

An Overview Teaching of physiology to undergraduate medical students

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Physiology is considered to be the key subject for medical students. It deals with the norms of all biological and metabolic activities in animals and human. Unless medical students understand and develop a very clear conception in physiology, basic understanding in pathology, pharmacology and other clinical subjects is not at all possible. Therefore a preclinical student must try to understand physiology. For the last forty years there have been changes in the curriculum of the medical courses in many countries but the place of physiology remains almost the same. Some experts proposed that a medical student must start with the subject of anatomy first and then to start with physiology, which may facilitate the students to understand physiology better in the background of anatomy. However, the ideas varied many institutions tried the new thought and then went back again to the conventional method of teaching of anatomy and physiology in the preclinical classes. The fact remains that a new medical student is always worried of physiology as they find it difficult to understand and difficult to memorise. Feedback from the senior medical students is almost the same i.e. to them physiology is also a difficult subject to manage. The initial apprehension is no doubt the main hindrance in learning the subject for any medical student.

The objective of this paper is to discuss the various teaching and learning methods applied to teach physiology to the undergraduate medical students in Asia beginning from the Middle East to the South East.

Methodologies: During the fiftees when we were medical students in the sub-continent, the teaching of physiology was mainly lecture oriented. However, some experiments viz. To elicit

muscle twitch on a smoke kymographic paper from frog's sciatic nerve preparation, and other conventional practicals were emphasized. There were very few qualified teachers in the department. Head of the department used to be the only qualified physiologist and the rest were just fresh medical graduates, with no teaching experiences. There were practically no stress on small group discussion. So students tried to get the professor's lecture notes as much as possible in order to pass the exam rather than to understand the subject. Viva-voce (oral) was one very important part of the examination. Students would fail if he/she could not able to satisfy the examiners in the oral exam. As a result very few lucky ones used to pass the subject. With time, situation started to change. Biochemistry was separated from physiology. There were changes in the methodology of teaching, course contents and the system of evaluation.

In the Middle East, countries like Saudi Arabia, Libya, Jordan etc., situation was a bit different. There were quite a number of qualified physiologists (having postgraduate qualification like Ph.D.) in the department. Individual teacher could spend more time and energy to teach the students. Stress was given in small group discussion (tutorial) and snap exam, as ongoing eval-

uation process. Marks were carried from ongoing evaluation to the final. Laboratory — based practicals were more of demonstrative in nature viz. to demonstrate the effect of stimulation of nerves and administration of drug on the arterial blood pressure in animals. More handouts of lectures and practicals were distributed among students. No doubt, this was a great improvement in the teaching of physiology. This system, helps a medical student to be exposed to huge amount of information in physiology and to develop more confidence and better understanding of the subject. The process is still going on in many of the institutions in the Middle East. Moreover, the entire course of physiology is taught in two academic years. Individual student has to pass in every compartment in order to qualify him/herself to be promoted to the clinical classes. Pass mark is 60% and the overall success in the subject is never more than 60%. Anything more than 60% is considered to be liberal.

Situation has advanced further in the South East of Asia and Australia. In some of the medical schools in South East Asia, and Australia, physiology is taught to the undergraduate students from entirely different angle and with a dynamic and modern approach. The medical school under the USM, Malaysia, is one such

institution. Here physiology is taught not as a separate subject for two consecutive years but rather in an integrated manner with other allied subjects. The teacher here does not go for leading the students with volumes of lectures, but the students have to identify the areas of learning by themselves and do the self-learning. There are abundant learning materials, teaching aids, books for the use of the students. At any time during the first 3 years of the undergraduate course, physiology is just one of the subjects out of so many. Here the students are exposed to the routine common clinical problems. The entire teaching is geared around that particular problem. The input from the physiology will be only problem related. The teaching is in the form of minimum lectures, small group discussion and some experimental demonstrations. Teachers are to guide and help the students but not to lecture around. Students have to learn by self-study and take helps from the teachers, if needed. Beside these, they develop the part of expressing themselves through scientific seminar. Conventional experimental laboratory programme has been changed to Multidisciplinary Labs. (MDL) and self study is conducted through Fixed learning Module (FLM) as charts, models and specimen. Students also receive the Computer Aided Instruction (CAI) programme, a

new method to find out the answer of many questions which are already being programmed. These CAI programme modules are prepared by the faculty staff members.

Discussions: The major issue of this paper is to find out the most suitable and best acceptable form of approach out of so many approaches to undergraduate medical students. To be frank, I started learning physiology when I was a postgraduate student in early sixties. Therefore I believe that the old conventional teaching method was obviously not of ideal choice. The objective of the medical school is one of the most important factors in deciding the method of teaching, so that the fresh medical graduates could learn to deal with the common suffering of the community in which he/she is living. If that is so, then the question comes why should a medical students spend so much time in learning physiology only. Since physiology is a basic dynamic science to understand the everchanging concept in medicine, it is imperative that a medical student must have clear concept in physiology. So we are at a dilemma. Some institutions are giving too much of it and some too little — so what is the solution! May be the time will decide, but one thing is certain to my mind that whether a fresh medical graduate be a general practitioner, or going to be a spe-

cialist in any branch of medicine, he has to understand the basic mechanism of physiological process. In order to achieve this, he/she has to exert effort with determination irrespective of his/her origin whether from a conventional school or from an integrated problem-based learning institution.

In summary, creation of an appropriate atmosphere and environment is most important to motivate the undergraduate medical students to learn physiology in a more, effective and applied manner. In order to do so the following suggestions may be considered:

- number of students admitted should be limited according to the facilities and aptitude of the students but not just considering their grades,
- Number of teachers in the department should be proportionately sufficient to provide more personalized care,
- more small group discussion to be encouraged,
- teaching and learning aids in the form of FLM/speimen should be updated,
- more self assessment type of evaluation,
- to find the students who need more care to rectify their deficiencies,
- teachers should update their knowledge with modern advances in medical physiology,
- to encourage cordial and close teacher — student relationship in order to create better academic atmosphere of learning.

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