

**EDITORIAL**

## Medical education in Indonesia: medical education curriculum in the future

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**ABSTRACT**

**Background:** As the time goes by, the medical education has been developed since 1849, with the development on the educational system, medical education institution faces a big challenge to control the quality of medical education via curriculum renewal. **Objectives:** to describe the Indonesia's medical education curriculum in the future as the implementation of hospital-based education system which will begin to be implemented. **Editorial:** The medical education was developed after the world-war II, in which medical institution was developed with the new educational models. The main purpose to find the solution of transition problems, from theory to practice, from undergraduate to postgraduate, and from training to unrestricted practice, but the quality of graduation was unequal. Medical curriculum was established as Flexner opinion stated that medical knowledge is not something fixed. This rethorical opinion create the new view of medical education to instilling the proper techniques on acquiring and evaluating the information. Nowadays, many curriculum was adopted in order to produce a good and qualified medical doctor, such as problem based-learning (PBL). **Conclusion:** Indonesian medical education curriculum faces constant changes from time to time depend on the society healthcare needs. Being a medical doctor means a long journey and long-life education in order to increase the medical skills and updating the medical knowledge. And medical doctor education means university based and hospital setting. This two education settings can't be separated.



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## Highlights

1. Medical doctor education is changing from time to time, responding the society's medical needs, from competency based to university based nowadays.
2. Undergraduate medical student need both university-based and hospital-based, as their core curriculum settings to prepare them to handle the patients, in both literature knowledge and practical settings.

## BACKGROUND

Education is a process transforming knowledge, values and skills, and brings hope to everyone to achieve their goals and better quality of life (Ariesta Dewi et al., 2020). Indonesia's medical education begin since the first medical training was established in 1849, and now there are more than 82 medical schools have been established with more than 8,000 students were graduated per year. This phenomenon gave a big challenge to control the quality of medical education via curriculum renewal and improvement. In 2005, the government had established a national level competency-based curriculum (CBC) for undergraduate student, followed by Medical Internship Program and the National Competency-based Examination (Mustika et al., 2019). The Indonesian's medical education requires 144 credit points in bachelor degree and two years of clinical placement in the clinical phase. All the curriculum was based on 2012 Indonesian Standard for Doctor Competency (Standar Kompetensi Dokter Indonesia or SKDI 2012). And all national medical school will undergo the school accreditation every 5 years (categorized as A, B, or C grade) (Kadir et al., 2021).

In the past, the undergraduate medical doctor curriculum were designed to fulfil the needs of Primary Health Care (PHC) services provision in Indonesia, which was termed as "competency-based" curriculum with detailed knowledge and skills which should be possess by all the student as it was designed to synchronise with the national health policy and needs (Blizard, 1988). However medical curriculum should be prepared the doctor for emerging health issues and increased public health roles, so the medical education institution should ensure all their student to meet the appropriate standards, as medical doctors play a role as disease prevention and health promotion in local and community, as well as involve in the development of policy (Kadir et al., 2021). Curriculum changes forced the medical school institution to produce the graduates with better understanding to assess and manage the community health issue (Smilkstein, 1982). Problem-based learning (PBL) has been implemented for over a decade in Indonesia and considered as essential system, with student-centered teaching method where students are formed into small groups to discuss cases, reactivating their previous knowledge and constructing coherent explanations of the problem (Hartantri et al., 2019).

Clinical education is the final stage of medical doctor in Indonesia, in which the medical doctor is shaped through the participation in medical practice, with medical environments and enables the student to interact with the clinical supervisors (Sari et al., 2023). After that, the medical doctor should be passed the national medical exams to have The Indonesia Medical Doctor National Competency Examination (IMDNCE). Indonesia has been implemented national licensing examinations (NLE) since 2014 for doctors that might positively impact education and health service (Leatemia et al., 2022). This national examination also acts as an attempt to ensure the graduate's quality in patient's care and safety (Rahayu et al., 2021).

