. PMDC should also arrange online CME activities for doctors working in remote areas of the country.

Another wrong decision of PMDC Executive Committee required every medical student to take another (Exit) examination following the completion of the MBBS course and house job for complete registration and License to Practice. This showed a clear distrust on the medical colleges and the examining medical universities of the country and casted shadows of doubt on the whole medical education system. This would have spoiled the present credibility of our medical institutions among the international community. It showed that PMDC Executive Committee was adopting the role of an examining body instead of a regulatory body. These decisions are now reverted by the new Management Committee of PMDC.

Establishing new medical colleges in Pakistan has now become an industry, i.e., a for-profit business. This revolution was brought about by the then PMDC which had allowed mushroom growth of these institutions. The practice is still going on. This has resulted in an acute shortage of medical teachers² especially the basic medical science teachers who were always a neglected section of doctors. Demand of basic medical science teachers increased and they became a precious lot. When this 'commodity' became costly, the 'industrialists' (the owners of medical colleges) searched for

the cheaper ‘commodity’ for their ‘industry’ and so came the decision of ‘allowing clinical degree holders to teach basic science subjects’. Holders of FCPS medicine can teach Physiology, Biochemistry and Pharmacology; holders of FCPS Surgery can teach the subject of Anatomy. Specialist in Histopathology can teach Forensic Medicine. Was this the mandate of Executive Committee of PMDC to allow teachers of one medical subject to teach the other medical subject? This is nothing but officially promoting ‘quackery’ in medical education which is totally unacceptable. This will really ruin the standard of medical education and profession in Pakistan. In an era of fast growing knowledge, when the scientific knowledge is doubling in a few years, this type of decision is astonishing. This decision came from a committee in which there is virtually no representation of basic medical science teachers. This decision still needs attention of the PMDC Management Committee.

It is worthwhile to note that supervision of postgraduate medical education is also the responsibility of PMDC. This is the only way to increase production of basic medical science teachers. Then, why PMDC is not following the right path to fulfil the demand of basic medical science teachers? Why it is pursuing a wrong and absurd solution of allowing clinical degree holders to teach basic science subjects? Why the focus of attention of PMDC is only on the undergraduate medical institutions and not the postgraduate institutions? It is a million dollar question. The answer lies in the whole process of recognition and registration of undergraduate

institutions and the ‘industry approach’ to establishing a medical college. PMDC has now become a billionaire organization. It takes money out of the pockets of the doctors and gives them, in return, a paper called registration. Besides this, verification and re-verification of a document or a published article is charged for. What a business!

PMDC has full data of all doctors, specialists, medical teachers as well as the medical institutions in Pakistan, both undergraduate and postgraduate. It should publish its data about the deficiency of doctors in the country and how many new medical colleges are needed in the country to fulfil this deficiency? Will it publish its data about how many medical doctors with postgraduate qualification in each basic medical science subject are present in Pakistan? How many are required to replenish the present deficiency? What is the medical teachers producing capacity of our postgraduate medical institutions? How many basic medical science teachers were produced in the last ten years? Why did the deficiency of basic medical science teachers occur? Who is responsible for this deficiency? In how many years the deficiency of Basic Medical Science teachers can be rectified? This data is essential to establish claim of PMDC about deficiency of basic medical science teachers. This will be a logical decision that as long as this deficiency is fulfilled, the moratorium on establishing new medical colleges should continue.

In Pakistani medical colleges, there was a transition from

basic science teachers to basic medical science teachers and we are possibly heading towards another transition from basic medical science teachers to purely **clinical science teachers**. But remember, Rome was not built in a day. Before strangulating the basic medical science teachers economically, arrange some alternative for their bread and butter. Continuous and gradual changes are more likely to be accepted than those which come as a surprise.

It is being demanded by the doctors that PMDC must be brought under some form of supervision and control with more stringent performance evaluation measures.⁴ After these disputed decisions of PMDC and the resultant frustration in the medical community, there is now a debate in medical circles about the existence of a central PMDC as the health has now become a provincial subject.⁵ No doubt, the central PMDC was formed in 1962 by dissolving the provincial medical and dental councils. What will be the loss if the legislation reforms the provincial level Medical and Dental Councils? The Federal Government can effectively oversee and guide these provincial bodies through Ministry of National Health Services Regulation and Coordination (NHSR&C). Alternatively, there should be proportional representation of professional medical organizations or associations in the PMDC by amending the PMDC Ordinance 1962 Section 3(1) replacing representation of ‘Registered Medical Practitioners’ and ‘Registered Dental Practitioners.’

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11 HABITS OF AN EFFECTIVE TEACHER

1. ENJOYS TEACHING
2. MAKES A DIFFERENCE
3. SPREADS POSITIVITY
4. GETS PERSONAL
5. GIVES 100%
6. STAYS ORGANIZED
7. IS OPEN-MINDED
8. HAS STANDARDS
9. FINDS INSPIRATION
10. EMBRACES CHANGE
11. CREATES REFLECTIONS

RESEARCH AND EDUCATION ARE INTERRELATED AND INTERDEPENDENT

Pak J Physiol 2017;13(2)

Examine the mission statement of almost any institution of higher education, and you'll discover that teaching (education) and research are listed as important but not necessarily related functions of the organization.¹ The relationship between teaching and research is often assumed and just as often ignored. Research should and does influence teaching (and *vice versa*), but the gulf between the two can at times seem large.² So, there is a debate whether these two activities are related or not and what the two contribute towards the advancement of knowledge.

