

Medical Education & Research (MER) Journal

Official Publication of the
Medical Education Chapter
of Indian Academy of Pediatrics



*Education is not the learning of facts but
training the mind to think*

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CONTENTS

Messages

Advisory & Editorial Board

- I. Editorial**
Embracing Transformational Change in Medical Education 1-2
Dr. Roosy Aulakh

- II. Original Article**
Simulation-based teaching using standardized patients for advanced communication skills among medical undergraduates. 3-10
Dr. Lavanya KM, Dr. Sushant Kumar Mishra, Dr. Lava Kumar Somu, Dr. Somnath Dash, Dr. Shreya Mishra

Elective Choices by Undergraduate Medical Students: What do they tell about the future Physician Workforce. A cross sectional study. 11-18
Dr Sandhya Chauhan, Dr Jaswinder Singh, Dr M S Butola, Dr Neelima Mehrotra

- III. Review**
Artificial Intelligence Tools for Academics in Medicine 19-21
Dr. Somashekhar Nimbalkar

Current dilemmas in medical education in India 22-26
Dr. Daljit Singh Utaal, Dr. Gurpreet Singh Wander

Changing Roles of a Teacher in Medical Education 27-33
Dr. N. Ananthakrishnan

- IV. Methodology Improvisation**
Use of Distant SP for Formative Assessment in Pediatrics 34-35
Dr. Chinmay Shah, Dr. Mehul Gosai, Dr. Alpa Parekh, Dr. Unnati Shah

- V. Perspective**
NEtT - a game changer of CBME? 36
Dr. Pramila Menon

Elevating medical education and research in India: a call for quality publications, rigorous promotion criteria, and equitable funding 37-38
Dr. Mihir P. Rupani

- VI. Invited Commentary**
Clinical competence: knowledge or skills or both? 39-41
Dr. Tejinder Singh

- VII. Update**
Graduate Medical Education Regulations-2023 42-44
Dr Priyanka Gupta

MESSAGE



Dear All,

I'm extremely happy to know that one of the youngest chapter of IAP has already grown and developed so fast as to bring it's first issue of medical education journal.

As we all know that the process of learning is never ending. Medical professionals and the teachers all the more need to stay updated as they impart the knowledge and skills to the students year after year.

Education is not simply an act of increase in knowledge or acquisition of facts and skills of purely practical value but actually an abstraction of meaning, in which what is studied is in some way changed, and not simply reproduced.

I'm sure the journal under the leadership of Dr Somashekhar Nimbalkar, Dr Pawan Kalyan & Dr. Roosy Aulakh will pass the test of time and find a permanent place in the inbox of all our pediatric teachers.

My best wishes for this excellent endeavour.

Happy reading

Dr Upendra Kinjawadekar
National President-2023
Indian Academy of Pediatrics

MESSAGE



I am indeed very happy to know about the launch of the Medical Education and Research Journal by the Medical Education Chapter dedicated to advancing knowledge and innovation in healthcare education. This journal aims to serve as a platform for the exchange of ideas, research, and best practices in medical education, ultimately enhancing the quality of healthcare delivery worldwide.

This is a remarkable achievement that highlights the dedication, expertise, and vision of MEC in advancing medical education.

Your commitment to excellence and your passion for advancing the field of healthcare education are truly commendable. I am confident that this journal will make a significant impact on the future of medical education, ultimately improving patient care and outcomes.

I extend my heartfelt congratulations to each and every one of you especially Dr. Somashekhar Nimbalkar, Dr. Pawan Kalyan & Dr. Roosy Aulakh. Your hard work and dedication have set a high standard in the medical education community, and we look forward to the continued success of this journal under your expert guidance.

Warmest congratulations once again!

Dr G.V. Basavaraja
National President Elect-2024
Indian Academy of Pediatrics

MESSAGE



Dear Friends from

Medical Education & Research Chapter of IAP

Greetings from Central IAP

It is really heartening that our great organization has new and important offshoot which exclusively nurtures Medical Education & Research among its members.

Dr Somashekhar Nimbalkar as President & Dr Pawan Kalyan as Secretary are toiling really hard to establish this Chapter. They have roped in Dr Roosy Aulakh a great academic figure as the Editor of this prestigious Journal.

No doubt, this Chapter and Journal will be an important milestone in IAP's chequered history.

All those who are giving their selfless services to this academic cause deserve tremendous appreciation.

That the inaugural issue of Medical Education & Research Journal of Medical Education Chapter of IAP is being launched in NCPE at Karamsad on 14th Oct 2023 is a testimony to the vibrancy of this Chapter.

I am sure that this will be a hugely successful event. Best Wishes to all.

Dr Vineet Saxena
HSG - IAP 2022-23

MESSAGE



I am delighted to learn that the maiden issue of IAP-MEC's Medical Education Journal is due for release, and I congratulate all those involved in bringing out this publication. The journal was a dream project of MEC right from the inception. It was initiated during my tenure as the Founding Chairperson, and it is coming to fruition due to the persistent efforts of the successive teams of leaders who have helmed MEC.

I must especially congratulate the incumbent Chairperson, Dr. Somashekhar Nimbalkar, the Secretary, Dr. P.S. Pawan Kalyan, and the Chairperson-Elect, Dr. Harish Kumar Pemde, for spearheading this venture. Most importantly, my heartfelt appreciation goes out to the multitalented Editorial Team led by Dr. Roosy Aulakh and comprising Dr. Ajay Gaur, Dr. Preeti Malhotra, Dr. Mangla Sood, and Dr. Prashant Kariya as Editors and Dr. Shashikant Dhir, Dr. Sujata Kanhere, and Dr. Priyanka Gupta as Associate Editors. Without their hands-on effort, this onerous task would have been impossible.

The Medical Education Journal fills a big void in healthcare literature. It provides a unique and exclusive platform for medical educators to voice their thoughts, and there is no other publication like it in India. Medical education plays a key role in grooming the upcoming generations of practitioners, and healthcare itself would cease to exist in its absence. Yet it has not gained its due recognition as a vital discipline in its own right. IAP-MEC was formed with the vision to address this issue, and we have made good progress within a short span of time.

The launch of the Medical Education Journal will take our mission forward by widely disseminating scholarly articles, which will surely result in a qualitative transformation of the medical education sector. We should now work towards establishing our authenticity by getting this publication indexed. Medical education spans all specialties, and most of the issues are of common concern. Hence, we should also keep our doors open to the contribution of relevant articles from all specialties and not just Pediatrics.

I am sure the Medical Education Journal will evolve into a coveted professional publication, and I once again congratulate everyone on this great achievement. I also express my greetings to all the readers and wish you a fruitful reading experience.

Dr. Santosh T. Soans
IAP President 2018
Founding Chairperson IAP Medical Education Chapter

MESSAGE



Friends,

We are at a unique turning point in the history of medical education in our country. The expansive roll out of competency based medical education coupled with a phenomenal rise in the number of undergraduate and postgraduate seats throughout the country provides a golden opportunity not to be missed!

Till now, research in medical education was limited to projects conducted by medical faculty pursuing advanced medical education courses.

However, it's time that each teacher contributes to quality research in this expanding field and bring about innovations which can bring the students back to classrooms!

I extend my best wishes for the first dedicated medical education journal of our own!

Sanjay Lalwani
Immediate Past Chairperson
IAP Medical Education Chapter (2022)

MESSAGE



The Official Journal of the Medical Education Chapter of the Indian Academy of Pediatrics is being released during the 10th National Conference of Pediatric Education. It is the labor of love of the editorial team over the past few months. The Journal will cater to Pediatric Professionals as well as other professionals who work in Medical Education in India. About 70% of the articles will be specific to Pediatric Education, and we welcome articles from other specialties. As Medical Education changes rapidly in India with the National Medical Council leading with changes such as NExT, Quality of Medical Education, etc., I am sure this journal will soon be a leading platform across India for students and faculty alike. The Editorial team led by Dr. RoosyAulakh has shown great leadership and commitment to the cause of Pediatric Medical Education and I wish them the very best in this endeavor. As Chairperson for the Chapter, I assure them of all the help possible this year as well as in the near future.

Prof. Somashekhar Nimbalkar
Chairperson – IAP MEC 2023

MESSAGE



Message from Dr Harish K Pemde Chairperson Elect, IAP MEC

I am very happy to learn that the inaugural issue of the official journal of IAP Medical Education Chapter is being published. This chapter is just few years old and we are having our own journal is a matter of pride. Kudos to the Editorial Team led by Dr Roosy Aulakh.

Medical education, though a critical factor in healthcare and its management, has not received its due importance in society and in academic circles. The nuts and bolts of medical education technology have not got enough attention of the leaders of IAP. This is the time that we focus on developing not only the contents of the subject matter but also the tools, processes, protocols, and guidelines on medical education technology.

Creating our own evidence cannot be over emphasized in the current times. The developments in information technology and use of artificial intelligence are bringing big changes in every field and medical education can not remain untouched. We need to learn to incorporate these newer technologies in teaching and training of medical students and of the practicing physicians. Equally important will be creating evidence and publishing good quality research papers in medical education technology.

Any new journal faces lots of initial hurdles like finding resources for publishing it, and getting good quality original research articles. Defining research priorities in the areas of Pediatrics Education and training our members in research methods (appropriate for research in medical technology) will help in having relevant research papers. This will have to be taken on priority. I expect the journal committee to own this responsibility and organize the needed programs. Research articles of desirable quality are likely to follow and thus we can create relevant evidences for best practices in Pediatric Education. This will be a great contribution to the medical education in general and ultimately to the betterment of clinical practices in Pediatrics.

I offer my best wishes and all the support to the team.

Dr Harish K Pemde, MD FIAP
Chairperson Elect,
IAP Medical Education Chapter (2023).

MESSAGE



Dear Readers,

It is with great pleasure and enthusiasm that I welcome you to the inaugural issue of our medical education and research journal. As the secretary of the chapter, I am honored to be a part of this significant milestone in our journey towards advancing medical knowledge and promoting excellence in healthcare.

This journal aims to serve as a platform for the dissemination of cutting-edge research, innovative educational practices, and insightful perspectives within the field of medicine. By providing a space for scholars, clinicians, and educators to share their expertise and experiences, we hope to foster collaboration, inspire critical thinking, and ultimately improve patient care.

I would like to express my gratitude to the editorial board, reviewers, and authors who have contributed their time and expertise in bringing this inaugural issue to fruition. Their dedication and commitment to excellence have been instrumental in ensuring the quality and integrity of the published content.

Finally, I extend my warmest invitation to all healthcare professionals, researchers, and educators to actively engage with our journal. Your support and participation will be invaluable in shaping the future of medical education and research.

Thank you for joining us on this exciting journey. Together, let us strive to make a meaningful impact on the health and well-being of individuals and communities worldwide.

Sincerely,

Dr Pawan Kalyan
Secretary
IAP Medical Education Chapter (2023)

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Embracing Transformational Change in Medical Education

Medical education is experiencing significant changes both in India and across the globe. These trends reflect the evolving needs of the healthcare sector and the increasing demand for competent and compassionate healthcare professionals. As we stand on the brink of transformational change in medical education, it is crucial that all stakeholders come together to drive this process forward. By embracing innovation, collaboration, and a commitment to excellence, we can shape a medical education system that meets the needs of our people and prepares doctors to deliver high-quality healthcare for all.