Several events have been hit the Indonesian's medical education, such as Covid-19 pandemic, which forced the medical institution to held an e-learning system (Turana et al., 2022). Other events including the statement of the Minister of Health in November 2022 which stated the six pillars for the basis of massive project in medical field, such as the transformation of primary health care, the transformation of referral care, the transformation of the health resilience system, the transformation of healthcare funding, the transformation of healthcare technology, and finally, the transformation of human resources in healthcare. The last plan has been forced the medical education institution to increase their

quota for medical student admissions. Even with the lack of specialist quota, the Minister of health launched a new term of hospital based to fulfil the specialist quota, which is quite difference with the University-based of specialist education. This new term of education rising new question on how to measure the medical education quality of hospital-based approach, as only the University with the first grade (A grade) is deserved to open the specialistic program (Octavius et al., 2023).

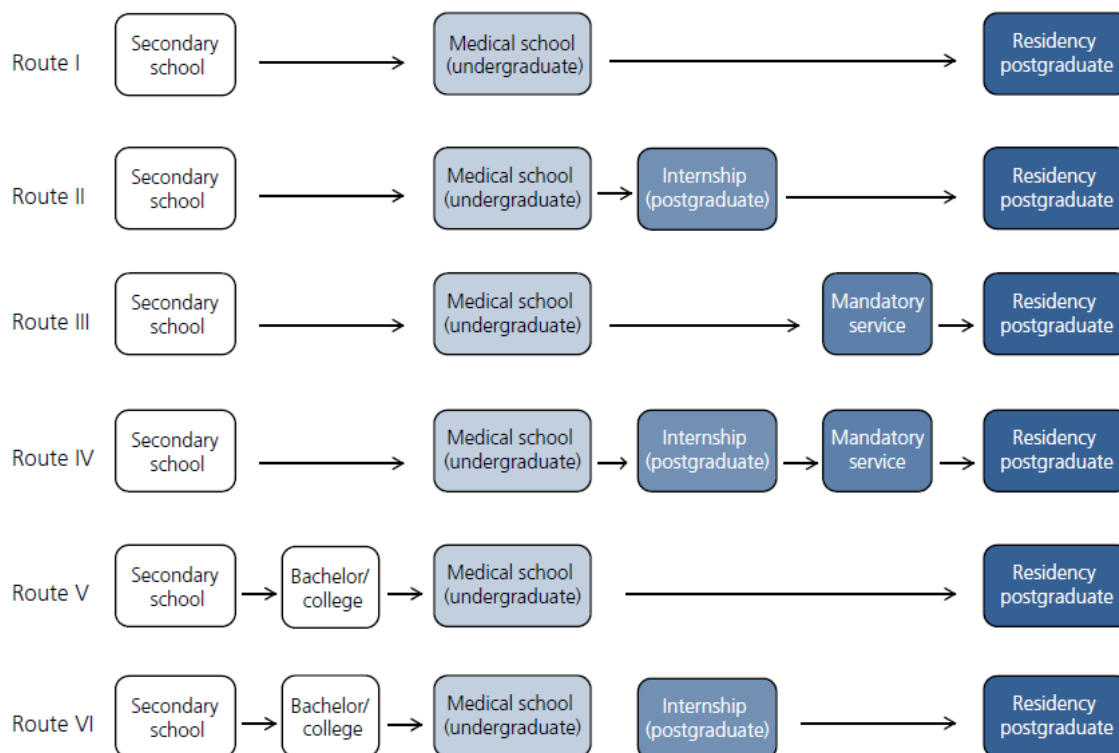
## OBJECTIVES

This editorial was written to describe the Indonesia's medical education curriculum in the future as the implementation of hospital-based education system which will begin to be implemented.

## EDITORIAL

### Medical education: from the past to the future

In the past, medical education was a master-student relationship in which the master was a perfect expert concerned in learning and training the student (Hulail et al., 2018). But now medical student after they completed their education must be licensed. It was appeared 100-150 years ago in industrialized country. It started when the university studied medicine with the guild-like models of barber-surgeon training, in which theoretical was followed by practical training from the expert, called as practical apprenticeship model. However, after the World War II, there are large expansion of postgraduate medical specialty, with the new educational models of undergraduate education, with the main purpose to find the solution of transition problems, from theory to practice, from undergraduate to postgraduate, and from training to unrestricted practice. However, this educational system did not distribute evenly to all countries so it resulted different outcomes. This differences gave a chance of international communication about the medical education through journals, conference, association, federation and organisation with the main dedication in the development of medical education (O'Brien et al., 2018).