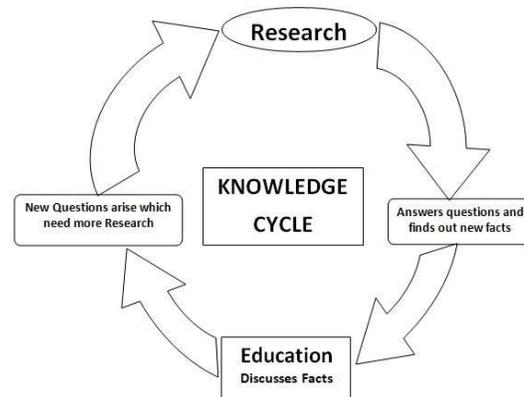
Man is imaginative and inquisitive, always struggling to know the facts about things and trying to explain events occurring around him. These instincts are not only his nature but they are more of his needs. These are also the prerequisites for a fact finding, elaborative, and scientific process called research. The word research is familiar to every one of us and we also know that research is done to find out new facts. But a few know that research is also carried out to prove or disprove the already known facts. Research is a planned, systematic and careful investigation towards increasing the sum of knowledge. This is also a fact that the knowledge is increasing day by day. In simple, plain language, knowledge may be called as a collection of facts. Research is the process of creating new knowledge by finding out new facts.

Humans are born illiterate and innumerate, and ignorant of the norms of society but with the help of education, within a few years they can read, write, calculate, and act in accordance with the societal norms. Education equips individuals with the skills and substantive knowledge that allows them to define and to pursue their own goals, and also allows them to participate in the life of their community as full- fledged, autonomous citizens.²

Education is also a means to disseminate facts or knowledge to many billion minds. During the process of education, the teacher and the taught ponder about the facts, analyzing and evaluating every facet of the topic under discussion. Teachers while preparing for their lectures think and reflect about each and every aspect of the relevant fact and discover new questions which require answers. At the same time, students by asking questions may reveal some newer aspects. Students' suggestions, comments, questions, and criticisms can elucidate new research directions.³ In the process of explaining an existing phenomenon, both might discover that existing explanations, technologies, or theories don't actually suffice⁴ and start thinking about new solutions requiring further research.

Knowledge, research, and education are thus interrelated and interdependent activities. Research is actually the primary source of knowledge. Research answers questions and unearths new facts, which are disseminated through education triggering wide spread discussion and debate, surfacing new questions that further initiates new research. This may be called a Knowledge Cycle depicted in

the Figure. It is also said that a good research answers a few questions but raises more questions. So, knowledge, research or education, any one of these activities will ultimately lead to a chain reaction; strengthening, reinforcing and complementing the other.



No doubt, efforts in the classroom can ultimately result in better research. In fact, although many educators are not necessarily researchers, the converse is undeniable. It is no accident that some of the best researchers are also excellent teachers. And, while some strong researchers who are not good teachers do exist, I believe that purposeful teaching effort does in fact result in much better research.³

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**Your degree is just a piece of paper,
your education is seen in your behavior.**

RAPID CHANGES ARE DELETERIOUS FOR THE HEALTH PROFESSION

Pak J Physiol 2020;16(4)

ثبات ایک تغیر کو ہے زمانے میں (اقبال)

(The only permanent thing in this universe is ‘change’....Iqbal)

Abstract

Changes are introduced for improvement. Changes cannot be accepted if the sole strategy is to mandate solutions from the top down and there is multiplicity of existing policies. Entry test was started to counter cheating in the FSc examinations. This year syllabus and format for this test and its percentage in merit calculation was changed many times. National Licensing Examination (NLE) is also imposed on students after passing MBBS course. There is no uniform teaching or assessment methodology for MBBS. PMC allowed Non-medical faculty to be inducted in medical colleges; it recently denied to register postgraduate qualifications of Basic Medical Sciences. PMDC was dissolved and PMC was constituted many times. No one is looking at the big picture and the health system as a whole. Results of this total bewilderment will appear in a few years’ time. After these rapid changes, situation will be disastrous for the country.

Key words: *Entry test, National Licensing Examination, MBBS, PMC*

No doubt, changes in any system are introduced for improvement. Changes in medical profession are stimulated by medical progress. Change is accepted if they benefit the public, if new models of care emerge, if clinical practices are altered by necessity or if they reach professional acceptance. Changes cannot be accepted if opposed by main stakeholders, if the sole strategy is to mandate solutions from the top down, if there is multiplicity of existing

policies and if they attempt to alter deep seated politics or cultures.¹ In Pakistan, during the last few years, changes in each component of health profession are so rapid that they create confusion and a sense of insecurity among students, faculty, health institutions regulators. We will try to discuss each component separately.

Students

Entry Test was started in 1998 on the initiative of the then Chief Minister Punjab Mian Muhammad Shahbaz Sharif to counter cheating in the FSc examinations at that time. From 1998 to 2007, it was conducted by the King Edward Medical University, Lahore. Since 2008, University of Health Sciences, Lahore conducted this test in Punjab. Now, in 2020, it is assigned to the National University of Science and Technology (NUST). Syllabus and format for this test and its percentage in merit calculation was also changed many times. Students are confused about this. This time, there will be a national level Entry Test in spite of the fact that there is no uniform syllabus nationally. This rapidly changing situation caused confusion among students. Entry Test is also belated this year and as a result there will be shortage of House Officers after five years as this important work force for hospitals will not be available timely. In one study it was found that the entry test has failed to achieve its goal of selecting better students for medical colleges¹.

Standard and integrity at the level of Boards of Intermediate and Secondary Education (BISE) has much improved during the past few years, so the Entry Test may be waived off now. Further insult to the injury is proposed National Licensing Examination (NLE) which is imposed on students after passing MBBS course. NLE for foreign medical graduates have some logic but for national graduates, it is simply a no-confidence on our national health system. Steps like Entry Test and NLE are taken as temporary measures to mend our basic systems and they should not be imposed permanently.

Let us calculate how many exams a doctor passes during his professional life: 1. Entry Test to get admission in to the MBBS; 2. Five university Examinations (usually called Profs) to pass MBBS; 3. A Public Service exam to become a Medical Officer (MO); 4. For Post-graduation at least two more exams to get a degree of MPhil or FCPS; 5. Another Public Service Commission exam to become a medical teacher (Assistant Professor). 5. For his/her rapid promotion, another exam to become Associate Professor and still another exam to become a Professor. Now another exam is proposed i.e., NLE. Consider the life of a doctor as a human being i.e., he has family life responsibilities, social and religious responsibilities which need his/her attention. It is a fact that doctors marry late because they are busy in their career building. Just a few years ago, our doctors were the most sought after doctors throughout the world but only a few years after these rapid changes, situation will be disastrous for the country.

