Asian Medical Students' Perspective on Medical Education Curricula Standards: A Qualitative Research

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Category: Original Research

Date Received: 02 June 2024

Date Accepted: 07 August 2024

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Background: Universal health care, a key aspect of the Sustainable Development Goals, requires effective, safe, and people-centered services ensured through comprehensive medical education. This education involves curriculum development, assessment, and innovation, requiring effective change management. While core knowledge is consistent, curricula vary in diverse global contexts.

Objective: This qualitative study combines panelists' and medical students' perspectives from Kyrgyzstan, Malaysia, Indonesia, and Macau to compare and contrast medical curricula as well as their ideal version envisioned by students.

Methods: This qualitative study employed a constructivist, phenomenological approach to explore medical students' perspectives on curricula. Data were gathered from an online event, featuring 48 participants from various countries. The event included a panel discussion and focus group discussions where attendees discussed curriculum design, admissions, learning media, clinical exposure, testing, standardization, and residency programs. Data were analyzed using open coding from transcriptions, with trustworthiness ensured through member checking. The figures and tables were drawn for correlation of data received using the online Datawrapper tool.

Results: Gaps in medical education curricula were observed globally. Medical students perceived curricula duration, format, and testing methods currently in place to be in accordance with their expectations. Earlier clinical exposure was favorable. Disparities in learning media usage exist, particularly between private and state universities. Financial burdens affect residency decisions universally.

Conclusion: To narrow gaps, international standards should encourage quality improvement, while taking into account the perspectives of medical students.

Keywords: global health workforce; medical curricula; medical education; medical students; qualitative study

Introduction

Universal health care is a fundamental right and humanitarian principle that should be accessible to all citizens worldwide.[1] The Sustainable Development Goals emphasize the need for universal health coverage, including financial risk protection and access to quality essential healthcare services and affordable medicines.[2] Quality health care must be effective, safe, and people-centered, requiring timely, equitable, integrated, and efficient services.[3] Ensuring this quality depends on the meticulous training of healthcare providers through comprehensive medical education programs that transform students into professional physicians devoted to lifelong learning and improvement.[4]

Medical education is a multifaceted process that goes beyond imparting medical knowledge and clinical experience. It involves designing teaching programs based on societal needs, fostering innovation, and lifelong learning.[5,6] Effective change management and a multi-perspective approach in teaching are crucial for the art of medical education, continuously improving the system.[7] At institutions where they exist, Departments of Medical Education oversee curriculum development, assessment, and educational support, aiming to train healthcare professionals who will significantly impact future healthcare systems.[8,9]

If we consider there exists a global desire for health, then healthcare is strongly influenced by globalization through its associated trends in travel, information, migration, poverty, disease, and socio-politics, as well as how we educate our future healthcare providers.[10] In a world that increasingly serves the international exchange of information on medical training, many students, physicians, and educators encounter numerous variations in curricula, degrees, points of licensing, and terminology.[11] The processes involved in providing quality medical education to meet this goal vary significantly in countries around the world, as does the availability of resources to implement them. International accreditation of medical education programs is then appropriate to ensure global standards and quality in medical care.

Globalization and the diverse socio-political and cultural contexts significantly influence medical education. While basic medical knowledge is consistent globally, curricula vary to meet specific national needs. Internationalization of medical education requires balancing foreign cultural understanding with adherence to local cultural values.[12,13] Comparative analysis of different countries' medical education systems can identify advantageous and innovative teaching approaches for reforming and improving training.[14,15] Educational strategies should focus on improving students' confidence and capabilities, aligning perceptions of ideal graduate attributes, and fostering a medical identity that meets societal needs.[16]

The countries in discussion, have structured medical programs that range from 5 to 6 years for undergraduate studies. Clinical training is an integral part of the curriculum in such programs. Furthermore, entrance exams and interviews are a common requirement for admission. There is ample evidence to show that there is a consistent influence of culture on the medical profession.* Hence, similar cultural and societal norms unite the medical systems set up in each of these countries.

Language instruction varies significantly with Malaysia primarily using English, while Macau, Indonesia, and Kyrgyzstan have multiple languages of instruction. Each country has varying levels of international recognition, which is determined by the quality and extent of clinical training. Globally, Malaysia has a highly recognized system at present. Hence, this qualitative study combines panelists' and medical students' perspectives from Kyrgyzstan, Malaysia, Indonesia, and Macau to compare and contrast medical curricula as well as their ideal version envisioned by students.

Method

This qualitative study employs a constructivist paradigm through a phenomenological approach, where the emphasis is on medical students' and key actors' perspectives. Data collection was done through the recording of an open event organised by medical students from India, Indonesia, Malaysia, Macau and Kyrgyzstan, part of Asian Medical Students' Association (AMSA) International, entitled "Medical Curriculum from Around the World." The webinar aimed to dive into divergencies and convergences within medical curricula across different regions. Hosted online using the Zoom platform, the event garnered participants from diverse corners drawing [48] eager attendees from various countries. Among these participants were aspiring medical students from different semesters of medical school who were keen on gaining insights into global medical education practices. The recording of this data is accessible through YouTube (https://youtu.be/rzgznWR4yFw).

In the first section of the event, a distinguished panel, including (1) Ms. HS, a medical student from Macau involved, (2) Mr. YJ, a medical student from Kyrgyzstan, (3) Dr. EGS, a medical association representative from Indonesia, and (4) Dr. ZN, a medical educationalist from Malaysia, brought forth their unique perspective and experiences on the following questions:

1. Could you elaborate on your country's medical education system in terms of admissions process, program structure, and residency training?
2. How is the medical education system adapting to meet the evolving needs of the healthcare system and emerging medical technologies, such as telemedicine, precision medicine, and artificial intelligence?
3. How does the national medical education system ensure standardized quality across all medical schools, considering potential variations in resources and faculty expertise?
4. How is the accreditation of medical schools graded? Are there certain thresholds that determine its grade quantitatively?
5. Are there both state-owned/public and private-owned medical schools in your country? If so, are there any differences in their public perception, quality,
6. What does testing look like in your country? Is it in the form of multiple-choice questions or essays, and why?
7. How is clinical exposure incorporated into your curriculum? Is it regarded as important?

Structured to encourage interactive engagement, the panel discussion served as the centrepiece and spanned for 1 hour and 15 minutes, facilitated by skilled moderators allowing attendees to probe further.[78] The format allowed a comprehensive exploration of key themes in medical education.[98]

Subsequently, in the second section of the event, the attendees transitioned into breakout rooms where they were divided into 6 smaller groups for focus group discussions. Attendees were led by moderators to discuss the following prompts:

1. Characteristics: How long will medical school be? How long are the pre-clinical and clinical years? What will your curriculum look like (blocks/semesters/ etc.)? Add more details if you want!
2. Admission: How will students get accepted? Will they have to go through tests first? Do they have to take a bachelor's degrees first, or immediately into medical school after high school?
3. Media of learning: What would be the ratio of lectures to discussions? For example, if there were 100 hours to study about the cardiovascular system, how many hours of it would be lectures, practicals, discussions, etc.?
4. Clinical exposure: How much clinical exposure will the medical students get? Should they get exposure since their pre-clinical years?
5. Testing: What form of testing would be most ideal? Multiple choice? Essays? Practical exams (OSCEs)? Which will you put emphasis on?
6. Standardization: How will you ensure the quality output for each medical school? Will there be a certain test students have to pass before being able to become doctors? If yes, what will be tested?
7. Residency: What will residency acceptance look like? Do students have to pay to get in? How long will it take?