One key trend is the shift towards competency-based education. Traditional methods of rote memorization are being replaced by a focus on practical skills, critical thinking, and problem-solving abilities. This ensures that medical graduates are better prepared to meet the complex challenges of modern healthcare.

Another important trend is the integration of technology in medical education. Virtual simulations, online platforms, and augmented reality are revolutionizing teaching and learning methods. These technological advancements provide opportunities for immersive learning experiences, remote training, and access to a wealth of resources.

Inter-professional education is also gaining prominence. Recognizing the importance of collaboration and teamwork in healthcare, medical education is increasingly incorporating opportunities for students to work alongside professionals from other disciplines. This fosters effective communication, mutual respect, and a patient-centered approach to care.

Furthermore, there is a growing emphasis on holistic education. Medical schools are recognizing the importance of nurturing the personal and professional development of students. This includes promoting self-care, empathy, cultural competence, and ethics, ensuring that future healthcare professionals are well-rounded individuals.

There is a renewed focus on community-oriented medical education. Recognizing the vast healthcare disparities in the country, medical schools are placing greater emphasis on training students to serve in rural and underserved areas. This includes immersive community-based

experiences and exposure to primary healthcare settings.

Lastly, the importance of faculty development and continuous professional development cannot be overlooked. By investing in the development of educators, we can ensure that they are equipped with the latest teaching methodologies and are able to inspire and mentor the next generation of doctors.

However, these changes must be accompanied by robust regulatory frameworks and accreditation processes to ensure quality and accountability. It is essential to have standardized assessments and monitoring mechanisms that evaluate not only theoretical knowledge but also practical skills and ethical values.

In addition, the role of medical education journals has never been more important. As we navigate the ever-changing landscape of medical education, it is essential that we continue to support and invest in these valuable resources. The launch of this Medical Education & Research (MER) Journal by the Medical Education Chapter of the Indian Academy of Pediatrics is a step in this direction. It proposes to serve as a platform for sharing innovative teaching methods, groundbreaking research, and critical analysis of medical education practices. It will provide a platform for educators, researchers, and practitioners to come together, exchange ideas, and stay abreast of the latest advancements in the field.

I would like to take this opportunity to express my heartfelt gratitude and appreciation to the Advisory Board members whose insights, guidance, and constructive feedback have played a pivotal role in ensuring the high standards and quality of the articles published in the MER journal. I would also like to extend my gratitude to the Editorial team members for their unwavering support, dedication, and expertise that have helped shape the success of our publication.

**Don't be afraid of change. You may lose something good,
but you may gain something better.**
-Unknown

With sincere gratitude,

Dr. Roosy Aulakh
Editor-in-Chief

Simulation-Based Teaching Using Standardized Patients For Advanced Communication Skills Among Medical Undergraduates.

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Abstract

Introduction: Good communication skill is the foundation for doctor-patient relationship. This is even more important when we encounter medical challenges. The need for training in communication skills is stated as a requirement in the 1997 Graduate Medical Education Regulations of the Medical Council of India. Simulation based training using standardized patients greatly facilitates the learning outcome in communication skills. We conducted a study on the undergraduate students & facilitators to record their perceptions on simulation-based teaching in Complex communication. **Methods:** A mixed method study was conducted among the 1st batch of CBME MBBS students presently in Phase III part I, in a Medical College located in coastal Andhra Pradesh. This study was conducted during the AETCOM classes in the Department of Community Medicine, among a convenient sample of 119 students. A module was created to develop medical trainees' competencies in advanced communication skills by SBT using standardized patients. Feedback was gathered from the students. **Result:** Majority (95.8%) of respondents were comfortable with this TL method. Suitability and appropriateness of the case scenarios was agreed upon by 95% of the participants. Sufficiency of allocated time for learning through role plays was agreed upon by 84.88% of the participants and achievement of learning objectives was agreed upon by 85.15% participants. Mock press conferences were found to appeal more (42%) to the participants. There is an increase in the self-rating about knowledge,

confidence, communication, team building & empathy demonstration after the training.

Conclusion: The simulation based structured teaching program on 'advanced communication' using standardized patients is acceptable to the two major stakeholders, students (learners) and faculty (teachers). It is feasible within the given context which is the most commonly prevailing scenario in the teaching medical institutions

Key words: simulated patients or standardized patients, mixed method, advanced communication, medical students, breaking of bad news

Introduction:

Communication skill is the ability to use language (receptive) and express (expressive) information, and this is an essential component of the medical curriculum. An Indian medical graduate is expected to be a good communicator.[1] In their day-to-day life, the Indian medical graduates are expected to communicate with the patients, their relatives & caregivers, the general public, colleagues, public authorities & the court of law.

Communication involves sharing information from one person to the other person. Effective communication is when the information is conveyed by retaining the same content and context. Effective communication depends on the richness of ideas, as it is an art and a process of creating and sharing ideas.[2]

Basic communication skills form the foundation for the framework of advanced communication skills. The advanced skills are framed within a

general understanding of how the communication process there is an understanding of all the elements of communication among people, the impact will be much greater because their influence doesn't remain on their communication alone but extends to influence the communication of others too. Hence, advanced communication skills are, in essence, leadership skills. They provide people access to ways in which they can guide and direct communication amongst individuals or a group so that they can achieve their goals and outcomes.[2] Advanced communication skills empower individuals to persuade ideas with clarity, purpose, and efficiency to maximize their impact on their audience.

These skills can be learned and practiced. It involves learning about the communication process, how it works, how to communicate the exact message to be conveyed, the different modes and the best mode of communication, and factors influencing the ability to convey and receive messages.[2]

The traditional medical curriculum does not incorporate formal training for students in soft skills, such as ethics, professionalism, or communication.[3] The Competency-Based Medical Education (CBME) curriculum has been implemented in India from 2019. The Graduate Medical Education Regulation (GMER) introduced competencies on attitude ethics & communication (AETCOM), where communication skills are being taught systematically and phase-wise to Indian medical graduates.[4] Patient interaction, small group learning, video recording and review, rehearsal, and other teaching-learning methods (TLM) are used to teach students these competencies.[5]

Simulation-based education is one of the most used and successful methods to facilitate learning and the development of competencies in health professional education.[6] Standardized patients (SPs) as a teaching modality is widely practiced in simulation-based teaching worldwide and for various healthcare providers at all levels of learning. Advanced communication skills may not be taught by exposing the undergraduates directly to real patients without prior training because using SPs in teaching communication skills can provide a controlled environment in which it is safe to learn from errors.[7] This can also greatly enhance fidelity in simulation scenarios.[8]

Therefore, the present study attempted to assess the acceptability & feasibility of the simulation-based structured teaching program on 'advanced

communication' by recording student's perceptions and facilitators' opinions.

Materials & methods:

This mixed-method study was conducted among the 1st batch of CBME MBBS students in Phase III part I, in a medical college located in coastal Andhra Pradesh. This study was conducted during the AETCOM classes in the Department of Community Medicine among a convenient sample of 119 students. Those students who had participated in the training session in basic communication skills conducted one week earlier, attended this session on advanced communication skills, and responded to a feedback questionnaire following this session were included, while those students who were absent during either or both these sessions were excluded from the study. Before the study, the purpose of the study was explained to the participants understandably & informed consent was obtained from them. Ethical clearance was obtained from the Institutional Ethics Committee.

The module for teaching AETCOM competencies was developed & validated by the medical education unit faculty. The module on advanced communication skills consisted of competencies related to empathy, breaking bad news, and handling print & electronic media.

The students were introduced to the competencies by an interactive lecture and cinema education on communication skills. This was followed by teaching in small groups, each of 30 students. Each session was conducted for two hours, during which they were assigned to different computer-based virtual patient cases to complement an interactive course that emphasized skills practice using standardized patients (SP) in a smaller group of six students each. Role plays based on the assigned scenarios were enacted by professional actors trained as standardized patients. The teaching-learning sessions were facilitated by ten trained faculty. Each session was followed by a debriefing session conducted at the end. During this debriefing exercise post-simulation, the students reflected on their roles in the role-play along with that of others and revealed their perceptions. After the role-play, the facilitator/supervisor, peers, and the SP provided immediate verbal feedback to the student, acting as the doctor. The duration for each role-play was approximately 15 min, followed by post-simulation debriefing for about 15 min.

Finally, a self-administered feedback questionnaire containing questions based on a

Likert scale and open-ended questions was used to collect student feedback. Responses to Likert scale questions were analyzed as proportions & chi-square tests. A Weighted average was taken to compare the feedback about "advanced communication training "before & after the session. The opinions of the facilitators were recorded by conducting a focus group discussion (FGD).The satisfaction index for each item in the Likert scale is calculated using the formula:

$$\frac{[(n1 \times 1) + (n2 \times 2) + (n3 \times 3) + (n4 \times 4) + (n5 \times 5)] \times 20}{(n1 + n2 + n3 + n4 + n5)}$$

$$(n1 + n2 + n3 + n4 + n5)$$

A satisfaction index of >75 was considered acceptable.

Responses to open-ended questions in the feedback questionnaire for the students and the responses of FGD were analyzed by inductive thematic analysis, and themes were generated for the same.

Results:

Participants were asked if they are comfortable with this method of teaching & learning in a five-point Likert scale. The majority (95.8%) of the respondents had agreement (27.7% strongly agreed & 68.1% agreed) that they were comfortable with this TL method. Regarding the suitability and appropriateness of the case scenarios used while teaching "advanced communication skills," 95% of the participants agreed (24.4% strongly agreed & 70.6% agreed).Role plays were conducted using standardized patients while teaching the participants about "advanced communication," and the participants' perceptions were recorded to determine the sufficiency of those dedicated time slots for effective teaching. A total of 84.88% of students had an agreement (20.17% strongly agree & 64.71% agree) upon the sufficiency of allocated time for learning through role plays. About 85.15% had an agreement (21.85% strongly agree & 63.03% agree) on the achievement of learning objectives. A majority (97.6%) agreed (31.1% strongly agree & 66.5% agree) that this TLM should be used routinely for advanced communication skills (Table 1). The satisfaction

index was above 75 for all the items, as shown in Table 1, and this indicates the acceptability of this teaching-learning method for advanced communication skills.

On probing the participants about the most appealing moment ("Aha" moment) during the entire teaching & learning session, it was found that mock press conferences appealed the most (42%), followed by a role play on breaking bad news (35%).

Self-efficacy scores of students in knowledge, confidence, communication, team building & empathy demonstration showed a significant increase in scores after the training compared to scores before the training. Weighted averages before and after were compared and found to be statistically significant (Table 2).

The themes generated for the open-ended question, mentioning two points that the participants liked most about the sessions, were faculty facilitation, feedback, team interaction, high fidelity, and appropriate learning methods. The themes generated for the open-ended question on mentioning suggestions for improvement of the sessions included giving more time for the session and video recording of the session (Table 3).

Some of the verbatims recorded during the focus group discussion with the facilitators were:

"Amazingly, the quintessence of the learning was well absorbed by the students, and it was a wonderful experience to see them applying it in their communication with standardized patients during the role play."

"The students showed an extraordinary enthusiasm in dealing with advanced communication related to print & electronic media, which was highly appreciable."

"The sessions provided a real experience because we had standardized patients during the role play."

"In the debriefing sessions, students had an opportunity to clarify their doubts and fine-tune their skills."