After the inception of PMC, **Fee Structure** in Private Medical Colleges is now uncontrolled and per year fee, without hostel fee, is now above fifteen lacs. This will be increased 7% each year. PMC also allowed non-medical faculty to teach Basic Medical Sciences in medical colleges. Simply this means that students going to become doctors will be taught by non-doctors.

Teaching Methodology and Assessment: There is no uniform teaching methodology and method of assessment for MBBS students throughout Pakistan. Some medical colleges follow the integrated curriculum and majority of other follow the traditional curriculum. Although traditional curriculum of University of Health Sciences (UHS), Lahore is of integrated type and Basic Medical Sciences teachers are doctors who can easily do horizontal as well as vertical integration, the method of assessment is different in some medical colleges affiliated with UHS.

Faculty

After inception of PMC, there will be two controlling authorities for Medical Colleges; one is PMC and the other will be HEC. Clinical Sciences faculty will be registered with PMC and basic sciences faculty will be registered with HEC. PMC also allowed Non-medical faculty to be inducted in medical colleges which will create disharmony in Basic Medical Science teachers. It should be noted that this was disallowed by PMDC after a long debate and experience of many decades. The decision of allowing non-medical teachers will damage the medical education system. Medical students like to be taught by doctors rather than by non-doctors. It is just like going to square on again. It is inventing the wheel again. Remember that it was the strength of our medical education system and not the weakness.

PMC recently denied to register postgraduate qualifications of Basic Medical Sciences teachers and referred them to Higher Education Commission (HEC) to be registered. HEC has no experience about medical education. There is no medical education wing and no arrangements for the registration of these degrees. In fact, basic medical science teachers have to apply to two authorities for registration of their qualifications; for MBBS, they have to apply to PMC and for MPhil or PhD to HEC. They have to bear extra burden as paper work and payment of additional amount of money to two different authorities. A situation of panic is created for basic medical science teachers.

PMC vs PMDC and HEC

During the last few years, PMDC was dissolved and PMC was constituted many times. In October 2019, the PMDC was dissolved first time and replaced by the Pakistan Medical Commission (PMC) when President Arif Alvi signed the Pakistan Medical Commission Ordinance 2019. On February 11, 2020, the Islamabad High Court nullified the Pakistan Medical Commission Ordinance and restored

PMDC. On 16 September 2020, PMDC was dissolved again by a joint session of the Senate and Parliament by passing the bill to replace PMDC by PMC to ensure standard medical education in Pakistan. At present, although PMC is in place, its constitution is being challenged at various fora that creates a total confusion among the medical fraternity.

PMC recently denied to register postgraduate qualifications of Basic Medical Sciences teachers and referred them to Higher Education Commission (HEC) to be registered. HEC has no experience about medical education. There is no medical education wing and no arrangements for the registration of these degrees. In fact, basic medical science teachers have to apply to two authorities for registration of their qualifications; for MBBS, they have to apply to PMC and for MPhil or PhD to HEC. They have to bear extra burden as paper work and payment of additional amount of money to two different authorities. Total confusion is created for basic medical science teachers.

There is a situation of total chaos in every component of health profession. No one is looking at the big picture and the health system as a whole. Results of this total bewilderment will appear in a few years' time and no one will take responsibility of this total disaster.

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Old-Fashioned Doctors

Editorial

In the 40 years that I have been a full-time medical educator, much has changed regarding what we teach and how we teach our students and house officers. As a consequence, I now confine myself to teaching basic medical principles—principles that should never change. But even so, today's trainees tell me that what I say and do is old-fashioned. I wonder:

- Is it because old-fashioned doctors spend whatever time it takes to obtain a good medical history and physical examination?
- Is it because old-fashioned doctors routinely seek *all* of the patient's previous medical records, not just the discharge summaries?
- Is it because old-fashioned doctors do not order sophisticated, expensive studies when simpler and cheaper procedures can supply the needed information?
- Is it because old-fashioned doctors order tests to substantiate, not generate, their clinical impressions?
- Is it because old-fashioned doctors use their brain and their heart, not an army of consultants, to manage their patients?
- Is it because old-fashioned doctors view consultants as opinion givers, not decision makers?
- Is it because old-fashioned doctors treat patients, not numbers?

- Is it because old-fashioned doctors do not blindly administer a ton of drugs in an attempt to alleviate every possible ill?

- Is it because old-fashioned doctors recognize that doing nothing is, at times, doing a lot?

- Is it because old-fashioned doctors understand that patients often get well *despite* what we do, not as a result of what we do?

- Is it because old-fashioned doctors realize that good rapport with their patients is their best protection against lawsuits?

- Is it because old-fashioned doctors are aware of their own fallibility and are never afraid to say, "I don't know"?

If so, then I am proud to be old-fashioned. And I believe that if more doctors today practiced medicine the old-fashioned way, our profession might regain some of the nobility and respect it once enjoyed.

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THERAPEUTIC USES OF IMMUNE SYSTEM: NEW POSSIBILITIES, NEW HOPES

Pak J Physiol 2015;11(4)

Our immune system is an amazingly complex system that is ill-defined anatomically but relatively well-defined physiologically. The fact is that we still don't have a thorough knowledge of this important body system. Our Immune system is capable of defending ourselves against invading pathogens; removing old, worn out or damaged body cells; identifying and destroying the foreign cells; identifying and destroying the abnormal, infected, mutant and cancer cells. The immune system, anatomically, consists of white blood cells (WBCs), tissue cells derived from WBCs, the thymus, the bone marrow, the lymph nodes and the lymph vessels. Antibodies, interferon, and complement system are the chemical weapons and the cytokines are the major communicating chemicals of the immune system. Cytotoxic T Lymphocytes (CTL) in our immune system are the most potent killers of foreign cells. Cytotoxic T lymphocytes (also called T-effector cells, T_{eff} or T_C) and the Natural Killer (NK) Lymphocytes can recognize and destroy the cancer cells.^{1,2}