Leveraging Google Slides and Zoom breakout rooms, attendees were tasked with designing their ideal version of medical curricula tailored to address contemporary challenges and opportunities in healthcare.

The two sections of the event were chosen to firstly provide a similar baseline to all participants of how medical education takes place in flagship countries, and to encourage dynamic exchange in group settings when they delved deeper into the intricacies of the medical education curriculum design. Data saturation was reached through the number of participants and group iterations; trustworthiness was ensured through member checking as participants were requested to present their discussion results to other groups. Recordings and discussion notes were transcribed; open coding was employed to analyse the data. Thematic analysis approach was mainly utilised for the recordings while discussion notes were analysed with a content analysis approach. Ethical approval was not applicable as this event and its recording is publicly available as secondary data; all participants have consented to participate and to be recorded. Utilization of the data has obtained approval from AMSA. The data was analyzed and visualized in the form of figures (bar graphs, donut charts) and tables wherever applicable using the online Datawrapper tool.

Result

Shared experiences of medical curricula in four countries

Overall, the key comparisons of medical curricula between countries are summarized in **Table 1.**

Medical education system in Indonesia

Indonesia's medical education system includes public and private medical schools. Public schools, run by the government, offer admissions through a national exam or individual school exams, with the latter having higher fees. Private schools have higher fees overall and conduct their own entrance exams.

Residency training differs significantly from medical school. The Medical College, or collegium—a body of experts and lecturers from various universities—oversees residency programs. They set national entrance exams, select candidates, develop curricula, and administer final board exams. The duration of training varies by specialty. Previously under the Medical Association, recent regulations have moved oversight to the Ministry of Health to reduce conflicts of interest and align with national health programs. This shift aims to improve residency program management and address issues like resident pay without compromising patient care.

Indonesia's medical faculties have not yet included artificial intelligence and palliative care in the national curriculum, which mandates 80% standardized content and allows 20% customization. Some universities are starting to consider these new subjects. The speaker

Table 1. Key comparisons between countries

Criteria/ Features	Countries			
	Indonesia	**Macau**	**Malaysia**	**Kyrgyzstan**
Admission Process	• Public: national exam / individual school exams	• Eligibility criteria (science background, color blindness, etc.) • Recommendation scheme; admission test; and international student pathways. • Personal statement and multiple mini-interviews (MMI).	• Eligibility criteria from various high school certifications • Ethnic quota • English language requirements and interviews; varies between schools	• Evaluates academic achievements in biology, chemistry, and physics • Interviews and aptitude assessments.
Residency Training	• Medical collegiums set national curricula and exams. • Duration of training varies by specialty. • Shifting to hospital-based programs under MoH	• Vacancy based on residency demand • Entry residency exam before training	• Two-year housemanship, rotating through six specialties. • 4–6 years	• MDs/MBBSs pass an entrance exam and meet criteria, e.g. MoH endorsement • Academic performance and exam results • 2–3 years of residency
Adaptation to Evolving Healthcare Needs and Emerging Technologies	• Artificial intelligence & palliative care not included yet in national curriculum (80% standardized; 20% customization) • Might focus on tech utilization over creation	• Integrates teaching tools • Updates tech advancements for relevant training	• Telemedicine training • Emerging technologies (precision medicine and AI) in some schools • Encourage lifelong learning through CPD	• MoH oversees updates, introducing modules on telemedicine, precision medicine, and AI

Criteria/ Features	Countries			
	Indonesia	**Macau**	**Malaysia**	**Kyrgyzstan**
Standardization of Medical Schools	• National exam by Ministry of Education, contributed by lecturers nationwide • 10% participants are retakers. • Plans to increase from 100 to 300 medical schools	Since there is only one medical school in Macau, there is no standardization and accreditation	• Regulated by Malaysian Medical Council (MMC) and ensured by Malaysian Qualifications Agency (MQA) • Non-compliant universities ineligible until improvements are made to meet standards.	• Overseen by the Ministry of Health • Sets accreditation standards, program evaluations, and updates through international conferences. • Investments in infrastructures are also done.
Accreditation of Medical Schools	• Three categories: A (allowing supervision), B (minimum), C (two-year deadline to B) • Will be simplified to accredited an			• Evaluated by Ministry of Health annually • Accreditation for reputation (A, B, and C)
Perception of State-Owned VS Private-Owned Medical Schools	• State universities are more reputable than private ones; able to offer residency programs • Government has reversed the association's power, giving private universities equal opportunities.	The only medical school is part of a private university.	• Some people perceive government medical schools as better than private ones • All schools meet the same curriculum standards.	• Public schools offer strong academic programs and extensive research opportunities with well-resourced facilities. • Private schools provide more flexible, innovative curricula and personalized attention.
Clinical Exposure	• 4 years focused on theory and basic clinical skills + 2 years of clinical rotations. • One-year internship post-exam for licensing. • Specialization: 3-6 years	Preclinical students observe hospitals and complete electives 3rd–5th year: clerkships with hands-on experience	• Structured clerkships (3rd year), bedside teaching, and ward rounds. • Simulated training	• 1st year: basic skills like injections. • 3rd year: hands-on experience in various departments. • 4th year: continue with hospital rotations and emergency duties.
Testing	• Multiple choice questions • OSCEs for practical examinations. • National exam combines both. • Block/module system	Multiple-choice, short answer, and OSCEs. Block system Block system MD exam to work in government hospital; 1.5 years of clinical training	• "Knows": MCQs and OBAs • "Know-hows": OSCEs and simulations. • "Shows how": mini-CEX and direct skill observations	• MCQs, mid-term exams, and clinical assessments. • Three government exams by the tenth semester: OSCE, a history exam, and another subject. • Semester exams and oral assessments

notes that learning programming and developing health tech are challenging for medical professionals, suggesting it's more practical for them to focus on using technology rather than creating it. Skills in telemedicine are becoming vital, with programs like those at Harvard University teaching ethical practices, emergency differentiation, and appropriate patient referrals. Mastering these applied skills is seen as more beneficial for medical professionals.

In Indonesia, the Ministry of Education administers national exams for medical students, aiming to create unbiased, high-quality multiple-choice questions. Adapted from Singapore's system, these exams involve contributions from lecturers nationwide. Despite efforts, about 10% of participants fail and must retake the exam, sometimes multiple times, causing protests. Nevertheless, the exam ensures consistent standards for all doctors amidst a critical shortage of medical professionals.

Indonesia plans to increase its 100 medical faculties to 300 within five to ten years to address the shortage. With a doctor-to-population ratio of 0.5 per 1,000 people, well below WHO standards, and the pandemic highlighting a lack of specialists, expanding the medical workforce is essential.

In Indonesia, health-related faculties are currently accredited into three categories: Class A, B, and C. Class A, the highest grade, allows supervision of lower classes and establishment of medical specialties. Class B is the minimum requirement, while Class C is for new faculties, which must reach Class B within two years. Soon, this system will be simplified to just two categories: accredited and non-accredited, to streamline the process.