Table 1: Perception of the participants towards the teaching learning method (TLM)

S No.	Item	1* No. (%)	2* No. (%)	3* No. (%)	4* No. (%)	5* No. (%)	S.I
1	You feel comfortable learning with this method	0 (0)	1 (0.8)	4 (3.4)	81 (68.1)	33 (27.7)	84.53
2	The case scenarios designed were aptly suited to teach "advanced communication"	0 (0)	1 (0.8)	5 (4.2)	84 (70.6)	29 (24.4)	83.69
3	The time allotted for the role plays was sufficient to depict the scenario effectively	1 (0.8)	3 (2.5)	14 (11.8)	77 (64.7)	24 (20.2)	80.16
4	Learning objective is achieved	2 (1.6)	5 (4.2)	11 (9.2)	75 (63.1)	26 (21.9)	79.83
5	This TLM should be used routinely for advanced communication skills.	0 (0)	1 (0.8)	2 (1.6)	79 (66.5)	37 (31.1)	85.54

1*-Strongly disagree; 2*-Disagree; 3*-Neutral; 4*-Agree; 5*-Strongly agree

Table 2: Self-efficacy scores of students in "advanced communication" before & after the session

Attributes	Ratings	Before Training		After Training		p-value
		Frequency	%	Frequency	%	
Knowledge	0	19	16	23	19.3	0.0007
	1	52	43.7	46	38.7	
	2	25	21	13	10.9	
	3	13	10.9	24	20.2	
	4	5	4.2	13	10.9	
	5	5	4.2	23	19.3	
Confidence	0	31	26.1	2	1.7	0.0003
	1	45	37.8	26	21.8	
	2	20	16.8	43	36.1	
	3	14	11.8	10	8.4	
	4	7	5.9	30	25.2	
	5	2	1.7	8	6.7	
Communication	0	20	16.8	2	1.7	0.0001
	1	47	39.5	22	18.5	
	2	30	25.2	45	37.8	
	3	13	10.9	13	10.9	
	4	7	5.9	28	23.5	
	5	2	1.7	9	7.6	
Team building	0	27	22.7	21	17.6	0.0001
	1	37	31.1	48	40.3	
	2	30	25.2	14	11.8	
	3	14	11.8	21	17.6	
	4	9	7.6	15	12.6	
	5	2	1.7	21	17.6	
Demonstrating empathy	0	16	13.4	24	20.2	0.0004
	1	50	42	50	42	
	2	29	24.4	7	5.9	
	3	12	10.1	23	19.3	
	4	8	6.7	15	12.6	
	5	4	3.4	24	20.2	

Table 3: Themes generated from the analysis of students' responses to open-ended questions.

Q. No.	Open ended question	Themes generated	Verbatim
1	Mention any two points that you liked the most about the sessions	<ul style="list-style-type: none"> a. Facilitation by faculty. b. Feedback c. Interaction in teams d. High fidelity e. Appropriate learning method 	<ul style="list-style-type: none"> a. "Guidance and support by the faculty made the sessions easy and fruitful" b. The feedback given by the facilitators helped us to understand our mistakes and improve ourselves. c. Interaction was good with each other d. We got to know each other e. Collaborating with my classmates was truly enjoying f. The session gave a feeling like we are in real profession of doctors g. Situations enacted during role play reflected real life scenarios h. Standardized patients appeared so real and we couldn't make out until we were told that they were not real patients. i. Developed the ability to work in a team." j. I could learn how to communicate with patients. And show empathy towards patients. k. Could learn how to communicate with the media and about written communication. l. I'm more confident to deal with similar scenarios in real life
2	Mention 2 suggestions for improvement of the sessions	<ul style="list-style-type: none"> a. Giving more time for the session b. Video recording 	<ul style="list-style-type: none"> a. Allocate more time for the activity b. Give some more time for performance c. Video recording of the role plays may be enabled and shared with the students for self-assessment

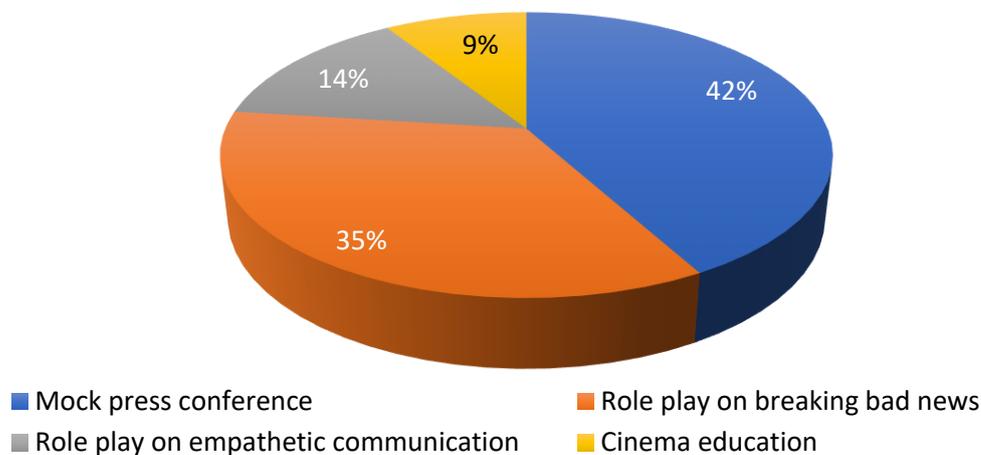


Fig 1: What was the "aha" moment?

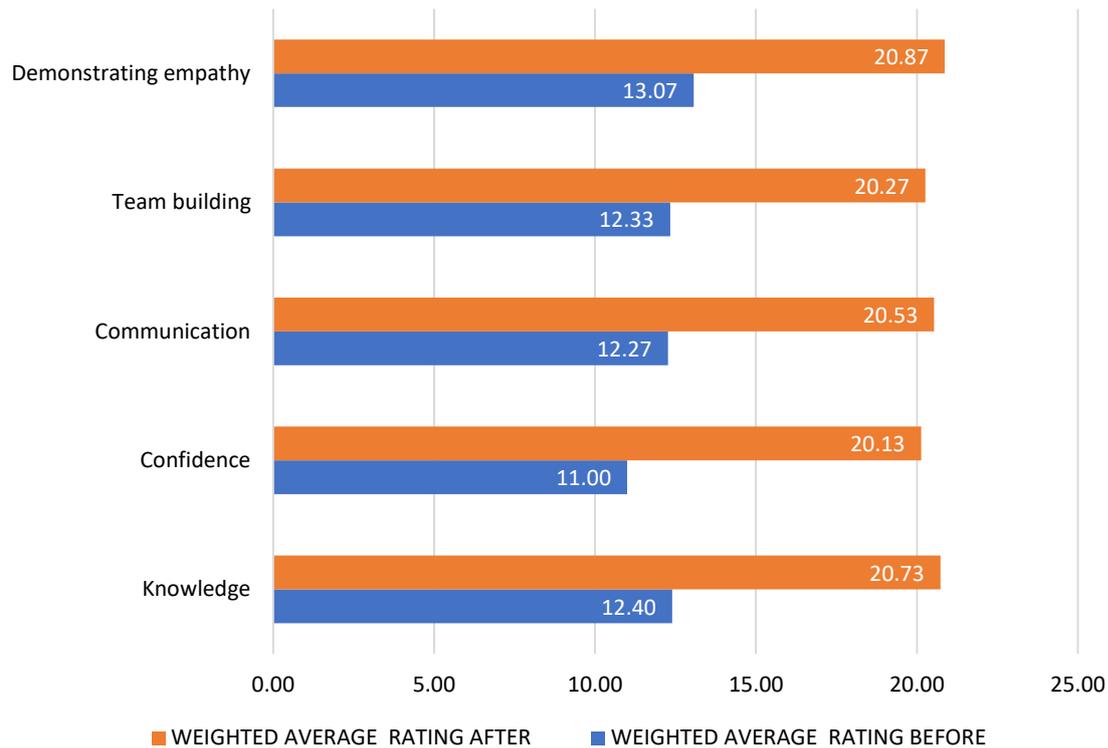


Fig. - 2: Comparison of weighted average rating of before and after

Discussion:

A similar study conducted by Rahul Tanwani, Rita Chandki, Ajay Joshi et al. on "Perception and attitude of medical students towards communication skills lab and teaching module" showed that 96.43% of students opined that the training had improved their communication with the patients. They also felt that such training should be integrated into the regular teaching curriculum of our country.[9]

In another study on "Perceptual feedback of undergraduate medical students on the effectiveness of AETCOM (Attitude, Ethics, and Communication) session in foundation course" conducted by A. T Sathiyavinotha, A. Vijayamathy, S. Velaru, et al., the feedback of the overall AETCOM session was considered as good by 50%.[10]

Jyoti Nath Modi, Anshu, Jugesh Chhatwal, Piyush Gupta & Tejinder Singh, in their study on "Teaching and assessing communication skills in medical undergraduate training," concluded that good communication skills are essential for an optimal doctor-patient relationship and also contribute to an improved health outcome.[11]

The majority of the students perceived positively about simulation-based teaching using standardized patients for advanced communication skills in the present study. This is also reported by Isaksson J, Krabbe J, Ramklint M, wherein the students stated that the training with SPs enabled them to practice challenging consultations in a safer and more patient-centered way and to manage their feelings when exposed to negative patient reactions, giving them new learning experiences.[12] These reflections correspond well to models of adult learning where the focus should be on creating a safe and active environment and where the transformative learning process should include emotional elements, encourage critical self-examination of the situation causing the discomfort, and develop new ways of thinking about and managing the situation [13,14].Corroborating with this, some students mentioned that, as a result of feedback and discussions during the simulation exercise, some of the students implemented the learning immediately within the consultations. At the same time, some described having better conversations and a better ability to develop relationships with patients later after the training.[12]

Simulated patients / Standardized patients have been recommended for training communication

skills in case simulations [15] and are now often involved in education at medical schools [16–18]. In the recent past, simulation methodologies with SPs have been used extensively in medical education and have been suggested to be a key determinant of a student's success in learning, with safe, active, and collaborative learning environments regarded as crucial [13].

The findings in the present study were supported by several studies demonstrating that the simulated patients (SPs) based objective structured clinical examination (OSCE) approach is a feasible, reliable, and valid approach for communication skills training in health science education.[19-21] SPs are commonly used in OSCE to teach or assess medical students' CSs.[22]

The research conducted in high and middle-income countries unswervingly confirms clear links between the communication skills of the physician and the relief of patient symptoms, adherence to medical advice, and overall satisfaction with care.[23-25] Thus, this study adds that a module-based structured teaching program on advanced communication among medical students is perceived to improve their knowledge & communication, bring confidence in dealing with communication difficulties, be empathetic, and help in team building. Using standardized patients during the training on "advanced communication" helps bring students a good teaching-learning experience.

Conclusions and Recommendations

The simulation-based structured teaching program on 'advanced communication' is acceptable to the two major stakeholders, students (learners) and faculty (teachers). It is feasible within the given context, the most commonly prevailing scenario in teaching medical institutions in India and other countries. Hence, this training on advanced communication skills can be implemented and practiced in similar medical ecosystems. More such research can be conducted to investigate its applicability in diverse scenarios and other allied health professional disciplines, as communication skills are the heart of the health care profession.