Different cells in the immune system convey messages through exchanging cytokines. Cytokines are chemicals secreted by some immune cells and affect the other immune cells to mount an appropriate immune response. Cytokines include chemicals

like interleukins, interferons, and growth factors.³ Latest advances in the fields of neuroscience and immunology have revealed that neural reflexes also modulate the immune system. Activating the Vagus nerve affects the cytokine production by leukocytes.⁴

All cells of the immune system are generated as immature stem cells in the bone marrow. These stem cells respond to different types of cytokines and other signals and they grow into specialized immune cells like T cells, B cells, or phagocytes. Because stem cells are non-committed cells, they can be considered a promising possibility for treatment of some immune system disorders. Researchers are investigating if a person's autologous stem cells can be used to regenerate damaged immune responses in autoimmune disorders and immune deficiency disorders.⁵ Haynesworth *et al* (1992a & 1992b) were able to isolate and culture human mesenchymal stem cells (MSCs) in therapeutic quantities. Studies have also indicated the capability of MSCs to differentiate into neural precursors, cardiomyocytes and possibly other cell types which can be useful in treating difficult conditions like stroke and myocardial infarction.⁶

The study of the immune system as a distinct body system is relatively recent. Although its origins can be traced to Edward Jenner in the late 18th century who first discovered that humans could be protected against smallpox by inoculation with cowpox

virus, which is a relative of the smallpox virus.⁷ Cowpox virus was also known as vaccinia, so the process was named as vaccination. In medicine, vaccination, or immunization, is considered as the greatest triumph of the field of immunology. This is a procedure in which severe disease can be prevented by prior exposure to the infectious agent in a form that cannot cause a full-blown disease. Actually, vaccination prepares the immune system before hand to recognise the infective agent and to get ready to make a protective response in case of attack by the microorganisms. This protection is provided with little risk to health or life of the individual.⁸

Scientists are now able to produce immune system chemicals like antibodies and cytokines, as well as specialized immune cells on large scale. The large scale supply of these materials has revolutionized the study of the immune system and its components. It also has had a great impact on medicine, agriculture, and industry.⁵ BCG Vaccine is an attenuated, live culture preparation of the Bacillus of Calmette and Guerin (BCG) strain of *Mycobacterium bovis*. BCG vaccine provides protection against tuberculosis (TB). It is also being used to treat bladder tumours or bladder cancer.⁹

Immune system function can now be enhanced, suppressed or successfully modified to the benefits of the host. Its activity is enhanced through immunization. Its activity is therapeutically suppressed in patients of organ transplantation. Immune system

suppression is a common side effect of chemotherapy for cancer and patients undergoing such treatment become more susceptible to opportunistic and other infections. A class of herbal medicines, known as immunomodulators, alters the activity of immune system function through the dynamic regulation of messenger molecules such as cytokines.¹⁰

In the early twentieth century, Paul Ehrlich first proposed that the immune response of the patient can be developed against tumours. It is now proved through research that many cancer patients can bring about serological as well as cellular immune responses against their own cancer cells. We are hopeful that these serological products can be used as vaccines. We also hope that these therapeutic cancer vaccines will successfully recruit the Cytotoxic T- Lymphocyte attack on cancer cells, with the minimal adverse effects on the patients.¹¹ As our knowledge for CTL cell activation grows, it has unveiled new opportunities to directly modulate CTL cells to launch optimal anti-tumour responses.¹² Observation supports that therapeutic activation of Cytotoxic T-lymphocyte may also cause durable cancer regression.¹³ A short course of daily Tadalafil treatment is sufficient to increase the percentage of tumour-specific CTL cells in circulation and promote the activation of these cells at the tumour site. This observation provides the rationale for new therapeutic strategies in human malignancies.¹⁴

Dendritic cells (DCs) are bone marrow- derived antigen-presenting cells (APCs). They play an essential role in the production and regulation of immune responses. It has been proposed that the DCs can be used as a ‘natural’ vaccine adjuvant and that may prove to be a very effective way to stimulate anti-tumour immunity.¹⁴

The future of cancer immunotherapy seems to be a promising one because of a number of latest discoveries and new techniques. The reason why cancer immunotherapy is not yet in widespread use is that we still have gaps in our knowledge about the human immune system. Latest studies are examining the possibility to use immunotherapy in conjunction with radiation and chemotherapy to increase the effectiveness of patient responses. Researchers can now reproduce natural body products that can be used as drugs in the treatment of many diseases, including cancer. Some of the modern techniques that are used to achieve this miraculous success are development of monoclonal antibodies, genetic engineering and hybridoma technology.³

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ایک چینی کہاوت

”جس دن طالب علم نے یہ سوچا کہ وہ اُستاد کے
 بغیر صرف کتاب سے علم حاصل کر سکتا ہے
 اس نے ناکامی کی پہلی سیڑھی پر قدم رکھ دیا“

MEDICATION ASSOCIATED HARM

Pak J Physiol 2017;13(1)

Every person around the world will, at some point in his life, use medicines to prevent or treat his illness. However, treatments and medicines do sometimes cause serious harm. Sometimes mistakes committed by health workers and/or patients can result in severe harm. A medication error is ‘any preventable event that may cause or lead to inappropriate medication use or patient harm while the medication is in the control of the healthcare professional, patient, or consumer; such events may be related to professional practice, health care products, procedures and systems, including prescribing, order communication, product labelling, packaging and nomenclature, compounding, dispensing, distribution, administration, education, monitoring, and use’.¹

There is now growing recognition that patient safety and quality of care is a critical dimension of universal health coverage. Estimates show that in developed countries as many as one in 10 patients is harmed while receiving hospital care. Globally, the cost associated with medication errors has been estimated at US\$ 42 billion annually or almost 1% of total global health expenditure.² Medication errors cause at least one death every day and injure approximately 1.3 million people annually in the United States of America alone.³ Adverse Drug Events (ADEs) affect nearly 5% of hospitalized patients making them one of the most common types of inpatient errors; ambulatory patients may experience ADEs at even higher

rates.⁴

World Health Organization (WHO), on 29 March 2017, launched a global initiative to reduce severe, avoidable medication-associated harm in all countries by 50% over the next 5 years. “We all expect to be helped, not harmed, when we take medication”, said Dr Margaret Chan, WHO Director-General. “Apart from the human cost, medication errors place an enormous and unnecessary strain on health budgets. Preventing errors saves money and saves lives.”²

Although reports published from western countries have suggested that many thousands of deaths per year are attributable to medication errors, the precise numbers remain unknown in Pakistan. There is no system in place to detect and report these events and we have yet to design and institute such a system. This system should not point finger at the caring health professionals because medication errors are inadvertent and honest mistakes. This proposed system should identify healthcare system inefficiencies and shortcomings, and suggest ways and means to improve the situation.