State universities in Indonesia have traditionally been more reputable than private ones due to their ability to offer medical residency programs. This was partly because the medical association previously blocked private universities from offering medical specialties. However, the government has now reduced the association's power. This change has enhanced the reputation of private universities, giving them equal opportunities and standards in medical education.

"For example, Pelita Harapan University has opened radiology and family medicine specialty programs. The national exam puts the private and public universities at the same level." (Dr, EGS, 2024)

In Indonesia, medical education begins with a four-year bachelor's program focused on theory and basic clinical skills, followed by a two-year medical doctor's program with clinical rotations. After six years, students must pass a national exam and complete a one-year internship for their license. Testing is in the form of multiple choice questions and OSCEs for practical examinations. The national exam also comes in these two forms of testing.

Specialization involves a residency of three to six years and optional sub-residency training of two to four years. For example, Family Medicine Specialty includes one year of theory, one year of rotations and internships, and one year managing complex cases and supervising juniors, with possible independent practice in rural areas during the final year.

Medical education system in Macau

To be admitted to medical school, applicants need a science background with chemistry, no color blindness, and proficiency in English and Chinese. Admission pathways include:

- Recommendation Scheme: Based on high school grades and a recommendation letter.
- Admission Test: A written exam for local and international students.
- IB, SAT, A-level: For international students.

Applicants must also submit a personal statement and complete multiple mini-interviews (MMI).

To become a specialist doctor in Macau, one must first check for residency demand and vacancies. If available, they can apply, pass an exam, and complete specialized training to become a specialist. Interestingly, since there is only one medical school in Macau, there is no standardization nor accreditation. There are no differences in the perception as there is only one medical school, but the only medical school is part of a private university.

"We are the only medical school in Macau, and since we haven't graduated our first class yet, all doctors here were trained abroad, mainly in mainland China. Graduates will need to pass a test and complete an internship to become recognized general practitioners. Although we don't have local competitors to compare our curriculum with, we are indirectly competing with long-established institutions that have more comprehensive systems. We are working to tailor our education to Macau's needs, despite these challenges." (Ms. HS, 2024)

Since COVID-19, Macau has embraced new teaching

methods like Zoom and simulation labs. The medical school integrates interactive tools and stays updated with technological advancements, such as AI in radiology placements, to ensure relevant training.

Preclinical students gain early clinical exposure by observing at the university hospital and completing summer electives, including hands-on activities in settings like elderly homes. This early experience precedes formal clerkships. Starting in the third year, junior clerkships run until the fifth year, offering extensive hands-on experience and being favored by students over traditional lectures.

In Macau, tests include multiple-choice, short answer, and OSCEs. The program uses a block system, requiring students to pass a test after each block. Each year ends with a summative exam and OSCE. After earning their MD, students must pass an exam to work in a government hospital, then complete about one and a half years of training in major clinical subjects. Upon finishing this training and meeting all requirements, they are officially registered as licensed general practitioners.

Medical education system in Malaysia

In Malaysia, medical graduates must complete a two-year housemanship, rotating through six specialties: Internal Medicine, Surgery, Orthopedics, Obstetrics and Gynecology, Pediatrics, and either Family Medicine, Psychiatry, or Neurosurgery. During this internship, they gain hands-on experience under specialist supervision.

After housemanship, doctors can pursue further specialization or residency in fields like Internal Medicine or Pediatrics, with training programs lasting four to six years. These programs, accredited by the Malaysian Medical Council, are offered at local universities and focus on both academic and practical skills to prepare graduates for healthcare careers.

Medical schools in Malaysia are incorporating telemedicine training, teaching virtual consultations and remote diagnostics. Collaborations with telemedicine platforms provide hands-on experience, improving healthcare access. However, telemedicine should complement, not replace, in-person care for serious conditions. Challenges include tech barriers and data security. Schools are also adding courses on emerging technologies like precision medicine and AI, and encouraging lifelong learning through CPD to ensure healthcare professionals stay updated. This approach aims to produce skilled, technology-savvy doctors.

In Malaysia, the Malaysian Medical Council (MMC) regulates medical education and practice, setting strict standards for curricula. Medical programs must meet these standards to be accredited, with non-compliant universities ineligible until improvements are made. The Malaysian Qualifications Agency (MQA) also ensures educational quality, requiring accreditation for medical graduates to practice. Universities undergo rigorous evaluations by the MQA, covering curriculum, students, facilities, and faculty. This collaboration between the MMC and MQA ensures that medical education meets international standards, preparing graduates for effective medical practice.

All medical schools in Malaysia must meet the standards set by the Malaysian Medical Council, achieving at least the minimum required. While some people perceive government medical schools as better than private ones, every medical school in Malaysia is required to meet the same curriculum standards.

Early clinical exposure is crucial to medical education, hence widely applied in Malaysia. Students engage with patients and healthcare professionals from the start, through structured clerkships, bedside teaching, and ward rounds. Clerkships begin in the third year, involving rotations in various specialties and hands-on patient care under supervision. Bedside teaching and ward rounds help students practice interviews, physical exams, and case discussions. Simulated training with task trainers and mannequins further enhances clinical skills. This comprehensive approach prepares students for clinical practice and promotes a patient-centered ethos.

A pyramid framework assesses clinical competence at various levels. At the base, "knows" focuses on fundamental knowledge through MCQs and OBAs. The "know-hows" level evaluates the application of knowledge with OSCEs and simulations. "Shows how" assesses competency through mini-CEX and direct skill observations. At the top, the focus is on independent performance in real-world settings, with workplace-based assessments like long-case and short-case evaluations to determine readiness for practice.

Medical education system in Kyrgyzstan

The admission process for medical schools in Kyrgyzstan involves evaluating academic achievements in biology, chemistry, and physics, along with interviews and aptitude assessments. This thorough evaluation ensures that only the most qualified and motivated candidates are admitted, upholding high standards for

future healthcare professionals.

In Kyrgyzstan, residency candidates must complete a five- to six-year MBBS or MD program. Foreign students may need additional language study. To join a residency in fields like surgery or internal medicine, candidates must pass an entrance exam and meet criteria such as Ministry of Health endorsement of their education. Applications are assessed based on academic performance and exam results. Residency programs last two to three years, with a rigorous selection process ensuring high standards in medical training.

Kyrgyzstan's Ministry of Health emphasizes standardizing medical education quality by collaborating with government agencies, academic institutions, and professional organizations. This includes establishing accreditation standards and regularly evaluating educational programs to ensure up-to-date curricula and knowledgeable faculty. At the speaker's university, the International Higher School of Medicine, faculty members attend international conferences in various specialties to stay informed. The Ministry also enhances infrastructure and resources in government medical colleges, prioritizing investments in simulation labs and research facilities. An annual accreditation system assesses and ranks medical colleges, aiming to continually improve the quality of medical education.

Medical education in Kyrgyzstan is evolving to include the latest advancements in healthcare and technology. The Ministry of Health oversees updates, introducing modules on telemedicine, precision medicine, and AI, available in English, Russian, and Kyrgyz. Medical universities feature simulation labs to aid patient care training, benefiting foreign graduates. Curriculum improvements involve collaboration with government, private sector, and NGOs, integrating modern technologies and practices to enhance healthcare quality and prepare graduates for contemporary challenges.

