

Medical Education – Reflections for the Future

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The practice of medicine, and the training of it, is of course steep in history and tradition. Names such as Hippocrates, Galen and Ibnu Sina come to mind easily. The Islamic civilization substantially contributed to and advanced the medical corpus of the Greek civilization. There was of course the practice of medicine in the Indian and Chinese Civilisation which seemed to have taken their own trajectories. The Age of Reformation and Enlightenment in Europe brought scientific basis into the understanding and treatment of diseases – anatomy, physiology, pharmacology flourished. However, it was Abraham Flexner who revolutionized the medical training and medical education - its methods and purpose - with his 1910 Report [1]. Flexner, a school teacher and *not* a physician, was commissioned by the Carnegie Foundation to review the then medical schools in America and Canada. He was chosen perhaps for his idea that education should be distinguished by small classes, personal attention and hands-on teaching. He was also persuaded by the ideas propagated by John Dewey – a philosopher and educationist - that learning should be by doing, by solving problems, rather than by rote learning [2]. In the course of his study, he became convinced of the essentiality of science in the training of doctors, incorporating biomedical sciences into the medical curriculum, embracing scientific breakthroughs and its advancement. Hence the curriculum was re-designed, giving greater emphasis to science; very much in line with the German system where Medicine was considered a scientific discipline, where physicians had a thorough training in laboratory investigations before they embarked on clinical training. Through this effort, excellence in medical training was redefined and reaffirmed, leading to the closure of many for-profit proprietary medical schools in America. By and large,

the 1910 Flexner Report set the stage for medical education for the next 100 years. But what has been the outcome? While medical training was now becoming more systematic, some rather unintended consequences emerged. The primary role of physicians as beneficent and trusted healers seeming to be compromised. Edmund Pellegrinos, a bioethicist at the Kennedy School of Ethics, lamented that ‘doctors had become neutered technicians with the patients in the service of science rather than science in the service of patients’ [3]. The profession’s infatuation with the hyper-rational world of excellence in Science was not balanced by a comparable excellence in clinical caring. The over-emphasis on scientific knowledge has dwarfed biologic understanding, clinical reasoning, practical skill and development of character, compassion and integrity [4]. Whilst we have been reminded time and again that Medicine is an embodiment of Science and Art, there has been a marked imbalance in the training of doctors, leading to an imbalanced doctor. Yet, Hippocrates did caution us, “It is more important to know what sort of person has a disease than to know what sort of disease a person has”. Interesting enough, even Flexner later lamented that medical education in America was “sadly deficient in cultural and philosophical background” [5]. It was noted that increasing attention to the quality of care, patient safety and documentation care enhances medical practice [6].

THE MALAYSIAN FLEXNERIAN EXPERIENCE

Over the last 2 decades, as more and more medical schools opened in Malaysia – both public and private – concerns were expressed on the quality of the medical education offered. Leaders in medical education and the medical profession – from the universities and the

professional bodies – got together with the Ministry of Health, the Malaysian Medical Council and the Ministry of Higher Education to agree on the system and standards of medical education in this country. For postgraduate training, the formation of the Conjoint Board – concerned with policies and direction – and the Specialty Boards – concerned with running the programmes – led to the training of specialists in many fields, thus addressing the acute shortage of specialists for the country, which had hitherto depended on the British MRCP and FRCS programmes. However, certainly for the undergraduate programmes, we seemed to get side-tracked and possibly trapped in the mechanics of journey, rather than the destination. We got into sometimes heated debates on pedagogies: Problem-Based Learning, early clinical exposures, student-teacher ratio, best answer questions, clinical skills labs, self-directed learning, reflection learning, etc., etc. Whilst these are important in themselves they are not adequate for our task at hand. Molly Cook whose report in 2004 [7] was touted as Flexner Report II wrote, “Moral dimension of medical education requires students and residents acquire a crucial set of professional values and qualities, the willingness to put the needs of the patients first”. She emphasized on “Professional values imparted through role modelling, setting expectations, telling stories and parables, and interacting with the healthcare environment, not just in courses on ethics and patient-doctor communications”. She emphasized that assessment should be “beyond knowledge, to appropriately assess procedural skills, judgement, and commitment to patients”. And now our other colleagues in other fields are going headlong into new pedagogies and learning experiences such as MOOCs, flipped classrooms, iCGPA and others, we need to take stock of the situation lest our commitment to pedagogical approaches turns into zealotry, just like our fascination for biomedical science turned into an infatuation. By the way, with lots of talks about 4th IR, we were told that because machines can make diagnosis better and faster than doctors, doctors’ jobs are at risk of being taken over by these intelligent machines and robots. Does that mean to say that a doctor’s job is just making diagnosis and the caring aspect is totally neglected?! Would they be contented to be cared for by robots in the future?