References:

1. Supe A. Graduate Medical Education Regulations 2019: Competency-driven contextual curriculum. *The National Medical Journal of India*. 2020 Sep;32(5):257–61.
2. <https://www.studocu.com/in/n/8668034?sid=01694582954> (Accessed 13.09.2023)

3. Bhagat PR, Prajapati KM, Bhatt RB, Prajapati VK, Dureja R, Tank GP. Development and introduction of a communication skills module for postgraduate students of ophthalmology. *Indian J Ophthalmol*. 2019 Nov;67(11):1810-1815. doi: 10.4103/ijo.IJO_366_19. PMID: 31638038; PMCID: PMC 6836600.
4. Lal S, Sehgal P. Integration of Attitude, Ethics, and Communication Competencies into Competency-based UG Curriculum. *Indian J Community Med*. 2022 Jan-Mar;47(1):4-7. doi: 10.4103/ijcm.ijcm_1022_21. Epub 2022 Mar 16. PMID: 35368474; PMCID: PMC8971870.
5. Silverman J. Teaching clinical communication: A mainstream activity or just a minority sport? *Patient Education and Counseling*. 2009;76(3):361–7. doi:10.1016/j.pec.2009.06.011
6. Raurell-Torredà M., Llauredó-Serra M., Lamoglia-Puig M., Rifà-Ros R., Díaz-Agea J.L., García-Mayor S., Romero-Collado A. Standardized language systems for the design of high-fidelity simulation scenarios: A Delphi study. *Nurse Educ Today*. 2020;86:104319. doi: 10.1016/j.nedt.2019.104319.
7. Hagerty RG1, Butow PN, Ellis PM, Lobb EA, Pendlebury SC, Leigh N, MacLeod C, Tattersall MH. Communicating with realism and hope: incurable cancer patients' views on the disclosure of prognosis. *Journal of Clinical Oncology*. 2005 Feb 20;23(6):1278-88.
8. Escribano S, Cabañero-Martínez MJ, Fernández-Alcántara M, García-Sanjuán S, Montoya-Juárez R, Juliá-Sanchis R. Efficacy of a Standardised Patient Simulation Programme for Chronicity and End-of-Life Care Training in Undergraduate Nursing Students. *Int J Environ Res Public Health*. 2021 Nov 6;18(21):11673. doi: 10.3390/ijerph 182111673. PMID: 34770187; PMCID: PMC8583232.
9. Tanwani R, Chandki R, Joshi A, Arora VK, Nyati P, Sutay S. Perception and Attitude of Medical Students towards Communication Skills Lab and Teaching Module. *J Clin Diagn Res*. 2017 Jun;11(6): JC12-JC14. doi: 10.7860/JCDR/2017/24858.10120. Epub

- 2017 Jun 1.PMID: 28764200; PMCID: PMC5535393.
10. Vinotha DrATS.Perceptual Feedback of Undergraduate Medical Students on Effectiveness of AETCOM (Attitude, Ethics and Communication) Session in Foundation Course. *International Journal of Multidisciplinary Research and Analysis*.2021 Nov 18;04(11).
 11. Modi JN, Anshu -, Chhatwal J, Gupta P, Singh T. Teaching and Assessing Communication Skills in Medical Undergraduate Training. *Indian Pediatr*. 2016 Jun 8;53(6):497-504. doi: 10.1007/s13312-016-0879-z. PMID: 27376604.
 12. Isaksson J, Krabbe J, Ramklint M. Medical students' experiences of working with simulated patients in challenging communication training. *Adv Simul (Lond)*.2022 Oct 10;7(1):32. doi: 10.1186/s41077-022-00230-3.PMID: 36217210; PMCID: PMC9552443.
 13. Abdool PS, Nirula L, Bonato S, et al. Simulation in undergraduate psychiatry: exploring the depth of learner engagement. *Acad Psychiatry*.2017; 41:251–261. doi: 10.1007/s40596-016-0633-9.[PubMed] [CrossRef] [Google Scholar]
 14. Clapper TC. Beyond Knowles: what those conducting simulation need to know about adult learning theory. *Clin Simul Nurs*. 2010;6(1):e7–e14. doi: 10.1016/j.ecns.2009.07.003. [CrossRef] [Google Scholar]
 15. Rosenbaum ME, Ferguson KJ, Lobas JG. Teaching medical students and residents skills for delivering bad news: a review of strategies. *Acad Med*. 2004;79(2):107–117. doi: 10.1097/00001888-200402000-00002. [PubMed] [CrossRef] [Google Scholar]
 16. Dave S. Simulation in psychiatric teaching. *Adv Psychiatr Treat*.2012;18(4):292–298.doi: 10.1192/apt.bp.110.008482.[CrossRef] [Google Scholar] [Ref list]
 17. Velásquez ST, Ferguson D, Lemke KC, et al. Interprofessional communication in medical simulation: findings from a scoping review and implications for academic medicine.*BMC Med Educ*. 2022;22(1):204. doi: 10.1186/s12909-022-03226-9. [PMC free article] [PubMed]
 18. Lewis KL, Bohnert CA, Gammon WL, et al. The Association of standardized patient educators (ASPE) standards of best practice (SOBP) *Adv Simul*.2017;2:10.doi: 10.1186/s41077-017-0043-4.[PMC free article] [PubMed]
 19. Bolstad AL, Xu Y, Shen JJ, Covelli M, Torpey M. Reliability of standardized patients used in a communication study on international nurses in the United States of America. *Nurs Health Sci*. 2012;14(1):67–73.[PubMed] [Google Scholar]
 20. Ebbert D, Connors H. Standardized patient experiences: evaluation of clinical performance and nurse practitioner student satisfaction. *Nurs Educ Perspect*. 2004;25:12–15.[PubMed] [Google Scholar]
 21. Vu N, Barrows H. Use of standardized patients in clinical assessments: recent developments and measurement findings.*Educ Res*. 1994;23:23–30.[Google Scholar]
 22. Luebert R, Popkess A.The influence of teaching method on performance of suicide assessment in baccalaureate nursing students. *J Am Psychiatr Nurse Assoc*. 2015;21(2):126–133.doi: 10.1177/1078390315580096 [PubMed]
 23. Lane SC. *Rollnick/Patient Education and Counseling*. Elsevier; 2007:13–20.[PubMed] [Google Scholar]
 24. Boolean C, The five-star doctor: an asset to healthcare reform.<http://www.Who.int/entimy/hrt/en/hrdj>.
 25. Kripalani S, Bussey-Jones J, Katz MG, Genao IA prescription for cultural competence in medical education. *J Gen Intern Med*. 2006;21:1116–1120.[PMC free article] [PubMed] [Google Scholar]

Elective Choices by Undergraduate Medical Students: What do they tell about the future Physician Workforce. A cross sectional study.

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Abstract:

Context: Graduate Medical Educations Regulations 2019 has tried to create, in the MBBS Curriculum itself, opportunities for the Students to get individualized educational experiences known as Electives. **Aims:** To ascertain the choice of Electives made by the students and to determine the factors that influence the Students' choice of Electives. **Settings and Design:** Cross-sectional questionnaire based study at the time of allotment of Electives to MBBS Phase 3 Part 1 Students. **Material and Methods:** Online Google based self administered Questionnaire in English language was distributed to all the 100 students of MBBS Phase 3 Part 1 Students. The Questionnaire consisted of Electives Choices from Pre/Para clinical (Block 1) and Clinical Electives (Block 2). The Students were asked to state their 4 preferences in each Block. **Statistical Analysis used:** Frequencies and percentages of all variables were computed. **Results:** All the 100 Students of MBBS 2019 Batch participated in the study. The Students were in the age group 20-23 years with 49 Males and 51 Females. Among the Electives offered in Pre/Para Clinicals, Pathology was the most sought for and Electives offered by Anatomy and Physiology were chosen the least. Among the Clinical Electives, Medicine and Allied were the most opted ones followed by Surgery. Pediatrics and Psychiatry were the categories that turned out to be the least sought for. No student opted for Electives in Community Medicine. **Conclusion:** Understanding the thought process, interests and aspirations of our Students (the future workforce), and adapting accordingly is very essential. **Key messages:** Choice of Electives during the Undergraduate years of Medical Curriculum provide important insights into the thought process

and future aspirations of Healthcare Workforce. This gives a window of opportunity to the Policy Makers, the Institutions and the Medical Teachers to guide the students appropriately for the benefit of the society.

Introduction:

The new MBBS program formulated after the changes in Graduate Medical Education Regulations 2019 aims to create a Competent Physician of first contact. Along with this, Medical students and interns, also need to explore learning beyond Primary Care in order to fulfil their self interests and to be globally relevant. The whole of the academic format of Medical Education is more or less directive in approach with information overload leaving very little room and time for self exploration. GMER 2019 has tried to create, in the MBBS Curriculum itself, opportunities for the Students to get individualized educational experiences known as Electives (1,2,3)

Electives, which have been an integral part of International Medical curriculum, usually refer to a period during Undergraduate Training in which there is a significant element of student choice involved. (4) In fact, they are learning experiences that are aimed to provide the learner with an opportunity to gain immersive experience of a career stream, discipline or research project. (1)

To achieve this aim, it is required that the Institutions provide enabling environments to students for better learning. An insight into the choice of Electives students make can assist the Institutions in better planning and execution of the Electives in future.

Aim and Objectives:

1. To ascertain the choice of Electives made by the students.
2. To determine the factors that influence the Students' choice of Electives.

Materials and Methods:

Study Design and Participants Cross-sectional questionnaire based study Target population : 100 students of MBBS Phase 3 Part 1 Students of 2019 Batch Online google based self administered Questionnaire in English language was distributed to all the 100 students. Participant consent was sought before beginning the survey.

Questionnaire After obtaining Ethical clearance from Institutional Ethics Committee, link to the online Google Forms based questionnaire was shared via the official class WhatsApp group and via official email from the Principal's office. The questionnaire comprised 2 sections: **The first section** included choices of Electives, both in Block A (Pre/ Para Clinical) and Block B(Clinical) and the Marks (in Percentage) scored by the Students in Phase 2 Professional Exams. **The second section** covered the students' reasons for choosing these programs.

Methodology The Department of Medical Education of SRMS IMS conducted a sensitization program for the conduct of Electives in the

Institute which was attended by the members of Department of Medical Education, Curriculum Committee members, Administrative Officers, Departmental Heads and the Undergraduate Teaching Incharges of the respective Departments. After this all the Departments were requested to submit a list of possible Electives that could be conducted in the respective Departments.

After this, the above mentioned Questionnaire was created. The survey was distributed through an official email id of the Principal's Office. Students were invited to participate via email. Each Student was instructed to state 4 preferences regarding the choice of electives both in Pre/Para Clinicals and in Clinicals separately. To decide the order of allotment of Electives, Merit list of MBBS Phase 2 Professional Exam was used. Non-responders were sent up to 5 follow-up emails.

Data Analysis:

For data analysis, Frequencies and percentages of all variables were computed.

Result:

All the 100 Students of MBBS 2019 Batch participated in the study. The Students were in the age group 20-23 years with 49 Males and 51 Females.