In Kyrgyzstan, medical school accreditation involves evaluating faculty qualifications, curriculum, student outcomes, and resources. Schools are assessed on their compliance with standards and continuous improvement, with no strict quantitative thresholds. The Ministry of Health conducts these evaluations, focusing on curriculum quality, clinical exposure, and online education effectiveness during the COVID-19 pandemic. Accreditation, which affects institutional reputation and decision-making for students and employers, categorizes schools into A, B, and C. This process ensures the ongoing quality of medical education in Kyrgyzstan.

Public and private medical schools in Kyrgyzstan each have distinct roles in medical education. Public schools, funded by the government, offer strong academic programs and extensive research opportunities with well-resourced facilities. Private schools, with less government support, provide more flexible, innovative curricula and personalized attention, often with smaller class sizes and advanced digital technologies. Both types contribute to a diverse educational landscape, serving local and international students and preparing them for various medical challenges.

Medical students start clinical training in their first year with basic skills like injections. By the third year, they gain hands-on experience in various departments. In the fourth year, they continue with hospital rotations and emergency duties. This structured approach ensures they are well-prepared for medical practice by their final years. Moreover, Kyrgyz students are assessed using various methods including MCQs, mid-term exams, and clinical assessments. In a five-year program, students must pass three government exams by the tenth semester: OSCE, a history exam, and another subject. The curriculum includes preclinical and clinical phases, with final exams each semester and oral assessments. These methods ensure students are well-prepared for their medical careers.

Medical students' perspective

Participants' Characteristics

Participants were event attendees; a total of 47 people attended the discussions, of which 31 were preclinical students and 16 were clinical students. The distribution by country is 32 from Indonesia, 7 from Pakistan, 3 from Malaysia, 3 from China, 1 from Mongolia, and 1 from Vietnam. Randomization is conducted to divide the groups, with regards to nationality. Participants were well represented from each country in each group.

Question 1: Characteristics (duration, format of blocks/semesters)

All six groups (100%) had proposed 5 to 6 years of medical school, with distinct pre-clinical and clinical

periods, even though their requirements for the academic year component vary. All groups require 2-3 years of preclinical and 3–4 years of clinical experience in medical school. A one-year foundation term covering fundamental medical knowledge and an introduction to professionalism in the medical field was another period suggested by one of the groups. The other group (16.67%) added an internship period of one year following the clinical phase. An introduction to the basic sciences was provided during the preclinical phase, and one group additionally incorporated the curriculum with the concept of medical entrepreneurship. One group (16.67%) suggested four blocks carried out concurrently, whereas five groups (83.33%) adopted a block or module system for all courses. Another group (16.67%) stated that routine mental health assessments are necessary, in addition to faculty assessments of students' well-being.

Question 2: Admissions

The six groups highlighted the crucial roles of a comprehensive admission procedure in medical school, which includes evaluating the candidate's knowledge competency in subjects like biology, chemistry, and physics, as well as assessing their psychological readiness to enter medical school. Furthermore, two groups (33.3%) advocated an assessment of medical knowledge, with one of them citing the MCAT as an exemplar of an ideal test. Two approaches were utilized to search for methods or assessments that could identify the psychological features of candidates. Six groups (100%) suggested conducting psychological tests, such as the MMPI, while two groups (33.3%) emphasized the importance of using interviews as an essential component of this evaluation.

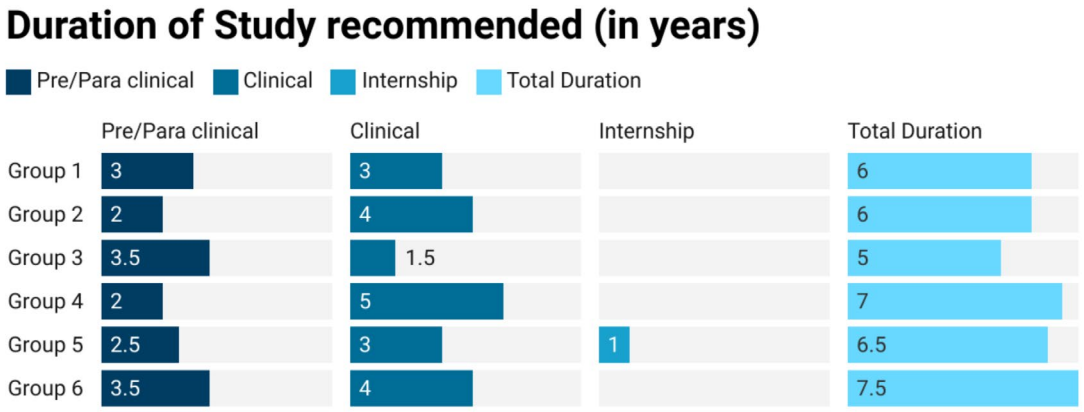

Figure 1: Split Bar Graph representing the suggested duration of study in Medical Schools in years.

In addition, another group incorporated a review of discriminatory factors during the applicant interview stage. One group indicated that interviews might potentially be undertaken afterward the preclinical phase. Some other points mentioned by one group were the pre-med period to prepare applicants in the disciplines of fundamental science, English, and medical knowledge. Age restrictions of no more than 25 years and an entrance test given once a year were also recommended by one group. These steps were provided with the same aim in each group, which is to guarantee that candidates are suitable and determined about their education and career route.

Question 3: Media of learning

More than half (66.6%) that is four out of six groups suggested that at least 40% of the curricula should be conducted offline and of interactive type. Two groups demonstrated that a strong focus should be given to practicals (50%) where one group emphasized that 25% should be allocated to lab training and the other 25% to clinical interaction with patients. One group explained the importance of the inclusion of skills lab training which should be given 30% part in the curriculum so that pre-clinical year students can learn essential skills as they do not have clinical rotation experiences. Another group suggested that clinical case discussions should be allotted only 20% of time, especially during hospital visits that can serve as a source of clinical exposure to pre-clinical students. In contrast, only 50% suggest that discussions must comprise only 30% of the curricula but they should be given more consideration than the assessment tests/tools. Detailed description of various media of learning is provided in the form of a stacked bar graph **(Figure 2).**

Table 2. Mode of Admission into Medical School

	Group 1	Group 2	Group 3	Group 4	Group 5	Group 6
Entrance Test	Yes	Yes	Yes	Yes	Yes	
Interviews/ Personality Test	Yes	Yes	Yes	Yes	Yes	Yes
Psychological Test (MMI/MMPI)					Yes	Yes
Mandatory Pre-Med Course						Yes

Question 4: Clinical exposure

Out of the six groups, 90% (five out of six) showed strong consensus about pre-clinical exposure whereas one group suggested that the duration or length of clinical exposure should be increased in comparison to the pre-clinical exposure because few exposures such as Intensive Care Unit (ICU) and Emergency Rooms (ER) can turn out be overwhelming for pre-clinical students. However, a great alternative as reported by two groups was shadow work which refers to observing medical professionals provide care in clinical settings. Conversely, three groups (50%) commented on the frequency of clinical exposure that must be provided during the pre-clinical years to enhance the smooth transition from pre-clinical to clinical years as shown in **Table 3.** Furthermore, one group suggested a dichotomization of clinical exposure, where pre-clinical students, that is the second and third-year medical students, must receive Basic Life Support (BLS) training and Objective Structured Clinical Examination (OSCE) should be a routine part of their assessment. Whereas, fourth and fifth-year students who have sufficient clinical exposure must interact daily with the patients and engage in discussions.