Pakistan has severe shortage of healthcare facilities and providers. There is about 53% shortage of doctors, 92% shortage of dentists, 96% shortage of nurses and 47% shortage of pharmacists as compared with the international standards.⁵ The magnitude of the problem will definitely be high in Pakistan. Keeping in view the local socioeconomic conditions and the shortage of nurses, training and recruitment of male nurses may be encouraged. During the past many years, health infrastructure and health workforce did not develop

proportionate to increase in population. Budgetary allocations on health are insufficient and need to be increased. As about 20%–40% of all health spending in developed and developing countries is wasted due to poor quality care, strict monitoring of health projects is mandatory.

In-patient and Out-patient Departments in a typical public sector hospital in Pakistan are overcrowded, under-staffed and short of space. There are 150–200 patients per outdoor doctor that is beyond the human capacity to efficiently deal with. If an outdoor doctor follows the recommended course of patient management, i.e., taking history, performing a proper physical examination, making a provisional diagnosis, ordering the required laboratory investigations, and then prescribing medicines with proper instructions for use of medicines, he will need at least about ten minutes for each patient. In a duty time of six hours, the doctor can deal with only thirty-six patients. This clearly shows that the doctors in outdoor are overburdened. Shortage of healthcare providers is compromising the quality of care that usually leads to medical errors. Overcrowding and overburdening also affects the psychology of the doctors who become irritable and sensitive and become prone to make mistakes.

Among other reasons, medication errors can be caused by poor training of health workers. Inappropriately trained doctors at home and doctors coming from less developed foreign countries are incompatible blood in the veins of our health system. We should

develop a holistic system of audit and accountability to monitor health professional education, training and registration so that a high quality health workforce is provided. Professional as well as ethical grooming through continuous professional development (CPD) activities should be part of a doctor's career. Basic ethical principle of 'do no harm' should be deeply ingrained into the minds of health providers during training and during work.

Fortunately, all medication errors are potentially avoidable. Paying attention to health system inefficiencies is important as most harm arises from system failures. Improving the way care is organized and coordinated and how prescriptions are written as well as how patients are advised to consume medications can enormously curtail cases of medication related harm. This requires putting systems and procedures in place to ensure that the right patient receives the right medication at the right dose via the right route at the right time. An organizational culture that routinely implements best practices and that avoids blame when mistakes are made is the best environment for safe care.²

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Shortage of healthcare providers is compromising the quality of care that usually leads to medical errors. Overcrowding and overburdening also affects the psychology of the doctors who become irritable and sensitive and become prone to make mistakes.

**OPEN DIFFERENT ROUTES TO GET A PhD
—NEED OF THE HOUR
Pak J Physiol 2020;16(2)**

The only source of knowledge is experience —Albert Einstein

Pakistan is badly in need of PhD teachers in basic medical sciences (BMS). The rate of production of PhD, especially in Physiology in our country is very low. There are many internationally accepted ways to get a PhD, some are suitable for international students. France, a developed European country, started VAE program in 2002 to incentivize productive and effective people in any field through awarding higher degrees, even PhDs, on the basis of their work and experience in the relevant field. To compensate for the acute shortage of faculty in BMS subjects, we should discover some out of the box solution. Higher Education Commission (HEC) and Pakistan Medical and Dental Council (PMDC) should recognize the internationally accepted degrees in BMS subjects with a lenient policy. Medical Universities should legalize, even if on one-time basis, awarding PhDs to the senior M. Phil Professors. Universities should formulate some criteria, e.g., an M. Phil Professor with 20 years teaching experience and 20 research papers may be granted PhD in his subject. Seats of PGRs may be reserved for students of PhD in different BMS subjects in CIP induction policy in Punjab. Two PGRs may be allocated to each PhD teacher for teaching, training, and guidance in research and thesis writing while the university should conduct examinations and thesis defence of these students.

Keywords: Basic Medical Sciences, PhD Physiology, PhD by Publication, VAE, CIP.

Pakistan is badly in need of PhD teachers in basic medical sciences especially in Physiology. The rate of production of PhD Physiology in our country is very low and, at the present pace, we need more than fifty years to have the required number of PhD teachers in our medical colleges. As an example, University of Health Sciences was founded in 2002 and it has produced only three or four PhDs in Physiology. Similar is the situation for other medical universities and for other basic medical science (BMS) subjects. This is a bitter fact that over the years basic medical sciences remained a neglected part of the medical field and because of this, we are now facing a dire deficiency of teachers in these subjects. Current COVID-19 pandemic has also highlighted the importance of basic medical sciences especially pathology, pathophysiology, immunology, biochemistry etc. This is the time to wake up and open different, internationally accepted, routes to get a PhD, at least in BMS subjects.

There are many internationally accepted ways to get a PhD. Daniel Higginbotham, editor Prospects, states that studying a standard PhD by thesis is not the only means of getting a Doctorate degree. Here are four other ways to achieve this prestigious qualification:¹ **Integrated PhD** which is also known as the New Route PhD that involves studying a one-year research Master's degree (M. Res) before progressing onto a three-year PhD by thesis.

Professional Doctorate is primarily for current professionals in

vocational sectors such as healthcare, teaching and education, and engineering and manufacturing. This type of Doctorate includes a significant taught component and, therefore, a smaller research project.