Table 1 Electives offered in Block 1 (Pre/Para Clinicals)

Disciplines (Block A)	Elective Topics offered	Out of 400 choices		
		Total	Males	Females
Anatomy	Cadaveric Surgery	18 (3.25%)	10	8
	Histology			
Physiology	Research in Physiology	8 (2%)	6	2
Biochemistry	Clinical Chemistry	22 (5.5%)	9	13
	Basic Biomedical Research			
Pathology	Hematology	114 (28.5%)	52	56
	Diagnostic Cytopathology			
Microbiology	Virology	70 (17.5%)	21	37
	Tuberculosis			
	Tinea infection			
	Sexually Transmitted Infections			
Forensic Medicine	Clinical Toxicology	87 (21.75%)	46	41
	Medicolegal Documentation			
Pharmacology	Drug Utilization Analysis	86 (21.5%)	41	45
	Pharmacogenomics			
	Pharmacokinetics			
	Pharmacovigilance			

Among the Electives offered in Block 1, Pathology was the most sought for and Electives offered by Anatomy and Physiology were chosen the least.

Table 2: Electives offered in Block 2 (Clinical):

Disciplines	Superspeciality Electives offered	Out of 400 choices				
		Total	Males	Females		
Medicine	Cardiology	33 (26.6%)	22	11	124	37%
	Diabetology	31 (25%)	14	17		
	Endocrinology	37 (29.8%)	15	22		
	GI Endoscopy	23 (18.5%)	10	13		
	Nephrology	24 (19.3%)	16	8		
Surgery	Cardiac Surgery	18 (18.3%)	16	2	98	24.5%
	Plastic Surgery	9 (9.18%)	1	8		
	Pediatric Surgery	3 (3.06%)	1	2		
	Uro Surgery	1 (1.02%)	1	0		
	Onco Surgery	23 (23.46%)	11	12		
	Minimal Invasive Surgery	31(31.6%)	17	14		
	NeuroSurgery	13 (13.26%)	6	7		
OBG	IVF	21	2	19	21	5.25%
Pediatrics	Neonatology	3	0	3	6	1.5%
	Pediatric Intensive Care	2	0	2		
	Pediatric Hematology	0	0	0		
	Pediatric Neurology	0	0	0		
	Adolescent Medicine	0	0	0		
	Research in Pediatrics	0	0	0		
	Immunization	1	0	1		
Anaesthesia	Pain management	13	6	7	21	5.25%
	Spinal anaesthesia	8	4	4		
Community Medicine	Community Research	0	0	0	0	0%
	Epidemiological studies	0	0	0		
	IMNCI	0	0	0		
	School Health Program	0	0	0		
Dermatology	Community Dermatology	0	0	0	17	4.25%
	Leprosy	2	1	1		
	Vitiligo	7	3	4		
	Superficial Dermatophytosis	8	3	5		
Psychiatry		2	0	2		0.5%
Transfusion Medicine		18	6	12		4.5%
Radiation Oncology		13	8	5		3.25%
Emergency Medicine		34	19	15		8.5%
Emergency Surgery		18	12	5		4.5%

The most sought for category of Electives in Block 2 was Internal Medicine that accounted for 37% of all choices made. The Electives offered were in the subspecialties of Diabetology (25%) , Endocrinology(29.8%) , GI Endoscopy (18.5%) and 2 superspecialities Cardiology (26.6%) and Nephrology (19.3%) . The next favourite category of Electives was offered by General Surgery that accounted for 24.5% of all choices made . Among the Electives offered , the most sought for were Minimal invasive Surgery and Onco Surgery followed by Cardiac Surgery and Neuro Surgery. Pediatrics and Psychiatry were the categories that turned out to be the least sought for in Block 2. No student opted for Electives in Community Medicine. No significant difference was found among the Males and Females except for in OBG

and Pediatrics.

Academic pursuit was the basic driving force for selecting the Elective with desire to gain experience for future career path (80.2%) as the most common reason stated for selecting the Elective of choice. Exploring their self interest areas (31.7%), exploring a new area out of curiosity (18.8%), prestige associated with the Speciality(8.9%), working environment in the concerned Speciality (15.8%) were also the reasons stated for the choice of Electives.

Family or social influence was the least common reason stated.

Table 3: Reason for selecting the Elective:

Intrinsic Factors			
1.	Academic Pursuit	a)To fill the knowledge gap	40 (39.6%)
		b) To gain experience for future career path	81 (80.2%)
		c)The choice pertains to self interest area	32 (31.7%)
2.	Personal needs	a) To complete attendance	2 (2%)
		b) Little effort required	1 (1%)
		c) Time efficient, leaving window for extracurricular activities	7 (6.9%)
		d) Prestigious area	9 (8.9%)
		e) To try out	19 (18.8%)
		f) Too early to decide	7 (6.9%)
3.	Personal experience/ Incidents like (past illness of yourself/ parents/ siblings/ relatives)		10 (9.9%)
Extrinsic Factors			
1.	Family	a) In alignment with the Parents' choice	1 (1%)
		b) Parent's Profession	2 (2%)
2.	Institute	a) better work environment in the Institute in the chosen speciality	16 (15.8%)
3.	Social	a) Any influence of your Role Model(Personality/ Person)	1 (1%)
		b) Influence of Media (TV Serials/ Web Series/ Netflix/ etc)	0

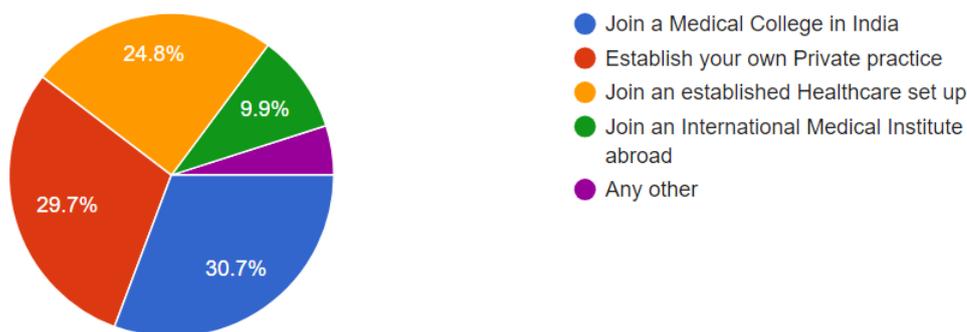


Figure 1 :Future Plans of the Students

97% Students wanted to pursue Postgraduation after internship. As for their future plans, nearly 54.5 % Students wanted to either establish their Private practise or join an established Healthcare set up after that . 30.7% planned to join a Medical College in future and nearly 10% planned to go abroad.

Discussion:

Medical electives have been globally perceived as an important part of learning within contemporary medical education and found to have multiple benefits. They not only provide the opportunity to gain experience in diverse health-care settings, but also provide direct exposure to alternative models of health care delivery and the opportunities for personal and professional development.(5) From this perspective, Electives have the capability to bring about a change in Medical Students from novice dreamers into technically sound, socially responsible, culturally competent graduates well positioned to respond to contemporary health care challenges.(5)

But to extract all these benefits , the most essential element is the choice that students make.

Worldwide various studies (6,7) have tried to study students' preferences of electives with varied results. In the present study, Electives were provided both in Pre/Para Clinicals and in Clinical subjects as per National Medical Commission of India guidelines.

The most preferred specialities for Electives in Pre/Para Clinicals (Basic Sciences) (Table 1) were Pathology (Hematology, Diagnostic Cytopathology) followed by Pharmacology and Forensic Medicine (Clinical Toxicology, Medicolegal Documentation). The least opted categories were Anatomy and Physiology .In Clinical Electives (Table 2), Medicine Super-specialities (Cardiology, Nephrology, Endocrinology) & Internal Medicine sub-speciality (Diabetology) were the top choices. Surgical specialities were the next with Minimal Invasive Surgery and Onco-

Surgery as the most opted ones. Specialities like Pediatrics, Psychiatry were the least opted ones. No student opted for Community Medicine.

Pre/Para Clinicals rolled out two and Clinicals rolled out one Research Elective. Where two percentage (2%) students opted for Research Elective in Basic Sciences, none opted for Research in Clinicals.

A desire to gain experience for future career path (80.2%) was the most common reason stated for selecting the Elective of choice in the present study. (Table 3) Studies conducted to understand the reasons for Elective choices made by Students has associated 3 basic attributes with Student choices i.e. perceived difficulty level of the Elective, perceived interest of the student and future career skills. (6) As regards the Future plans of Students (Figure 1) nearly 55 % of the students stated that they shall either go for Private Practise or join an already established Healthcare unit.

Multiple available literature (8,9,10,22,23) suggest that these choices of Electives at the Undergraduate level are an indirect reflection to the career choices students make in future.

The choice of electives, in the present study, reveal some very interesting paradoxes. The subspecialities and superspecialities of Medicine were the most opted Clinical electives but the subject dealing with the scientific and cognitive basis of treating the patients i.e. Physiology was the least opted Basic Science elective.Out of all the Clinical Electives, Surgical Electives were the second most opted ones. For choosing Surgery and allied as a career option, knowledge of Anatomy needs to be optimum but Anatomy was the least

chosen elective in Basic Sciences. Clinician Scientists are known to be central to the basic discoveries in the field of Medicine, the clinical translation of such discoveries and the biotechnology advances that fuel the growth of the life-sciences industry.(11) Still no student opted for Clinical Research Elective. Lot of choices were there for Forensic Medicine giving an impression regarding the awareness of Medical students of the importance of themes related to Forensic Medicine. Available literature (12,13,14) also shares this awareness regarding the importance and also adds to the contrast that worldwide Forensic Medicine is the least opted speciality for future career . Nearly half of the Students stated to go into Private practice in future but Community Medicine(having the elements of Primary care and Family oriented care) that forms the foundation of successful private practice in initial years was not opted by any student.

An insight into the Elective choices that students make reveal lot of valuable information.

- (a) The choices might act as a surrogate for what medical students consider to be important in their learning and what they choose to prioritise. For instance, a low selection of Anatomy and Physiology might be the pointer that Students are not able to comprehend the relevance of Basic Sciences in Clinical Practise.(15) Not selecting Clinical Research Electives might imply that the concept of Clinical Scientists is perhaps non-existent among Undergraduate Students.(16,17) Moreover Clinical medicine and practical skills are given the priority over research activities in Medical education curriculum . Although research activities in the form of ICMR STS projects are there but hardly any weightage is given to them over numerous conflicting priorities in Undergraduate Curriculum. Research-associated topics are generally considered additional issues and left to student's personal interest. (18) Thus, it is not surprising that a career in Medical Research is hardly thought of at Undergraduate level. Elective choices with well-remunerated procedure-oriented specialties that allowed for private practice forming the major chunk of Elective choices reveal that Undergraduates seem to be very well aware of how much lucrative and financially viable are the specialties while making these choices. (19) Medical specialty choice emerges from the matching of perceptions of specialty characteristics with personal and social needs and that in turn depends on student values.
- (b) This may also give a very important insight into the trends seen in the society regarding the future choices of Medical undergraduates .Some specialties face an overload of Post Graduates while others do not get selected at all leading to maldistribution of Physicians in different specialties. It might be that the Medical curriculum by and large does not expose Undergraduate students to the wide variety of specialties in depth. Therefore, initial student preference for specialty training usually does not align with the health care workforce demands and with available residency vacancies . As a result, specialties may either experience a shortage of residency applicants' primary choices, while the competition for other more popular specialties can be fierce.(20)
- (c) This might also act as a period where insight into the decision process might help healthcare leaders ascertain whether, when, and how to intervene and attempt to influence students' decisions. For instance, high demand for Surgical Electives and low demand for Anatomy Electives implies that a need exists to develop a Clinically Correlated Anatomy Program that will maximize the learning experience of the students, improve their performance and allow them to make more informed career choices.(21) This information should be important for healthcare system leaders since specialty selection determines the future composition of the physician workforce.(18)
- (d) Nonetheless this can definitely assist a University in appropriate Curriculum Design, proper demand management and in the allocation of space and teaching resources.(24) For instance, even if the students choose not to pursue careers in medical research, they can be taught in their day to day classrooms to perceive that research activities at this level have other benefits including the development of critical appraisal, information literacy, and critical thinking skills; and the opportunity to select an area of and form contacts for future success. Some interventions like planning the roll out of Electives parallel to the submission of ICMR STS projects can be done. Similar to the concept of Early

Clinical Exposure in MBBS Phase 1, a concept of Late Basic Science Exposure can also be introduced in MBBS Phase 3 to reinforce the importance of Pre Clinical disciplines and Research in survival of Clinical disciplines.