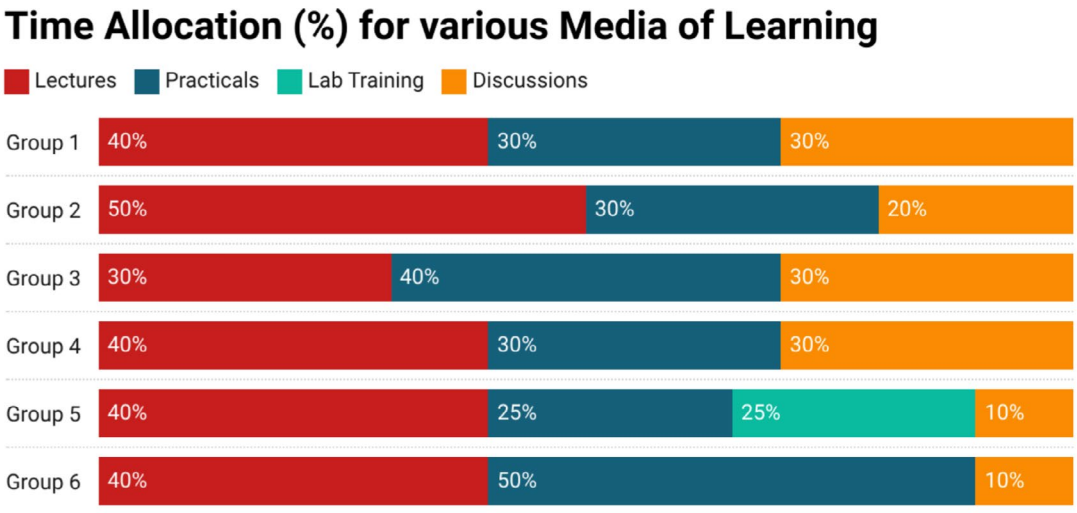

Figure 2: Stacked bar graph representing in percentages the time allocation suggested for lectures, practicals, and discussions as a medium of learning in medical schools.

Table 3. Frequency of suggested clinical exposure during pre-clinical year.

Group No.	Frequency
Group 1	Once a Week
Group 2	From Day 1 of Medical School
Group 3	Once a Year

Question 5: Testing

All six groups (100%) recognised that there should be a variety of tests implemented in each country's medical school system. Testings of both theoretical and practical types were discussed and suggested as seen in **Figure 3** below. Of the types of testing discussed, only 66.67% (four out of six) of the groups endorsed the use of essays as a testing method. As an alternative, however, one group suggested a slightly different approach to standard essay questions, the Modified Essay Questions (MEQ), where students instead analyze a clinical scenario in order to identify its clinical and ethical aspects. Another popular selection of theoretical tests include Multiple Choice Questions (MCQ) which were recommended by 83.33% (five out of six) of the groups. A supplementary recommendation regarding this type of testing was given by one group that suggests One Best Answer (OBA) or Extended Matching Question (EMQ), a type that encourages students to choose an answer that fits best instead of a seemingly correct one. Contrary to theoretical exams, the practical Objective Structured Clinical Examination (OSCE) was suggested by all (100%) groups, as each group sets it as a non-negotiable to recognise a doctor's competence in a clinical setting.

Question 6: Standardization

Of all groups, five out of six (83.33%) agreed to conducting national exams to assure the competency of medical school graduates. Groups 1, 2, 3, 4, and 5 stressed that these examinations must include both theoretical exams and practical exams that will allow the evaluation of all necessary clinical skills as seen in **Table 4**. Group 6 on the other hand, suggests otherwise. There should only be exit exams done for those interested in practicing in another country to ensure that their competency are in line with standards that were set in that country. In addition to this, groups 2 and 6 (33.33%) also recognized the need for standardizations to not just exist at the beginning or end of every students' education. Instead, there needs to be quality assessments done unto medical education providers. Group 2 suggested for there to be an accreditation done directly unto universities' in the matters of their approach to provide quality medical education. This is done based on an evaluation on the faculty's overall excellence, patient inload in their teaching hospitals, and supporting infrastructures for students to demonstrate practical skills. Group 6 supports the aforementioned point with suggestions that there be random-timing accreditations done unto faculty members, to ensure that their teachings are up to date with current developments in the healthcare industry.

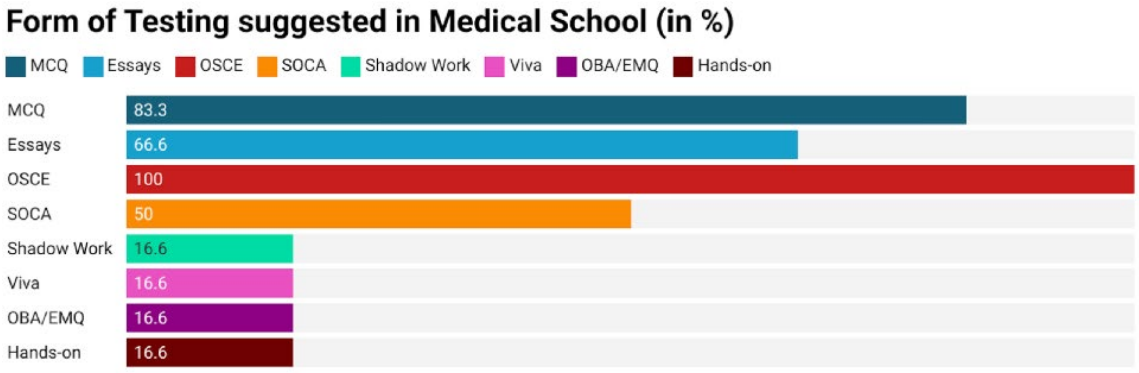

Figure 3 : Stacked bar graph representing in percentages the form of testing suggested by all six groups in Medical Schools.

Question 7: Residency

Of the six groups, 100% agreed on the importance of specific criteria for residency admissions, with all groups highlighting the importance of aligning residency admissions with a student's chosen residency. Specifically, 50% (three of six) emphasized adapted entrance exams for each specialization, while another 50% (three of six) highlighted the use of diverse admission criteria, including final grades, multiple choice questions (MCQs), essays, and objective structured clinical examinations (OSCE).**(Figure 4)** Regarding the financial aspects of residency, 83% (five of six) of the group expressed concerns about financial problems to enter residency, specifically the need to pay entry fees or tuition fees. Two groups proposed paid residency

positions to reduce the financial burden. Additionally, 67% (four of six) recommended benefits or salaries for residents, recognizing them as workers and advocating for financial compensation during the residency period. **(Figure 5)**

In terms of residency duration, all groups (100%) acknowledged that length should vary depending on residency, with suggestions ranging from 2 to 6 years. The proposed specific duration includes 3 years for clinical specialties and 2 years for paraclinical specialties. Additionally, 33% (two of six) of the group cited the need for flexible residency programs, both mandatory and optional, with a focus on minimizing financial and time demands. One group pointed to a mandatory two-year residency program in Malaysia that covers basic disciplines as a model, emphasizing the importance of work-life balance and job satisfaction. Finally, 50% (three of six) groups proposed involving government agencies, such as the Ministry of Health, to provide scholarships and financial support for residents, highlighting the role of institutional support in facilitating residency training. The general consensus among all groups is that residency programs should be structured to help medical graduates enter desired specialties while balancing financial, time, and workload considerations.