PhD by Publication involves submitting previously published work such as books, book chapters and journal articles which together form a coherent body of work and show evidence of an original contribution to a particular field of study.

Distance Learning PhD. If you have family or work commitments, or are an international student, this gives you the chance to undertake a PhD without having to live close to your chosen university. As PhDs are based primarily on independent research rather than time spent in lectures and seminars, distance learning is a viable route for many students.¹

An honorary degree is an academic degree for which a university (or other degree-awarding institution) waives off all of usual requirements, such as matriculation, attendance, course credits, a dissertation or thesis, and the passing of comprehensive examinations. The degree is typically a doctorate or, less commonly, a master's degree, and may be awarded to someone who has no prior connection with the academic institution or no previous post-secondary education.² PhD degrees awarded to political figures and other celebrities is a well-known example of honorary degrees, even known to Pakistanis too.

France, a developed European country, started VAE program in

2002 to incentivize productive and effective people in any field through awarding higher degrees, even PhDs, on the basis of their work and experience in the relevant field. In English, you may call this program as ‘Validation of Acquired Experience’ which awards a degree to people who have significantly contributed to their area of work and to the society. As somebody said “Knowledge is theoretical whereas experience is practical. All things being equal, experience is more useful than knowledge since the real world often behaves differently than the textbook.”³ Now-a-days, online life experience degree programs are available at most accredited colleges. Using them can help you earn your distance degree more quickly and at considerably low cost.⁴ BMS teachers are advised to get a PhD through one of these programs.

Societies always appreciate and honour people who are working efficiently in their field and are useful for the society at large. Awarding degrees on the basis of experience and work to productive and useful people is not new to Pakistan. In medical field, Fellow of College of Physicians and Surgeons (FCPS) degrees were awarded to many senior Professors, in clinical as well as BMS subjects, only on the basis of their work and experience and without examination. Internationally, Member of the Royal College of Physicians (MRCP) is the degree earned through passing an examination but Fellow of the Royal College of Physicians (FRCP) and Fellow of the American College of Physicians (FACP-US) are the degrees awarded only on the basis of work and experience. Skill Development Council in

Pakistan is also awarding degrees on the basis of work and experience. There are many other examples to quote.

To compensate for the acute shortage of faculty in BMS subjects rapidly, we should discover some out of the box solution. A three step approach in this regard is suggested. As a first step the Higher Education Commission (HEC) and Pakistan Medical and Dental Council (PMDC) should recognize the internationally accepted BMS degrees, e.g., PhDs in BMS subjects with a lenient policy. Secondly, our Medical Universities should legalize, even if on one- time basis, awarding PhDs to the senior M. Phil Professors who are willing to train PhD students of the University. For this purpose, Universities should formulate some criteria, e.g., an M. Phil Professor with 20 years teaching experience and 20 research papers may be granted a PhD in his subject. A Diploma Holder teacher, e.g., in Forensic Medicine, Pathology or Community Medicine, with 10 years of experience and 10 research papers may be granted an M.Phil in his subject. In this way, shortage of faculty in BMS subjects will be rapidly overcome, and further the faculty will be available to train prospective M.Phil and PhD students. Thirdly, for example in Punjab, 30 seats of PGRs may be reserved for students of PhD in different BMS subjects in CIP induction policy. Medical Universities may admit these students and out of them two PGRs may be allocated to each PhD teacher at their place of posting for teaching, training, and guidance in research and thesis writing while University should conduct examinations and thesis defence of these students. This will

also create an environment of healthy competition.

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ADOPT VAE PROGRAMME FOR BASIC MEDICAL SCIENCES: THE 21ST CENTURY METHOD TO HONOUR WORK AND EXPERIENCE

Pak J Physiol 2020;16(3)

*Mao Zedong Quotes: All genuine knowledge originates in direct
experience.*

We are so slow a follower of the West that we lag behind about 50 years, at least in higher education. The only way to get the highest degree of PhD in Pakistan is to leave your home, go to a big city where a university is located and then follow a tedious, trodden path. Developed countries have moved forward and devised many routes to get a PhD that suits many types of students. Validation of the Acquired Experience (VAE) is the 21st century way of ratifying and recognizing experiential learning, a method of non-formal education. It matches the work and experience of the student/applicant with the ‘outcomes of the requested degree’. For a PhD degree, his intellectual work will be assessed with the outcomes of the PhD course. Pakistan should not waste its precious, talented, learned and experienced basic medical scientists. Award them PhD through VAE program and engage them to train young medical scientists.

Keywords: VAE, Basic medical sciences, PhD

Many of us have heard the phrase “we are followers of the West”. No doubt, we are following the West but we are so slow a

follower that we lag behind in every field, especially science. Take, for example, the basic medical sciences, which are taught for about half of the duration of a medical course. These are Anatomy, Biochemistry, Physiology, Pharmacology, Forensic Medicine, Pathology, and Community Medicine. We have only a few PhDs in these subjects. One reason for this is confusing policy about medical post-graduation in these subjects. Mainly, the medical universities are conducting postgraduate programmes while College of Physicians and Surgeons Pakistan (CPSP) is also conducting FCPS in some basic science subjects. Unfortunately, FCPS in Pakistan is categorized as PhD. This discourages young doctors to pursue a PhD programme. Nowhere in the world FCPS is considered as a PhD. That is why Pakistan's ranking is very low regarding the number of PhD's, hence is considered educationally a low ranking country. Funding for basic medical sciences is also very minimal. We earlier suggested a Medical Higher Education Commission to facilitate post-graduation in basic medical sciences.¹

According to the world over standard practice, the ranking of the medical universities is determined on the basis of number of PhD scholars produced by them. The PhD Programme in Basic Sciences in public sector medical universities of Punjab seems 'almost on the verge of closure'. The varsities admit students for PhD in Basic Sciences after passing MPhil making them eligible for the level-III qualification after 22-years of continuous education while the CPSP registers the students for FCPS in Basic Sciences after MBBS (18

years' education). Section 5 of the CPSP Ordinance 1962 only allows the students requiring hospital-based training in clinical sciences including surgery, medicine, gynecology etc., and not the basic medical sciences.²

There are international standards to categorize educational qualifications which are based on credit hours allocated for the course. It will be shocking for many people that for FCPS (at least in Physiology) there is no mention of credit hours, still College of Physicians and Surgeons (CPSP) has managed to equate FCPS with a PhD, well done PM&DC! Pakistan needs to follow international standards to step out of educational seclusion and find a respectable place in the comity of nations. 'Global Convention on the Recognition of Qualifications concerning Higher Education 2019' is adopted by UNESCO in Paris on November 25, 2019.³ This may be adopted by our regulatory bodies as 'gold standard' to recognize educational degrees, and Pakistan should immediately ratify this Global Convention.