Rationale of the Study:

The findings of this study may be used as a base in developing and implementing better Electives in accordance with the Students' interests, and Community needs. Also, this can act as a starting point for initiating and implementing improvement in the existing electives.

Limitations of the study:

This study has been done in Private Medical College of India. The profile of students and also the student values might differ from the High Ranking students getting selected in Government Medical Colleges. Thus the findings cannot be totally accepted to represent a generalization of the thought process of Undergraduate Medical Students of India.

Secondly this is a cross sectional study representing Students' interest at one point of time i.e. before they begin their final year of MBBS curriculum. Students' interest and thereby their choices have been known to change with time and increasing experience.

Conclusion:

The healthcare delivery systems have to adapt to the needs and expectations of the society . For attaining this objective successfully, new methodologies have to be introduced to prepare the workforce who are meant to deliver. But for the success of these methodologies , understanding the thought process, interests and aspirations of our Students(the future workforce), and adapting accordingly is very very essential .

References:

1. Medical Council of India. Electives for the Undergraduate Medical Education Training Program, 2020: p 1- 30 [Electives-Module-20-05-2020.pdf \(nmc.org.in\)](https://www.nmc.org.in/2020/05/2020-05-2020.pdf)
2. Mahajan R, Singh T. Electives in undergraduate health professions training: Opportunities and utility. *Med J Armed Forces India.* 2021 Feb;77(Suppl 1):S12-S15. doi: 10.1016/j.mjafi.2020.12.005. Epub 2021 Feb 2

3. Mathur M, Mathur N, Verma A, Kaur M, Patyal A. Electives in Indian medical education: An opportunity to seize. *Adesh Univ J Med Sci Res*, doi: 10.25259/AUJMSR_42_2022
4. Lumb A, Murdoch-Eaton D. Electives in undergraduate medical education: AMEE Guide No. 88. *Med Teach.* 2014;36(7):557–72. <https://doi.org/10.3109/0142159X.2014.87.0142159X>.
5. McCool, J., Curtis, E., MacCormick, A.D. *et al.* Medical electives: exploring the determinants of placement and access variables between 2010 and 2016 at the University of Auckland. *BMC Med Educ* 19, 398 (2019). <https://doi.org/10.1186/s12909-019-1784-7>
6. Ting DH, Lee CK. Understanding Students' Choice of Electives and its Implications. *Stud High Educ.* 2011;37(3):309–25.
7. 0. Daly C, Last J. An analysis of free-choice electives in an undergraduate medical degree. *BMC Med Educ.* 2017;17(1):113. <https://doi.org/10.1186/s12909-017-0955-7>.
8. Agarwal A, Wong S, Sarfaty S, Devaiah A, Hirsch AE. Elective courses for medical students during the preclinical curriculum: a systematic review and evaluation. *Med Educ Online* 2015;20(1). <https://doi.org/10.3402/meo.v20.26615>
9. Al-Taher, R., Al-Ani, R., Al-Ani, A. *et al.* The clinical elective course and its effects on medical students and graduates of Jordanian medical schools. *BMC Med Educ* 22, 716 (2022). <https://doi.org/10.1186/s12909-022-03779-9>
10. van den Broek W, Wijnen-Meijer M, Ten Cate O, van Dijk M. Medical students' preparation for the transition to postgraduate training through final year elective rotations. *GMS J Med Educ.* 2017;34(5):Doc65. <https://doi.org/10.3205/zma001142>
11. Moraes DW, Jotz M, Menegazzo WR, Menegazzo MS, Veloso S, Machry MC, Costanzi M, Pellanda LC. Interest in research among medical students: Challenges for the undergraduate education. *Revista da Associação Médica Brasileira.* 2016;62:652-8.

12. Jadav JC, Patel BN, Tandon RN. Knowledge and attitude of medical students on forensic autopsy in Ahmedabad city. *Journal of Indian Academy of Forensic Medicine*. 2013;35(1):26-8.
13. Alawad AA, Khan WS, Abdelrazig YM, Elzain YI, Khalil HO, Ahmed OB, Adam OA. Factors considered by undergraduate medical students when selecting specialty of their future careers. *Pan African Medical Journal*. 2015;20(1).
14. Ibrahim IA, Soliman SS, Alzahrani HS. Awareness of medical students toward forensic medicine at Albaha University medical college, Saudi Arabia. *J Pak Med Assoc*. 2019 Dec 1;69(12):1896-9.
15. Lynch C, Grant T, McLoughlin P, Last J. The Relevance of Basic Sciences in Undergraduate Medical Education. *Irish J Med Sci*. 2016;185(1):195–201.
16. Sobczuk P, Dzedziak J, Bierezowicz N, Kiziak M, Znajdek Z, Puchalska L, Mirowska-Guzel D, Cudnoch-Jędrzejewska A. Are medical students interested in research?—students’ attitudes towards research. *Annals of Medicine*. 2022 Dec 31;54(1):1538-47.
17. Noble K, Owens J, André F, Bakhoun SF, Loi S, Reinhardt HC, Tuveson D, Swanton C. Securing the future of the clinician-scientist. *Nature Cancer*. 2020 Feb;1(2):139-41.
18. Houlden RL, Raja JB, Collier CP, Clark AF, Waugh JM. Medical students’ perceptions of an undergraduate research elective. *Medical teacher*. 2004 Nov 1;26(7):659-61.
19. Weissman, C., Zisk-Rony, R.Y., Schroeder, J.E. *et al*. Medical specialty considerations by medical students early in their clinical experience. *Isr J Health Policy Res* 1, 13 (2012). <https://doi.org/10.1186/2045-4015-1-13>
20. Querido SJ, Vergouw D, Wigersma L, Batenburg RS, De Rond ME, Ten Cate OT. Dynamics of career choice among students in undergraduate medical courses. A BEME systematic review: BEME Guide No. 33. *Medical teacher*. 2016 Jan 2;38(1):18-29.
21. Haubert LM, Jones K, Moffatt-Bruce SD. Surgical clinical correlates in anatomy: Design and implementation of a first-year medical school program. *Anatomical Sciences Education*. 2009 Nov;2(6):265-72.
22. Sheu L, Goglin S, Collins S, Cornett P, Clemons S, O’Sullivan PS. How do clinical electives during the clerkship year influence career exploration? A Qualitative Study. *Teach Learn Med*, 2021. <https://doi.org/10.1080/10401334.2021.1891545>
23. Levailant M, Levailant L, Lerolle N, Vallet B, Hamel-Broza JF. Factors influencing medical students’ choice of specialization: A gender based systematic review. *EClinicalMedicine*. 2020 Nov 1;28.
24. Ramalho, A.R., Vieira-Marques, P.M., Magalhães-Alves, C. *et al*. Electives in the medical curriculum – an opportunity to achieve students’ satisfaction?. *BMC Med Educ* 20, 449 (2020). <https://doi.org/10.1186/s12909-020-02269-0>

Artificial Intelligence Tools for Academics in Medicine

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Introduction

With the advent of ChatGPT in December 2022, there has been increased interest in Artificial intelligence in the public and the academic community. Since then, many articles have discussed how ChatGPT can be used to write scientific papers, its reliability, etc. However, the field of Artificial Intelligence is not restricted to ChatGPT. Multiple applications can be used constructively in aiding researchers through the entire process of conducting research, from idea generation to methodology development, as well as conducting, analyzing, and disseminating research. In this article, I shall elaborate on a few that should be explored in detail.

Research Rabbit.

<https://www.researchrabbit.ai/>

It is a free tool for finding and organizing academic papers. It is an AI research assistant that searches and contains research papers in your field. It adds these articles to a collection, which can be shared with other researchers. It helps streamline the entire process and makes it easier to filter through the collection to get the articles you seek. You can do various actions such as explore an abstract, order publications by date, move papers across collections, automatically search preferred authors' works, suggest other authors for your field, and get updates for the search via email regularly. It allows for interactive visualizations to understand the literature better.

SciSpace

<https://typeset.io/>

SciSpace is a wonderful AI-powered tool to help us understand research papers. It explains and elaborates on most academic texts in simple words. It has tools such as Literature review, Copilot to read with AI, Citation generator,

paraphraser as well as an AI detector. Typeset is a platform built for research writing and collaboration that helps disseminate knowledge effectively. Academics can execute the research-creation workflow end-to-end, from writing and reviewing the document to formatting using Typeset. One of the key advantages of Typeset is the deeply integrated services beyond text and formatting that help researchers publish the best content possible. Built-in grammar correction improves the small issues that can change the narrative, and integrated plagiarism detection saves hours. The citation management system and support for various styles allow authors to automatically generate in-text citations and bibliographies and features for journal selection and recommendations.

Scite Assistant

<https://scite.ai/>

Scite is an AI-powered tool that extracts key information from papers and evaluates scientific articles via Smart Citations. The information includes research questions, methods, results, and conclusions. Smart Citations shows how a publication has been cited by giving the citation context long with a classification elaborating whether it provides supporting or contrasting evidence for the citation. Scite AI allows authors to search citation statements, create a dashboard, visualize research through interactive scite visualizations, in addition to reference checks, etc. Scite AI uses 1.2 billion Citation Statements and metadata from over 181 million full-text papers, which will keep increasing.

Consensus

<https://consensus.app/>

Consensus is an AI search engine that uses machine learning to find papers relevant to a specific research question despite not using the

same keywords. In addition, it provides summaries, allowing users to interpret their relevance to their topic of interest. For searching, direct questions can be used, inquiries related to the relationship between two concepts, and open-ended concepts. More than 200 scholarly peer-reviewed documents in medical sciences, social sciences, physics, and economics are included. The results cite actual studies and use large language models and GPT4 for the analysis. If you slide the Synthesize button in response to a question, you can see a Summary and the Consensus Meter. The Summary answers the query by analyzing multiple journal articles. The Consensus Meter analyzes the journal articles and gives you a Yes, No, or Possibly answer.

Elicit

<https://elicit.com/?workflow=table-of-papers>

Elicit is another AI research assistant that automates research workflows such as literature reviews. It will find relevant research papers without needing a perfect keyword match. It will then extract important information from these papers and summarize them in one sentence for the specific question. In addition, it can help in brainstorming, structure arguments, and help with text classification. Additional options such as Intervention, Outcomes Measured, and Number of Participants for each paper are also available. It can also be used to create presentations and posters.

ChatPDF

<https://www.chatpdf.com/>

ChatPDF is an AI tool that evaluates research papers uploaded by you. It can extract text, translate languages, and improve the accuracy of research. Users can interact with any PDF they upload without signing in, such as books, research papers, manuals, articles, and legal documents.