Table 4. Quality Output Techniques for Standardization.

1	Group 1	Entrance Exams (MCQ + OSCE)
2	Group 2	Annual inspection of quality of medical education, patient inload, infrastructure of the medical school & affiliated teaching hospital MCQ, OSCE, Essay Test
3	Group 3	Entrance Exams (MCQ + OSCE)
4	Group 4	Entrance Exams (MCQ + OSCE)
5	Group 5	MCQ + OSCE after pre-clinical & final year completion
6	Group 6	Annual Inspection, Review curriculum & provide accredition to medical schools as per their performance

Discussion

Setting the stage: the rise of international health worker migration

Many countries face challenges in recruiting skilled healthcare personnel for their own healthcare facilities. The shortage of healthcare workers leads to a decrease in the quality of patient care and an increase in workload for current healthcare workers. To tackle this issue, certain high-income countries, such as the United States and Canada, depend on health worker migration and actively recruit health professionals from low-to-middle-income countries like India and the Philippines, which contribute a substantial number of international health workers.[17,18] International health worker migration refers to the relocation of health professionals across national borders for work opportunities, either temporarily or permanently.[19] The issue has been a significant focus of global policy-making for many years, with multiple international organizations and bilateral agreements involved, including the WHO Global Code of Practice on the International Recruitment of Health Personnel, which aims to address these issues by encouraging workforce self-sufficiency and discouraging active recruitment from countries with severe health personnel shortages.[19,20] Various factors influence workers' decisions to leave their home countries, encompassing both push and pull factors. Push factors include limited employment prospects, financial difficulties, limited educational and career advancement, and even encouragement to migrate to another country. In contrast, pull factors include higher wages, better working conditions, access to advanced technology and training, and career advancement and personal development prospects.[18]

The emigration of workers abroad has sparked significant debate about its impact on the source country. Advocates highlight the potential advantages, citing instances where migrant health workers return with improved skills and knowledge, benefiting both their home country and their families through remittances.[17] On the other hand, critics raise concerns about the potential drawbacks, such as a brain drain and the loss of skilled workers in the source countries who have to bear the cost of training. This can lead to heightened health disparities, as demonstrated in the WHO Africa Region.[21]

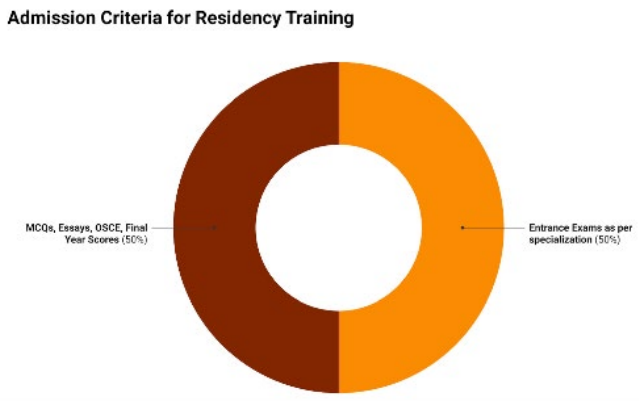

Figure 4 : Donut Chart representing in percentages the admission criteria suggested by all six groups for residency training.

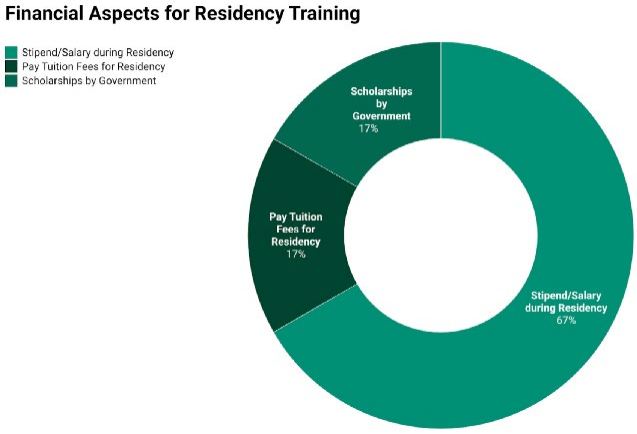

Figure 5 : Donut chart representing in percentages the suggested mode of financial aspects involved when considering residency training.

With the ongoing rise in health worker emigration abroad, it is imperative to address these concerns.[17] One area that demands immediate attention is the role of medical education in each country and its ability to adapt to the increase in health worker migration. Changes in medical education—particularly the global orientation of education systems in source regions—significantly impact international health worker migration patterns. The Indian case exemplifies how education systems are aligned to produce globally oriented professionals, reflecting the global health worker labor market.[22] However, some counterexamples, such as Cuba, place primary care and community health as their top priorities. They have developed a medical education system that efficiently generates a surplus of healthcare professionals willing to work in areas that lack adequate medical services, both domestically and internationally. This challenges the notion that all countries must align their medical education systems with global labor market demands to address health worker migration issues.[23] Each country, being unique, should decide how their health education system should be oriented to meet the demands of their healthcare systems.

Students' perspectives versus best practices

Best practices for duration of medical education (see question 1)

The length of medical education programs is an important factor that shapes the skills and the preparedness of the students who are going to be future physicians. Standardizing the medical education curricula to the national and international standards is a vital factor in determining the right time frame for them. Nowadays, many countries and organizations, including the World Federation for Medical Education (WFME), have adopted the standards recommending five years for the basic medical degree, with one or two years of clinical training or internship as the minimum.[24] Following this generally accepted standard guarantees

the medics with a complete training and worldwide recognition upon graduation.

Medical education should be well-balanced between theoretical knowledge and practical clinical experience. The best practices include spending as much time as it takes for study rotations, clerkships and clinical experience in different medical specialties.[25] By providing students with this experience, they are able to acquire basic clinical skills, interpersonal competencies, and an understanding of real-world healthcare settings, which is an absolute necessity for their future practice.

Nowadays, medical schools put a lot of emphasis on interprofessional collaboration and teamwork. Curricula should be designed in such a way that medical students are provided an opportunity for interdisciplinary learning and interaction with other healthcare professionals like nurses, pharmacists, and therapists.[26] This exposure allows for a deeper understanding of the entirety of providing patient care and enhances communication and collaboration skills, which are essential in the current healthcare environment.

The medical education curricula should be made flexible enough to be able to accommodate emerging trends, new technologies, and evolving healthcare needs. The best practices include providing the electives, the research experiences, and the interdisciplinary learning.[27] This flexibility enables the students to design their education in a way they find interesting and in line with their future careers. As such, it assists them in meeting the challenges of the dynamic environment in healthcare.

The effective duration of the curriculum should be influenced by the continuous evaluation and improvement that is based on feedback from various stakeholders such as students, faculty, healthcare professionals, and accreditation bodies. Continuous evaluation and adjustments not only in the light of the latest medical knowledge, but also in the pedagogical approaches and the ever-changing needs of the society are necessary for the medical education programs to remain relevant and effective.[28]

Best practices for admissions (see question 2)

In medical education in Asia, the best practices for admissions are very important in choosing talented and diverse students who can be successful in the medical curriculum and who will be part of the healthcare workforce. The implementation of a comprehensive admission process which takes into consideration a wide range of factors such as academic excellence, personal qualities, life experience, and likelihood of succeeding in the medical field is one of the key best practices.[29] This strategy accepts that academic scores do not reveal all the aspects that an individual has.