**Figure 1.** Route for medical education.  
Sources: (O'Brien et al., 2018).

Wijnen-Meijer identify 6 dominant pathways or routes in medical education, as stated in **figure 1**. (O'Brien et al., 2018). In 1999, the Accreditation Council on Graduate Medical Education (ACGME) and the American Board of Medical Specialties develop 6 core competency for medical student,

including : medical knowledge, patient care, practice-based learning and improvement, systems-based practice, ICS, and professionalism, termed as “the competency-based medical education”, in which the practices was based on competency-based or outcomes framework, not only focusing on teaching process- the focus was on what medical students, residents, and practicing physicians can do, know, and value as a result of the training (Grover et al., 2023). However, the medical education always in debate in the aspect of scientific knowledge and its social and humanistic characteristics. The reformation of medical curriculum is only including the biological vision of health-illness process, so the development is still needed with the objectives of learning the health-illness process including social and cultural, not only on biological and psychological aspects (Quintero, 2014).

Medical education is challenging in which the teachers should taught the learning objectives, outcomes and competencies. Many teaching methods has been implemented in medical education, from traditional (didactic lectures) in the first and second year at the medical undergraduate course to provide the foundation of information, to the interactive teaching methods such as case-based learning (CBL), team-based learning (TBL), problem-based learning (PBL), human patient simulation (HPS) and tutorial-based method. This interactive teaching methods is student-oriented teaching methods (Spencer and Jordan, 1999).

In Japan, similar in Indonesia, student must be complete a 6-year undergraduate education. After that they must enrolled 2-year postgraduate resident training programs, including general medicine, internal medicine emergency medicine and primary care (Hulail et al., 2018).

### **Medical education: from Flexner to Problem-based Learning (PBL)**

Abraham Flexner (1910) report in “Flexner report” that medical knowledge is not something fixed, but always grows and evolves, which create the new view of medical education to instilling the proper techniques on acquiring and evaluating the information, rather than merely inculcating facts through rote memorization (Ludmerer, 2011). This view changed the medical education in the world in which medical education was based on scientific method, active learning, and competency-based education. Those three points were the vital concept of modern medical education. This course of change improved the quality of medical education to produce a capable, competent physicians and surgeons (Schivo, 2019). Health-illness process is a crucial step for medical curriculum design, as it will determine the understanding the reality of health and illness in community and individuals to create the professionalism to address and intervene the specific healthcare needs. This step will recognised what should a physician do to prevent the illness and restore and maintain health (Grover et al., 2023).

The effect of Flexner report leads to a college degree in US, such as John Hopkins, with specific scientific courses. This system required a four-year curriculum, including the laboratory and the clinical clerkship the primary teaching devices, and a full-time medical teaching committed to scientific study, not just class study (Ludmerer, 2011). Other figure, Osler, made a significant contribution by creating Interurban Clinical Club (1905), with the aim of exchange the idea and nurture the fellowship among the medical professors. This organisation had several goals in “realising” concept Flexner, including the scientific investigation of the disease, sharing and improvement the teaching methods (Duffy, 2011).

Medical education institutions should design the curriculum, developing new teaching tools training faculty to develop new teaching skills, and nurturing students through learning (Barrows, 1996), as the physicians were prepared to address the complex systems and lead those systems to protects the patients and community (Quintero, 2014). As we know, medical education system is the most dynamic system with a continuous state of flux (Alzerwi, 2023). So the curriculum design for medical education should consider the health and illness, not only as a state, but as a process and interaction of multiple determinant in individuals, collective and society which resulting the illness. The curriculum should integrate the basic biomedical, clinical, socio-humanistic and population health sciences, which can be achieve by teaching and learning, termed as Integrative Learning Activities System-based, a PBL variant (Problem-based Learning). This system allowed the student to acquire leadership, teamwork, communication and professionalism skill in order to improve the competences and improve the healthcare system (Quintero, 2014).