Semantic Scholar

<https://www.semanticscholar.org/about>

Semantic Scholar is a free, AI-driven search and discovery tool with open research resources launched in 2015. It indexes over 200 million academic papers from 50+ publisher partnerships, data providers, as well as web crawls. Semantic Scholar extracts meaning and identifies connections from within papers. It provides these insights to help academics to understand research. Semantic Scholar distributes open code and datasets and maintains a Semantic Scholar Open

Research Corpus (S2ORC), a general-purpose corpus for natural language processing and text mining of the scientific archives. It has TLDR (Too Long; Didn't Read) super summaries of manuscripts' main results and objectives using expert background knowledge and the most recent GPT3 NLP techniques.

ChatGPT {GPT - Generative Pre-trained Transformer}

<https://chat.openai.com/>

ChatGPT is an Open AI chatbot released in November 2022 that has a lock on updated knowledge at the end of September 2021, unlike many of the AI tools described previously which have access to the current Internet. However, it has a simple chat-like feature that allows us to ask simple and complex questions. It can assist in the initial stages of a literature review by suggesting key papers, authors, or trends, but requires a proper follow-up search. However, to fully exploit ChatGPT, one needs to understand the best prompts to get accurate information. It has severe limitations as it can often confidently provide false information, including generating inaccurate citations. The free version of ChatGPT-3.5 allows a maximum token limit of 4096 tokens, meaning around 800 to 1000 words can fit in a response.

BingAI

<https://www.bing.com/>

It is a conversational LLM 4.0+ search engine that builds on GPT4 technology and is connected to the Internet. It is best used with the Microsoft Edge browser. Three conversation styles can be used: More Creative, More Balanced, or More Precise.

Quillbot

<https://quillbot.com/>

Quillbot is an AI tool for writing and language enhancement. It is based on algorithms that paraphrase to avoid plagiarism, give alternate word choices, and offer various vocabulary suggestions and explanations. It has an Expand feature that helps with brainstorming by generating content from a few keywords or phrases during the writing process. It can also translate text into various languages to ensure accurate referencing.

Traditional Tools

Many traditional apps used in academic writing and research, such as Grammarly and Zotero, are adding AI capabilities to their arsenal, allowing us

to improve our productivity. Many browsers, such as Chrome, Firefox, etc, have extensions that work with AI tools, making it easier for researchers and academics to improve their work.

Limitations

There are several limitations to using AI in research.

1. **Data limitations:** AI requires large amounts of data to learn and improve performance. If the data is biased or incomplete, it can lead to inaccurate or unreliable results.
2. **Lack of transparency:** AI models can be complex and difficult to interpret, making it hard to understand how they arrive at their conclusions.
3. **Ethical concerns:** AI can raise ethical concerns about privacy, security, and bias.
4. **Cost:** Developing and implementing AI models can be expensive, requiring specialized hardware and software.
5. **Human expertise:** AI is not a substitute for human expertise and judgment. Researchers still need to interpret the results generated by AI models and make decisions based on their own knowledge and experience.
6. **Limitations of current technology:** Despite recent advances in AI, there are still many limitations to what it can do. For example, AI models may struggle with tasks that require common sense reasoning or creativity.

It's important to consider these limitations when using AI in research. While AI has the potential to revolutionize the way we do research, it's not a panacea and should be used judiciously.

Links to some Websites that have a list of AI tools.

<https://tamu.libguides.com/c.php?g=1289555>

<https://guides.library.ttu.edu/artificialintelligencetools/aitools>

<https://wordvice.ai/blog/8-best-ai-tools-for-researchers>

<https://www.futurepedia.io/ai-tools/research-assistant>

<https://www.analyticsinsight.net/top-10-ai-tools-for-academic-research/>

<https://intellipaat.com/blog/top-artificial-intelligence-tools/>

Conclusion

Many AI tools will continue to improve with time, and the interface for user interaction will change regularly. Also, most tools will have subscription features if one wants to utilize their full capability. It is important for academicians to learn about and use these tools appropriately to improve their productivity. Change is the only constant; those who fail to adapt will face oblivion and find themselves on the sidelines. It is important to learn and develop these skills so that the best interests of students and children are foremost among our leaders.

Current Dilemmas In Medical Education In India

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Our country's medical science and health services have rapidly evolved and expanded in the last century. Comparatively, the changes in medical education have been slow over the years. However, the recent adoption of the Competency Based Medical Education (CBME) curriculum has brought about a much-needed rationalization. The new curriculum is intended to bring about the transition from content-based to outcome-based technologies.

Many dilemmas need to be discussed and debated since the demands on the medical education system are changing with our country's social and economic development (1). Some of these are addressed below. We do not have a definite or rigid opinion about each aspect. This article aims to raise some of these issues so that we continue to pay attention to them.

Do we need to increase the number of medical colleges?

During Independence, India had only 29 medical colleges with just 1000 undergraduate seats annually. The number of colleges gradually increased to 100 in 1971 and 140 in 1970. The 'liberalisation' of medical education saw a rapid increase of colleges and seats in the 90's onwards, to 381 medical colleges with 45,000 MBBS seats in 2015.

In 2022, the numbers have increased to 703 medical colleges and 1 lakh MBBS seats yearly (Figure 1). The government of India had announced the establishment of hospitals and medical colleges in every district through the Public-private partnership (PPP) model in the union budget 2020. This decision will result in an increase in the number of medical colleges in the next few years.

The justification for this rapid expansion was that the doctor-population ratio in India is inadequate compared to the World Health Organisation (WHO) recommendation. However, in December 2022, the government informed parliament that India's doctor-patient ratio currently stands at 1:834, better than the WHO-prescribed norm of one doctor per 1,000 people.

Even if it is claimed that the actual doctor-population ratio is lower than required, it must be realized that the geographical distribution of medical colleges worldwide does not mirror the regional population (2). The main problem in India lies in the mal-distribution of doctors and services among rural and urban areas. While 67% of the population resides in rural areas, the distribution of doctors is reversed. A study in Odisha revealed that only 17% of final-year government college students and 9% of private college students showed willingness to work in rural areas in the long run (3). How the urban-rural discrepancy can be corrected is what needs a total re-think of the strategies.

Also, there is an unequal distribution of medical colleges and, consequently, the number of doctors in different states. Karnataka, Maharashtra, and Tamil Nadu have 35% of the total medical colleges in the country. An exploratory study found that while the national average density of medical colleges was 4.08 per 10 million population, there is a wide range of density in provinces from 0 (Nagaland and other areas) to 72.12 (Puducherry) (4). There is one doctor for every 503 people in Karnataka, compared to 2540 people in Telangana.

The disparity in the level of education imparted in different medical colleges also needs to be bridged. Simply increasing the 'production' of

doctors will not solve the matter. The effect of this expansion in colleges and their capacity will need careful consideration since it will increase the number of medical graduates beyond the required numbers, apart from the disastrous outcome of compromising on the quality of education. As far back as 1910, Flexner, in a landmark report on medical education in the United States and Canada, noted that "...the country needs fewer and better doctors; and that the way to get them better is to produce fewer" (5)

Should we allow 200/250 MBBS seats in any medical college?

To increase the number of graduates, we need to create more medical colleges and/or increase the seats in each college. Setting up a new college is costly compared to other disciplines since NMC mandates elaborate norms regarding land, infrastructure, faculty, staff, facilities, and a well-equipped hospital with high occupancy. Filling faculty posts in all departments with competent, motivated teachers is challenging. It is not easy to offset expenses through student fees, which are strictly regulated.

Increasing the capacity of a college is fraught with the danger of diluting the standard of education.

The competency-based curriculum of NMC demands a focus on hands-on learning, small group discussion, focus on attitudes, ethical approach, and communication skills, and a robust formative and summative assessment system. Given the existing resources and strength of faculty, how quality can be maintained with a large number of students is difficult to reconcile. The NMC has now set a limit of 150 seats for any new medical college to be setup. This decision could also be made retrospectively applicable to the existing colleges in which more than 150 seats have been permitted.

Do we need more generalists or specialists/super-specialists?

As per the data released by the Ministry of Health and Family Welfare, the total number of postgraduate medical seats in government, private, and deemed/central universities in India for the academic year 2023-24 is 45337, which is less than half the seats for graduation. This implies that a majority of the doctors are generalists. The overwhelming health problems in the country are related to nutritional deficiencies, infections, infectious diseases, and complications of non-

communicable diseases, most of which are preventable and need basic interventions. Managing such issues requires basic health facilities and a generalist. At the same time, an individual doctor always wants to specialize in a suitable clinical discipline and not remain a mere MBBS doctor with little prospects of career progression. Advances in technology and digitization, artificial intelligence, and machine learning will affect healthcare practice for the future. Modern medical graduates need to be taught some of these tools to utilize them for better patient services.

The choice between opting to be a generalist or a specialist is quite a dilemma for all the stakeholders. In a survey of fresh medical students of both public and private colleges in Madhya Pradesh, most of the students (91%) wished to pursue a specialization after their graduation. They intended to work in urban areas (64%)(6). A happy medium needs to be found.

Should we allow flexibility in the curriculum or keep it strictly uniform in all colleges?

The current Competency Based Medical Education (CBME) curriculum is highly structured with a rigid time schedule and detailed teaching-learning methods and assessment, allowing hardly any innovation or experimentation. This is undoubtedly aimed at uniformity and standardization among medical colleges nationwide, which has been a major concern in the past (7). It is hoped that it is meticulously carried out in all places.

Since the end product is to be assessed through a nationwide test, one wonders why flexibility, innovation, and experimentation are not permitted in the process and methods. Many excellent colleges have highly motivated and skilled faculty and administrators possessing innovative and progressive ideas.

Several models of medical education already exist in the world, including Problem Based Learning which blurs the compartmentalized and strictly discipline-based medical education imparted in India. Although there is an attempt at vertical and horizontal integration in the CBME curriculum, the structure of the course and the assessment pattern do not allow the complete adoption of comprehensive problem-based learning. One wonders if a few excellent medical colleges could

be permitted to adopt their own curricular structure.

We keep talking about learner-oriented, problem-based, community-centered, integrated education, but our rigid curriculum restricts this methodology's scope. The very structure of the course, dividing it into discipline-based 1st, 2nd, and 3rd'Professionals' with corresponding subject-wise examinations, rules out complete integration.

An alternative pattern of curriculum having an initial period covering basic concepts of each discipline, followed by organ-based or system-based modules incorporating common clinical problems comprehensively dealing with related aspects of various specialties, would permit better integration. The assessment would also need to be adapted accordingly. Are we ready for this drastically different curricular approach?

Should we involve specialists outside medical colleges to teach medical students?

Gone are the days when academics, research, and advanced clinical techniques and facilities were exclusively in the domain of medical colleges. Today, many brilliant doctors go for other options and excel in their field of medical practice. They conduct research, publish scientific papers, and give excellent presentations at conferences and CME programs. Why should we not utilize their skills and experience for medical education? Involvement in teaching undergraduate and postgraduate students through guest lectures, clinical classes, resource sharing, and research participation can fruitfully supplement teaching imparted by full-time faculty.

Is the relatively new competency-based curriculum serving its purpose?