The only way to get a PhD in Pakistan is to leave your home, go to a big city where a university is located and then follow a trodden path; get admission after passing an entry test, undertake a full time course work, write a synopsis, do a research work, write a thesis and defend it. This takes many years of hard work as well as putting a financial burden on the family. We are sticking to the only one method and the result is that there is harassment, mental torture, bribery and many other types of corruption reported in institutions

conducting PhD programmes.⁴ Developed countries have moved forward and developed many routes to get a PhD that suits many students.⁵ Following these different routes will definitely create an environment of healthy competition, enhance available choices for working people, and facilitate people who cannot leave their place for PhD and it will also decrease the chances of corruption in higher education programmes. This is initiative according to the 'Education For All' (EFA) which is a global movement led by UNESCO, aimed to meet the learning needs of all children, youth and adults by 2015.⁶

Validation of the Acquired Experience (VAE) is a programme of awarding degrees on the basis of practical work and experience. VAE is the 21st century's way of ratifying and recognizing experiential learning which is a method of non-formal education. In Pakistan, we are also partially following this method, e.g., if you have studied one course, some part of the other course is exempted. An MPhil degree holder is exempted from two years of course work if he wants to pursue FCPS in the relevant subject. In Europe, VAE programme is being conducted since 2002. Degrees issued through this programme are formally recognized in Europe, US, and signatories of The Hague Convention. The Lisbon Convention on Recognition also recognizes VAE degrees.

In France, VAE is taken as a human right: 'any person engaged in active life is entitled to validate the achievements of his experience, including professional, for the acquisition of a diploma, a title for professional purpose or a qualification certificate'. VAE matches the

work and experience of the student/applicant with the ‘outcomes of the requested degree’. For example, if one student applies for a PhD degree in his field, his intellectual work will be assessed with the outcomes of the PhD course. Outcomes of a PhD course as mentioned in the literature are: Goal 1: Graduates will demonstrate a detailed knowledge of their areas of specialization. Goal 2: Graduates will master the analytical/methodological skills needed to evaluate and conduct research in their areas of specialization. Goal 3: Graduates will demonstrate their ability to design and conduct original research in their chosen fields of specialization. Goal 4: Graduates will be able to teach college-level courses in their areas of specialization. Goal 5: Graduates will be able to communicate the results of their research in a clear and effective manner (e.g., in conferences).⁷

Pakistan should not waste its precious, talented, learned and experienced basic medical scientists. We should award them PhD through this programme and make them supervisors to train young medical scientists to do their PhD. Our legislators should go through the French law: *loi de modernisation sociale du 17 janvier 2002 & décret 2017-1135 du 4 juillet 2017* and legislate similar law for Pakistan.

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MY INAUGURAL SPEECH TO FIRST YEAR MBBS STUDENTS

Welcome! welcome to a very noble profession, the medical profession. This profession is noble as it alleviates the suffering of the ailing humanity. Remember! The society will give us respect and honour as long as we do this healing job efficiently and to the expectations of the society. You are the chosen ones to perform this healing job. Feel this pride as well as responsibility. The most important person (VIP) for a doctor is “the patient”. Doctor’s first priority is patient’s health and not his wealth. We hope that twelve years of pre-medical education, your family training and your religious beliefs have transformed you into a good human being, a noble person. Remember that “only a good human being can become a good doctor.” And we feel that our duty is just to transform a good human being into a good doctor. A good human being is responsible, kind hearted, tender, polite, merciful, sympathetic, civilized, courteous, considerate, soft-spoken and a law-abiding person. Try to inculcate these virtues in your behaviour and character.

In my opinion, education is a two-way process. We both are learning and we both are students; you are undergraduate students; we are postgraduate students. We deliver lectures and you learn. You ask questions and we learn. So, both of us are involved in this learning activity. I also believe that the wisdom is not present only on this side, this is also present on the other side. To me you are equally respectable as we teachers and doctors are. But remember that society will respect you as long as you behave like a good doctor, a good human being. What is Professional Education? It differs a lot from general education. Knowledge learnt is not only memorized but is practically applied throughout life. Knowledge gained is to be continuously updated. Never forget that “A doctor remains a student throughout his life. If he ceases to be a student, he dies.”

A Professional Student is expected to acquire a large amount of knowledge through Lectures which are the most important, Textbooks, Computer based materials e.g., CD's, Internet, etc., Research journals, from Senior students. A Professional Student is expected to organize material in meaningful ways: i. By making notes, ii. By making mind maps.¹ iii. By highlighting Books, iv. By adding notes (on the sides of a basic Book), v. By inserting/pasting small paper having additional material from other books on to the basic book, vi. By using computers. A Professional Student develops knowledge from different methods of instructions: i. Lectures, ii. Tutorials (small group discussions), iii. Practicals, iv. Seminars, v. Conferences, vi. Workshops. A Professional Student Stores, remembers and, when required, retrieves information and demonstrates progress through different forms of evaluation: i. SEQ's, ii. MCQ's, iii. Oral and Practical Examination. A Professional Student should show competency during Professional Exams as a student and the most importantly during his/her Professional Life as a Doctor/Physician.