THE UiTM MEDICAL TRAINING EXPERIENCE

The UiTM Medical programme started with 20 students in 2003 on a curriculum based on that of Universiti Sains Malaysia. The Medical Faculty went on a rapid expansion with its intake trebled to 60 in 2004, and with the curriculum was completely revamped in 2005, making it substantially integrated. This massive exercise was carried out with the cooperation of the University of Melbourne, including the introduction of Problem-based Learning (PBL) and the training of lecturers. The integrated curriculum is a hybrid of conventional curriculum with the new PBL. It is predicated on “Solid scientific foundation imbued with strong humanistic values”. Apart from PBL, it introduces a number of new approaches such as Self-Directed Learning (SDL), and Directed Self-Learning (DSL), early clinical exposure, Primers of Medicine (others call them Simulated Patients), pathology teaching sessions in the Medical Museums (two were established; in Selayang and Sungai Buloh Campus). Exams and assessments were also re-organised with Best Answer Questions introduced to the existing Multiple Choice Questions and Short Answer Questions, and the fourth year was devoted to posting in the specialties, the need to pass a paper on Medical Ethics as a prerequisite for the Final Exams, the inclusion of a third component to the clinical exams in the Final Exams (Materia Medica Exam consisting anatomy, pathology, microbiology, imaging, ECG and surgical instruments) to the usual Short and Long Cases, and Shadow Housemanship after graduating and before starting the official housemanship. These learning activities are supported by purpose-built campuses in Sungai Buloh, Selayang and Teluk Intan which are situated just beside the respective Ministry of Health hospitals which are used as the teaching hospitals as well as the 88 bedded Clinical Teaching Centre (now renamed UiTM Medical Centre). Further supporting the teaching and learning ecosystem, apart from the usual infra- and infostructures, were built modern medical libraries, customised clinical skills labs, lecture theatres, computer laboratories, clinical skills labs, Medical Museums, specialist clinics, primary care clinics, rural clinics, anatomy and wet labs, exam halls and tutorial rooms. The Faculty is

equipped with two highly strategic research facilities (Institute for Medical Molecular Biology, IMMB, and Centre for Translational Research and Epidemiology, CenTRE). A modern Student Residential College was built in all the three campuses. An International Academic Advisory Board consisting of the Dean of Medicine at Melbourne University, Dean of Medicine from Baylor College of Medicine, Houston Texas and senior Professor from Harvard University and the Senior Deputy President of Glaxo-Smith-Kline provided a global perspective to medical education. The faculty, apart from its connection with Harvard, also has connections with the Royal College of Physicians of Edinburgh through its academic seminars which were connected direct through Streamyx on a regular basis. The Faculty went for the compulsory accreditation with the Malaysian Qualifications Agency in 2008, its first and was awarded with a full 5-year accreditation. This was the first time a medical school was provided a full 5-year accreditation at its first accreditation when its first cohort of students had yet to graduate. The Faculty went on to obtain another full 5-year accreditation at its second accreditation in 2013. In the meantime, it managed to secure 3 places a year for its top second year students to do a full intercalated year of research in Harvard University. A 2012 Ministry of Health survey among housemen found that UiTM graduates scored second. An ambitious plan to set up a Medical City in Nilai comprising a super modern teaching hospital for medical teaching and training and research, a comprehensive research facility, an industry-university engagement in research and professional development, a retirement facility as well as a hotel and leisure/business centre somehow did not take off. A full-fledged teaching hospital nonetheless currently being built in Puncak Alam is expected to significantly strengthen the mission of the Faculty.