The other important best practice is the promotion of diversity and inclusion in the student body in Asian medical school admissions. A student body that is diverse in its background leads to a learning environment that is so rich, that it enhances cultural competence and makes future physicians better able to serve the diverse communities in Asia.[30] Admissions committees ought to take into account aspects like socioeconomic circumstances, ethnicity, and individual experiences to make a diverse and representative cohort that mirrors the local community diversity.

Many medical schools in Asia have already included structured interviews like multiple mini-interviews (MMIs) or situational judgment tests as a part of the admissions process.[31] Such interviews examine how applicants handle interpersonal relations, problem-solving, ethical reasoning, and communication, which are critical skills for successful performance in medical school and the medical profession.

Incorporating multiple stakeholders such as current medical students, faculty members and health professionals is also one key strategy in Asian medical school admissions.[32] This collective method makes sure that the admission criteria and the procedures are consistent with the institutional values, mission, and needs of the communities that are served by the medical school.

Lastly, the assessment and improvement of admission processes shall be a part of the process. The criteria and practices for admission should be reviewed and refined regularly based on the data analysis, feedback from the stakeholders and the changes in the institutional priorities or societal needs.33 This process of ongoing assessment enables Asian medical schools to identify and select the most capable of their students who can contribute to the health sector of the region.

Best practices for media of learning (see question 3)

The findings from our study shed light on the diverse perspectives among multinational medical students regarding the optimal composition of medical curricula, particularly concerning the balance between offline and interactive learning modalities, practical skills, laboratory

training, and case discussion. A notable consensus emerged among the majority of groups, advocating for a substantial portion of the curriculum (at least 40%) to be conducted offline and in an interactive lecture format. This inclination underscores the recognition of the value of face-to-face interactions, fostering engagement, active learning, and a theoretical foundation for medical practice. Previous study also emphasizes the essential role of student engagement in offline and interactive learning to ensure quality in medical education.[34] Student engagement is a psychosomatic state of motion making them feel triggered, and employ exertion in learning activities, which connects their state with medical education.[35] Thus, student engagement in medical education is positively allied with the outcomes of the learnings with utmost consequence on practical engagements than professionalism.[36,37]

Practical training also emerged as a central theme, with a strong emphasis on hands-on experiences. A significant proportion of groups (50%) advocated for dedicating half of the curriculum to practicals, highlighting their pivotal role in bridging theoretical knowledge with real-world applications. Furthermore, the result also aligns with study that underscored the pivotal role of hands-on experiences in developing clinical skills and competence among medical students, supporting a Competency-Based Curriculum (CBC) with well-stated learning objectives for students to acquire essential clinical skills. Students should be provided with sufficient learning opportunities including a well-equipped clinical skills laboratory and individual attention, and constructive feedback should be given to students for building their confidence level during their learning process.[38] This aligns with another study that showed that skills training and practical simulation significantly lowers anxiety and increases confidence in medical students, enhancing their performance in patient care.[39] Moreover, the specific allocation of 25% each to lab training and clinical interactions with patients reflects a balanced approach, ensuring exposure to both laboratory techniques and clinical settings. This perspective acknowledges the needs of pre-clinical year students who lack direct exposure to clinical practice, emphasizing the importance of early skill acquisition to enhance preparedness for subsequent clinical training.

Moreover, discussions on clinical case presentations during preclinical studies received varying degrees of endorsement. While one group suggested a modest 20% allocation, underscoring the value of clinical exposure for pre-clinical students, contrasting opinions were evident, indicating the need for further exploration regarding the optimal balance between clinical exposure and theoretical discussions. It is noteworthy that despite the emphasis on interactive learning modalities and practical training, discussions constituted a significant aspect of the curriculum according to half of the groups. A review also discusses the importance of theoretical foundations in medical education. Clinical teaching is fundamental to the training of physicians; however, it frequently lacks structure, being opportunistic and lacking a theoretical basis. Given the current landscape of healthcare provision, where accountability and patient safety are paramount concerns, medical education demands a rigorous scientific approach and evidence-based methodologies. Thus, theories play a crucial role in validating concepts through practical implementation, thereby enriching comprehension, application, and credibility in the learning process.[40] Overall, the multifaceted nature of medical education highlights the need for a balanced curriculum that integrates diverse learning modalities to optimize student learning and prepare future healthcare professionals effectively.

Best practices for clinical exposure timing (see question 4)

The results of our study revealed a predominant consensus among the majority of groups, with 90% expressing strong support for pre-clinical exposure within medical curricula. This result underscores the recognized importance of early clinical immersion in medical education, aligning with the principles of Early Clinical Exposure (ECE). ECE allows students to gain a deeper understanding of the healthcare delivery systems, patient care processes, and professional responsibilities, hands-on experience, develop empathy, and improve recruitment and retention by providing a more engaging and rewarding learning experience.[41] ECE emerges as the most fitting concept to meet the needs of medical students in this study, as it integrates the knowledge of basic and clinical sciences and the psychosocial aspects of medical practice to move medical education towards the real context of practice, ultimately leading to the perfect training of professional physicians and smooth transition to the clinical phase.[42]

Furthermore, alternative modalities for clinical exposure were proposed by two groups, emphasizing the concept of shadow work. Shadowing medical professionals in clinical settings provides students with valuable observational learning opportunities, enabling them to witness real-world clinical practice and contextualize

theoretical knowledge within clinical contexts. This perspective reflects a nuanced consideration of the balance between theoretical knowledge acquisition and practical clinical experience, highlighting the potential benefits of extended clinical immersion in enhancing students' clinical skills and readiness for professional practice.

Best practices for testing in medical school (see question 5)

Our research discovered that medical students perceived current exam formats to be ideal enough as they combined a variety of methods; nevertheless, measures must be taken to ensure these tests' reliability. For basic sciences in preclinical phases, multiple choice questions (MCQs), sometimes modified to have multiple possible answers, short answers, and laboratory practical exams, each assesses cognitive level with good reliability. In applying such knowledge into clinical settings, however, an oral exam (viva voce) is often used, but this test has high variability between scorers, leading to lower reliability. Direct observation in clinical practice and simulation-based assessments also require faculty training for optimal reliability.[43,44] The "testing effect" should also be considered in all simulation-based assessments, including Objective and Structured Clinical Examinations (OSCEs).[44] Overall, assessment formats, scoring methods, stakes, duration, and frequencies should all be considered as they collectively affect students' learning.[45]

Considering the marked interest in applying theories to clinical scenarios, simulated patients should be sufficiently prepared to provide authenticity, hence minimizing the risk medical students will pose on real patients.[46] Past studies have shown that students have perceived their medical education to provide less practical relevance than their expectations,[47] especially during the COVID-19 pandemic.[48] Nevertheless, educational theory dictates that formal theory should still be taught as a foundation for evidence-based practice.[49]

Best practices for standardization (see question 6)