PBL has been implemented for more than a decade. It was a student-centered (Mansur et al., 2012), which motivated by immediate problem centered approaches in learning processes with the learning

outcomes of medical education (knowledge, skill and attitudes). This study system forces the students to face a real life scenario of the patients and they should decipher those problems by their own understanding and reason, while the teachers acts as facilitators and provide the sources, such as cases, the laboratory results, etc, along with group discussion and peer supports for self-directed learning (Dasgupta, 2020). PBL has been the cornerstone for modern medical education, with the principles of knowledge construction, prior knowledge activation, organization of knowledge, elaboration of knowledge, stepwise transfer across contexts and cooperation with other learners. The positive effect of this system is the ability to identify the knowledge, generate and analyze hypotheses to produce the differential diagnosis of the case according to the complaint and patient's anamnesis, supported by history taking, physical examination and investigations (Elshama, 2020).

### **Indonesia's Medical Education System: Hospital vs. University-based**

Medical education encompassed the pre-medical preparation which is experienced in medical school or university, and medical specialty training as resident and fellowship programs which is held in the hospital. Medical education is the life-long learning professional education, and Flexner recommended the medical education should be held in university-based, with minimal admission, which based on curriculum and applied laboratory and clinical science content. The university should have the faculty actively engaged with research (Buja, 2019). Flexner Report also suggesting that medical education need to understand the scientific principles of medicine (knowledge) and practical experience of the clinical care (skills), which can be achieve by face-to-face instruction between teacher and student (Leinster et al., 2021). In contrast with Flexner, Osler proposed bedside teaching to bring the medical students to contact the patients directly, and learn medicine by direct experiences under the clinician's guide. The combination of those two systems resulting the basic or foundational sciences and the clinical sciences (Buja, 2019), and it is important for medical professional training in order to apply the theoretical and conceptual knowledge in the clinical context (Beavers et al., 2020).

Clinical learning is the essence of medical education as it influence the development of clinical competence by exposing the student to a large volume and variety of clinical experience, learn in clinical setting with self-directed learning methods and supported by a conducive environment directed by clinical teachers (Alhaqwi and Taha, 2015). That's why the undergraduate medical training is built up around teaching hospitals, as the main body of medical teaching is hospital based (Baerheim, 2007). Hospital is an institution providing medical treatment and nursing care for sick people, which can be attached to the University, termed as teaching hospital; or independently, whether private or public ones, which is set up to deal with the diseases and injury. Hospital also completed with emergency department, inpatient and outpatient care (Gonçalves-Bradley et al., 2018). The difference with teaching hospital is that it had specialised center for certain disease category. Teaching hospital not only provide clinical care for the patient, but also research innovation and product development, identify and validate emerging care pathways; and provide education and training for the next generation of providers (Grover et al., 2023). Hospital also provides the evidence-based patient for 90% of clinical decision accurately, timely and up-to-date clinical information for the best patient outcomes, so evident-based practice (EBP) is important for medical education programs, and must be included in the curriculum (Lehane et al., 2019).

Teaching hospital is a unique environment for medical student, as it provide the patients for clinical teaching, and trained the in the hospital work structure (Baerheim, 2007) for 24 hour a day and 7 day a week. The hospital therefore is an ideal place to see, learn and practice clinical skills. With its organised structure, ease of access and high number of patients, students are able to learn about the latest diagnostics and treatment of conditions. They are able to see the multi-disciplinary team approach in caring for patients and develop their personal history taking and examination skills needed as a doctor. Being in a hospital setting, a student's education is more geared towards specialised experience of medicine. This may be helpful for those students who want to work within a hospital setting and better prepare medical students foundation training after graduation (Kiessling et al., 2017).

### **CONCLUSION**

Indonesian medical education curriculum faces constant changes from time to time depend on the society healthcare needs. Being a medical doctor means a long journey and long-life education in order





to increase the medical skills and updating the medical knowledge. And medical doctor education means university based and hospital setting. This two education settings can't be separated.

### Conflict of Interest

The author has no conflict of interest.

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### Author Contribution

BS responsible for collecting the evidence, drafting, editing, proof-read and submitting.

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