How will you learn at a Medical College? Learning is a social activity and it needs a team work. Medical profession itself is a **team work**. Collaboration with your teacher and fellow students is a must. Teachers prepare their lectures by using different resources e.g., books, internet, medical journals etc. So lectures are the most important source of knowledge for you. There is no 'textbook' for your course. Your course is in the form of topics. The whole knowledge in the world about that topic is required to be known. So, you have to study any of your subject from more than two books. You have to discuss different topics with your fellow students as well as senior students so as to integrate and memorize important facts.

At medical college you will follow a Learning cycle. Its first phase is "Information gathering phase" in which you gather information through Lectures and for this you should have good **listening skill**, you read books and for this you should have good

reading speed.² You may use Computer based material e.g., CDs or internet and for this you should be having good **Computer skills**. You should also need discussion among fellow students and with senior students. Here you need good **communication skills**.

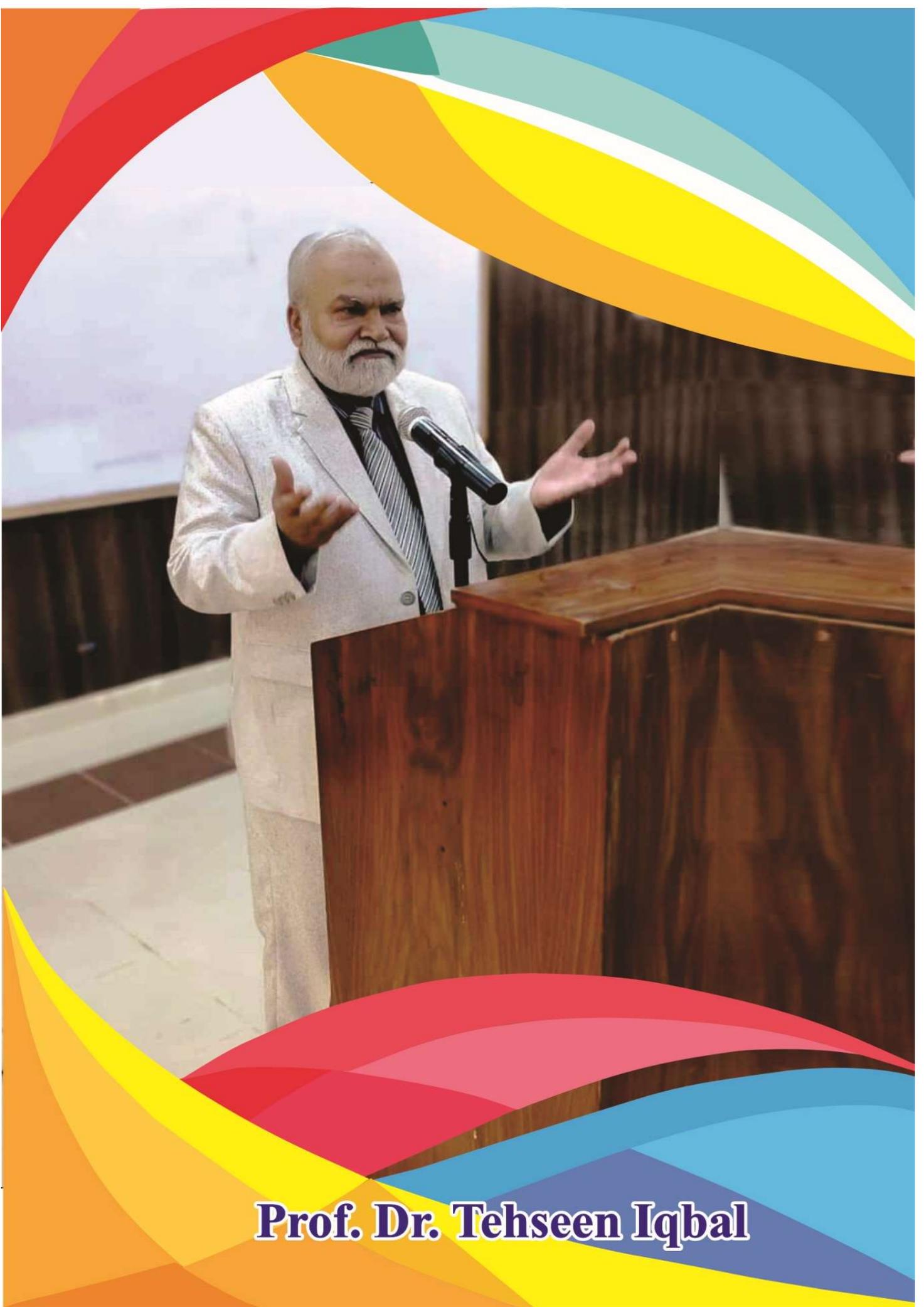
Second phase of the learning cycle is “Integration phase.” After the whole week of information gathering phase, comes the ‘Sunday.’ Sunday is actually a ‘sum day’ in which you should sum up the material presented to you during the whole week. Try to integrate the material as Intra-subject and inter-subject. The third phase of learning cycle is “Consolidation phase.” While preparing for test, you revise the course covered and you need **Memorization techniques** like repetition, mnemonics mind maps etc. Five reviews are said to be necessary for adding material to the long term memory: 1st after one hour of initial reading; 2nd after one day; 3rd after one week; 4th after one month; 5th after six months.³ (Ref: ‘Use Your Head’ by Tony Buzen). Then comes the “Presentation Phase.” During the test you recall the material memorized and then write it down on the paper. Here you need good **writing speed** and a special **writing style**. You should use the “**Explanation skill**” and “**Précis writing skill**” during the test.

What is our relationship? I am not a teacher in the strict sense of the word, I am a facilitator. Likewise, you are not students, in the strict sense of the word. You are self-learners and learning is your duty. So, don’t expect that we will teach you the subject word by word or page by page. Teachers will not teach you the subject, rather they will teach you how to learn the subject **and learning is your duty**. Do not forget that all your requirements (messing, lodging, boarding, clothing etc.) are being fulfilled by your parents/guardians. They only require that you study hard and please them with your good performance. May God help you in this uphill task.

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Looking at text and expecting to learn is not far off from looking at food and expecting to get its nutrients. We need to digest our life experiences just like we digest our food



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