Medical students in our study mostly agree that a national exit exam is needed to ensure standardized doctors are competent for practice; scores for national CBT and OSCE have been found to demonstrate clinical performance quality, but complex factors over the years may have a greater role.50 In India, a three-step National Exit Test (NEXT), done in the (1) final year of the MBBS degree, (2) licentiate examination, and (3) PG entrance, is judged most feasible.[51] Contrarily, in Vietnam, where medical licensure exams have not been required before 2024, medical schools are considered responsible for their graduates' competence. Nevertheless, the establishment of a National Medical Licensing Exam (NMLE) is deemed to be beneficial beyond its costs (human resources, infrastructure, and logistics).[52] To tackle the high-stakes nature of such exams, progress testing can be conducted throughout medical education years to assess knowledge growth, reduce stress, and encourage deep learning.[53]

Educational institutions should be monitored for quality even with the existence of exit exams,[54] through accreditation and the processes following it: post-accreditation monitoring, meta-accreditation, and meta-evaluation of the accrediting bodies.[55] Albeit often centralized, such systems should be designed to fit local needs and contexts, possibly through a fit-for-purpose framework.[56] Existing evidence shows that medical schools accredited by the World Federation of Medical Education (WFME) retrieved higher United States Medical Licensing Examination® (USMLE®) scores. However, implementing and maintaining meaningful accreditation systems requires substantial resources.[57] To prepare for accreditation, within medical schools, independent medical education units (MEUs) can be established and assigned for continuous quality assurance, given the authority to prescribe teaching interventions.[58]

Best practices for residency (see question 7)

In our study, medical students expressed a variety of perspectives on how residency programs should be held in a well-structured system with diverse eligibility standards to allow postgraduate medical students to easily enter their desired medical residency. During this time, different countries used different methods for residency admissions, but the national exam remained the primary criterion in most countries.[59] However, the scores of the NMLE test are rarely placed in the top quartile on the research about factors that determine medical residents success during specialist training or throughout their career as a specialist.[60] Recent research about USMLE also reported the lack of representation of women and underrepresented minority groups (URM), showing disadvantages as the only criterion to embody diversity in residency programs. As emphasized by certain groups in our FGD, adapted entrance exams

for each specialization (interview, OSCE, or essay submissions) are suggested to be implemented to reduce inadvertent racial or gender bias and conduct a holistic admission process.[61,62]

In addition, financial burdens and increasing amounts of debt during residency contribute to the rise of anxiety and stress levels among residents and unfortunately become one of the top reasons to not pursue or suspend their intention to join a residency program.[63] Adding the high tuition fees of residency programs to the list of other unpaid financial debts could be extremely burdensome for medical trainees, while some countries consider general practitioners to be just postgraduate students who are either unqualified to be paid or are paid less than the country's workers' standard salary. Ultimately, this has been shown to be a leading cause of the shortage of medical doctors in all countries, showing inequality in access to residency programs.[64,65] Reformation of residency programs to regulate financial barriers is strongly needed, such as clarifying residents' status as healthcare workers, promoting scholarships and financial support for residents from government or private parties, and advocating the urgency for the government's financial assistance for giving financial compensation to universities or hospitals.[66] Certain nations that employ university-based residency programs urgently require financial support, and the conversion to hospital-based programs might also help to solve issues with paying medical trainees. After earning an adequate salary, it would be more visible for residents to be able to pay off their debts and overcome their financial problems, such that residency programs still remain the choice for postgraduate medical students. Since medical students are considered to have deeper concern on paying high amount of tuition fees throughout their educational year, recent research also reported the importance of financial management to be included in the medical curriculum.[67]

Strengths and limitations

This paper encompasses the key aspects of medical education through the lens of its main stakeholders—medical students—through its qualitative nature that serves to describe the phenomenon comprehensively. However, limitations exist in its data source; as the discussions were conducted between AMSA members, subjects are mainly Asians who are interested in medical education and/or student activities. Such demographics may skew interpretation and the qualitative data accrued as we might have missed students who were not involved in AMSA. Moreover, although Asian countries share similar collectivist values,[68] the four countries may not be representative for Asian countries beyond them.

Conclusion

Gaps between countries were observed in medical education curricula implementation. Block or module systems remained the leading methods in curricula with recommendations for improvement in annual mental health assessment for students and providing more clinical exposure since pre-clinical years. Furthermore, admission processes could consider psychological tests and MMI, which are still uncommon. Equitable use of learning media remains difficult due to curriculum differences and gaps between private and state universities reported in several countries. MCQs and OSCE are quite popular and meet the expectations of medical students to be continuously implemented as testing methods and national exit exams for requirements to enter residency programs. Medical students and all stakeholders agreed about financial burdens happening in all countries, affecting decisions to enter residency programs. Moving forward, solutions to advocate these issues to the government are still deliberated with much room for improvements to meet all parties' needs and expectations. WFME should create integrated medical education standards that can be applied globally with structured achievement targets, encouraging quality improvements. Nevertheless, implementation should remain context-sensitive in countries. In doing so, the perspectives of medical students as the main stakeholders in medical education should be considered.

A lengthy study must be carried out in order to identify medical education systems throughout Asia. Aspects that need to be evaluated are the comparison of curricula from different medical schools in Asia to identify best practices in career development, professional satisfaction, and patient outcomes in the healthcare environment. Evaluation can be done by investigating different teaching methods (problem-based, simulation-based, or conventional learning). The quality and quantity of student experiences and opportunities are some of the many points of student entitlement that need to be guided due to their impact on clinical competence and practice readiness.

Given technological advancements, medical education providers can investigate the function and efficacy of new systems, as well as the use of technology in medical

education, such as digital learning platforms and expanded telemedicine in daily practice. Public policy is essential for ensuring equity in faculty and curricular structures. Sustainable improvements in public policy can be implemented to improve medical training and health care.

In a fully involved world, student associations can play a leading role in medical student change. It can be achieved by speaking up and suggesting reforms to educational authorities. Students and staff can contribute to such changes by sharing their experiences and making ideas. This allows young organizations to organize and participate in discussions with officials about the issue. Finally, improvements and issues can be communicated and promoted through campaigns and idea exchanges. Peer support programs can also assist students in overcoming obstacles and advocating for institutional support structures on a broader scale.

Acknowledgement

Our gratitude goes to Haddasah Silva from AMSA Macau, Yashwardhan Jain from AMSA Kyrgyzstan, Dr. Erfen Gustiawan Suwangto from AMSA Indonesia, and Dr. Zulkhairul Naim from AMSA Malaysia for their willingness to be speakers for AMSA International's event. We would like to thank Tushika Mukati, Margaret Chung Ni Na, Shruti Kataria, Nayla Valinka Almira, Bernadet Christabel, Adinda Putri Surya, Michelle Beauty Permata Siahaan, Ebadi Cininta Tresakta, Belva Aulia Putri Ayu Rehardini, and Debora Riadi Alim as part of the Global Health Organising Committee without whom the event and discussions, qualitative data sources in this research, would not have been possible.

Conflict of Interest

ST was the Director of Global Health of AMSA International 2023/2024, RNF was the Chief Editor of JAMSA 2023/2024, and AVM was the Internal Global Health Officer 2023/2024 in charge of the interchapter collaboration event of which data was analysed in this article.

Source of Funding

No funding was received to assist with the preparation of this manuscript.

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