The Faculty will be celebrating its 15th year next year. It would do well to undertake a major revamp of all its teaching programs and its infra- and infostructures and facilities as well as its governance and define its further engagement in medical education and training, research and healthcare so that it would continue to lead in medical education – both at undergraduate and postgraduate/specialist training - and

in research and the provision of healthcare. This will also provide it an opportunity to deliberate on the need to align itself with the demands and challenges of the 4th Industrial Revolution, new epidemiologic trends (eg. aging, rise of noncommunicable diseases), new learning trends, advent of new technologies (medical and pedagogical), rising costs of healthcare and health financing, global health trends, disenfranchised and vulnerable populations, differing health systems, climate change and the emergence of new values and new normals in the community. By then, it needs to define its role and approach in the training of not just undergraduates but also postgraduates/specialists. It needs to project its research and clinical niches at regional and global levels. There is much that need exploring but in whatever undertaking, excellence and accountability and an unswerving focus on the Big Picture must be a guiding principle less complacency and shady deals start to take root.

EMERGING TRENDS IN MEDICAL EDUCATION

With the advent of the 4th Industrial Revolution, extensive and exquisite changes and disruptions are expected through every facet of life, and medicine won't be immuned to these. The juxtaposition across specialities and between competencies, made possible through the ubiquitous connectivities across the globalised world and the new generation of citizenry demanding and creating their own space and presence will bring about fundamental change to the way we live, work and play. Already intelligent machines are deemed to make more accurate diagnosis than doctors, and faster, more accessible and cheaper. There are suggestions that soon robots will replace doctors¹⁰. Medical schools and medical teaching may be undertaken by robots, intelligent machines and interactive logarithms. Four areas would be developed with much speed and enthusiasm – nanotechnology, biotechnology, infotechnology, cognatechnology (NIBC) – and these will bring much disruptions to the life sciences as we know today. Surgery is being progressively supplemented by robotic surgery. Precision medicine, much of which is rooted in the genomics and big data, is making an indelible presence. Artificial intelligence, AI, is enabling more and more smarter machines. Routine procedures are being taken

over by machines and robots. Information and knowledge would be easily accessible to almost everyone. Suggestions are being made that universities, and medical schools, would soon be obsolete.

But then whilst technology opens up possibilities, it is man that make it happen. NIBC is possible because man work on this. And NIBC alone would not be sustainable, it needs a fifth element – *values* – hence, it should be NIBCV. Here man has an almost complete monopoly over machines. It is also man who brings about AI, but man should also focus on IA, Intelligence Augmented - how can we further enhance the intelligence of man across the board, and elevate it towards Wisdom and (ultimate) Truth. Hence the 4thIR can be, as it should, tuned and harnessed to enhance human living and life, with man driving the agenda. The 4thIR extends capabilities and capacities of man, replacing perhaps some or even many direct human involvement especially those pertaining to the routine and repetitive jobs or chores and creating new platforms and enclaves for human involvement and free man to interact more with each other.

Nonetheless, we need to anticipate, plan and lead these changes. For instance, whilst machines can do better than the doctor in making a diagnosis, the role of the doctor would still be relevant but take a different sphere, that of caring. A patient would appreciate or even yearn for the human voice, the human touch and the human warmth of the doctor which no robot can emulate or imitate. Are we producing such doctors that the 4th IR would need? Can a robot take over the role of the teacher-clinician in medical education? No amount of Googling, TedTalks, HS Talks, MOOCS, clinical skills labs, power point presentations, sms/emails, etc can replace the teacher-clinician. And that does not even include contextualizing knowledge, or share actual clinical experiences, or fathom the feeling and understanding of the patient, or decipher and interpret the nuances of the patient-doctor relationship, or the skills needed to build a strong clinical team, etc., etc. And how do you encourage critical thinking, promote crisp and accurate language and clear communication,

and nurture ethics and good etiquette, and be a role model of an empathic, capable clinician that patients can trust? The health system needs to be further refined and realigned to the demands of the aging population and the ubiquitous technologies, appropriate for a growing nation like Malaysia. These are examples which need urgent and serious attention. Perhaps UiTM Medical Faculty can setup a Centre for Medical Future, complementing its current strategic research centres, IMMB and CenTRE.

CONCLUSION

The medical faculty need to reflect on its mission and responsibility. Beyond that it needs to equip itself with the changing need of the times. How this could be done is a matter that need be tackled with great urgency and seriousness. In higher education, more so in medicine, change is a constant. Whilst adaptability is the hallmark of the fittest to survive, it is exceptionalism which will light up the way forward to the future.

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