The necessity of curricular reform in response to the current needs of society has been a subject of ongoing debate for a long. A curriculum must address the biological, psychological, social, and cultural aspects of medicine, with an opportunity to develop leadership, teamwork, and communication skills among the students (8). An AETCOM (attitude, ethics, and communication) module has been introduced for the foundation course. This is a step in the right direction since it emphasizes the importance of soft skills right from the beginning. While the CBME curriculum aims at very relevant goals, it is too early to say whether it is producing an Indian Medical Graduate possessing the desired qualities. The previous

system, too, produced outstanding clinicians who have excelled in their chosen fields. Only time will tell whether the new curriculum will contribute to producing better doctors.

Is the National Eligibility cum Entrance Test (NEET) the best way to select students for admission?

Are we assessing the aptitude and the right attributes in the aspirants for becoming a doctor? Potential for developing qualities in terms of the domains of knowledge, skills, and attitudes needs to be identified right at the time of admission to the medical course. Some of these cannot be satisfactorily assessed in the current selection process. The vital aspects of good behavior, compassion, communication skills, and a sound personality are not touched in the existing admission criteria through NEET. The validity of the test is sacrificed at the altar of objectivity and feasibility. Merit is determined simply based on knowledge, mainly at the level of recall and, to some extent, understanding. We need to learn and adapt from the American system of determination of merit, which involves using elaborate tools to test soft areas of ability that can more closely predict the potential of functioning as a competent doctor in the future. However, implementing this on the massive scale that would be required in a heterogeneous country like India, as well as eliminating subjectivity and bias, would be a challenge.

During the graduate course, the government has proposed a common final year examination called the national exit test (NEXT), which will act as a licentiate examination to practice medicine and serve as the criteria for admission to postgraduate (PG) medical colleges. We need to work on this test more diligently since the education provided in the colleges will align with this examination's level and curriculum.

Are we attracting the best students to the medical profession?

The social environment today, especially the rising incidence of violence and harassment of medical personnel, lack of trust, and deteriorating doctor-patient relationships, has dissuaded many youngsters from choosing medicine as a career. The tough and long course is demanding and stressful, which many young students find unattractive. The lifestyle of a typical doctor, with little scope for enjoyment and relaxation, tends to

put off modern kids who would rather have a comfortable, glamorous lifestyle. Much must be done to bring the best bright students to the medical field. Getting back the glory of the profession and safeguarding the legitimate interests of the doctors will go a long way in attracting the right youngsters.

Are we able to ensure a good career path for medical graduates?

Inadequate planning has led to the present situation where, on the one hand, there are doctors trained in high technology medicine, which is lucrative, through treating the few patients with the ability to pay, while on the other hand, doctors are trying to deal with the basic needs of the majority of the population (9). The latter group is largely dissatisfied because the salary structure, working conditions, facilities, housing, social interaction, the general standard of living, and career prospects are far from satisfactory, especially in rural areas. The fate of a fresh MBBS graduate is often pathetic. Apart from 1 lakh MBBS graduates, 20000 Foreign Medical Graduates (FMGs) come to India annually. Even if only 16% clear the FMG exam, the number of new doctors is huge. The government, the largest employer, provides about 1750 vacancies every year for doctors to work in Primary Health Centres, and a similar number are employed yearly by various government agencies like Railways, Employees State Insurance (ESI), Public Sector Undertakings (PSUs), army and other institutions. This leaves most MBBS doctors looking for reasonable jobs every year.

Some graduates can join postgraduation, not necessarily in the subject of their choice. Still, even with the increase in PG seats, many MBBS doctors are unemployed or engaged in frustrating work. The backlog of unfilled PG seats is visible in the 1 lakh candidates appearing for the NEET PG entrance exam every year. Some of the unsuccessful PG aspirants do join some private hospitals as resident doctors for a short period, but this is hardly a career option.

Should we try to reduce students' stress levels or just focus on academics?

Researchers have been trying to understand the trends, causes, and solutions for the mental and physical hardship in the medical fraternity. Poor health and reduced life expectancy in doctors is a matter of great concern. Medical students must be prepared for the challenges they will likely face. The medical course itself is quite demanding and inherently stressful. Counselling, welfare policies, extracurricular activities, and recreational facilities need to be incorporated in the program. Serious thought needs to be given to reducing the academic load on the students. The subject's 'Must Know' component should be clearly defined, and several unnecessary portions of the curricular content could be done away with at the undergraduate level.

There are no ready answers to all these dilemmas. We must, however, remain open to ideas and suggestions to constantly strive to make the medical education system in our country as relevant, appropriate, need-based, and valid as possible.

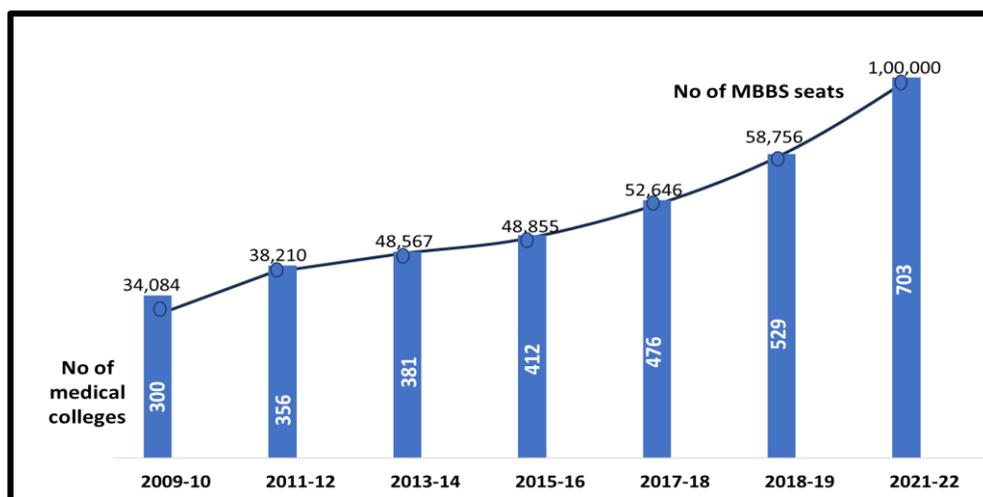


Figure 1: Number of medical colleges and MBBS seats in India from 2009-2022.

References

1. Kaul KK. Need for Change in Medical Education in India. *Journal of Medical Evidence*. 2021; 2(1):94-5.
2. Boulet J, Bede C, McKinley D, Norcini J. An overview of the world's medical schools. *Med Teach*. 2007;29(1):20–6.
3. Nallala S, Swain S, Das S, Kasam SK, Pati S. Why medical students do not like to join rural health service? An exploratory study in India. *J Fam Community Med*. 2015;22(2):111–7 [cited 2019 Jul 22]. Available from: <https://www.ncbi.nlm.nih.gov/pmc/articles/PMC4415126/>.
4. Sabde Y, Diwan V, Mahadik VK, Parashar V, Negandhi H, Trushna T, Zodpey S. Medical schools in India: pattern of establishment and impact on public health - a Geographic Information System (GIS) based exploratory study. *BMC Public Health*. 2020 May 24;20(1):755. doi: 10.1186/s12889-020-08797-0. PMID: 32448195; PMCID: PMC7245906.
5. Flexner A. Medical education in the United States and Canada. From the Carnegie Foundation for the Advancement of Teaching, Bulletin Number Four, 1910. Bull World Health Organ [Internet]. 2002 [cited 2020 May 8];80(7):594-602. Available from: <https://www.ncbi.nlm.nih.gov/pmc/articles/PMC2567554/>.
6. Diwan V, Minj C, Chhari N, De Costa A. Indian medical students in public and private sector medical schools: are motivations and career aspirations different? – studies from Madhya Pradesh, India. *BMC Med Educ*. 2013;13:127 [cited 2019 Jul 16]; Available from: <https://www.ncbi.nlm.nih.gov/pmc/articles/PMC3851318/>.
7. Sood R. Medical education in India. *Med Teach*. 2008;30(6):585-91. doi: 10.1080/01421590802139823. PMID: 18677660.
8. Quintero GA. Medical education and the healthcare system - why does the curriculum need to be reformed? *BMC Med*. 2014;12(1):213. <https://doi.org/10.1186/s12916-014-0213-3>.
9. Thomas G. Medical education In India—the way forward. *Indian J Med Ethics*. 2016;1(4):200–2 [cited 2019 Aug 1]; Available from: <http://ijme.in/wp-content/uploads/2016/11/2152-5.pdf>.

Changing Roles of a Teacher in Medical Education

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Introduction: Over the past few decades, the process of medical education and the art and science of pedagogy have undergone transformative changes in India owing to several imperatives. The personal journey of the author as a pedagogue started in 1973 as a learner cum teacher in Pedagogy, Andragogy, and, more lately, Heutagogy and is continuing. Over half a century, the author witnessed a teacher's ever-changing roles and requirements and, even more so, changing perceptions and expectations of students from educational institutions and those they are willing to accept and consider as their teachers.

This paper is about the changes one has noticed in the Teaching / Learning process and the roles of a teacher during this half a century. If these changes are not understood in context, accepted, and acted upon by all concerned, medical institutions would no longer be able to function effectively to fulfil the purpose of their existence. Consequently, the quality of the output would become unsatisfactory. Such an eventuality is likely to have disastrous consequences on the profession as a whole and the health of the country.

Imperatives to change: Several developments in medical education have contributed to the mandated transformation. These are described in the following paragraphs.

1. **The number of medical colleges** in India has risen to over 700 as per the latest figures, with the annual admissions crossing 110,000. Although the latest guidelines of the National Medical Commission mention that future medical colleges cannot have more than 150 students per college, it was not always so. In the past, many colleges were allowed 250 students per year. The teacher numbers have not increased proportionately, so the teacher-to-student ratio has been adversely affected, stressing the system.
2. **Introduction of the Competency-based Undergraduate Medical Education program** in 2019 emphasized the role of acquisition and certification of nearly 2884 competencies and over 800 skills, almost 200 of which needed to be certified as acquired before graduation. The CBME also emphasized the role of small group teaching, thus magnifying and drawing to attention the adverse student-to-teacher ratio.
3. Almost simultaneous with the introduction of CBME came the **regulatory definition of the attributes of the Indian Medical Graduate (IMG)** with five attributes and 35 sub-competencies. Realizing the importance of soft skills in the functioning of a doctor, the NMC introduced the compulsory vertical curricular thread of the AETCOM module. AETCOM stands for Attitude, Ethics, and Communication skills.
4. **Changing expectations of students** from the learning ambience in which they find themselves and increasingly adverse impact of increasing student numbers without a proportionate increase in teacher numbers, clinical material, simulation resources, and other facilities such as small group learning activity centers in medical colleges.
5. **Students' abilities, involvement, and motivation** in the academic program have remained variable. To avoid pejorative terms, we refer in our institute to students who lag behind their peers as the **"SNACS" group**, i.e., Students Needing Additional Curricular Support if the reasons are academic. Those who have other non-academic reasons which make them feel unwelcome or uncomfortable in the ambience of the educational institution

are referred to as the **"SNAPS" group**, i.e., **Students Needing Additional Psychological Support**. In modern-day education, one encounters the categories of "reluctant learners" and "unwilling learners", referring to those who find themselves in an environment where they do not want to be but are forced to be, largely due to parental pressure. One must not forget the category of students who do very well in the program and are classified as "Advanced learners." They are called the **"SPECS" group**, i.e., **Students Provided Enriched Curricular Support**. These require challenges in the form of additional academic inputs, rewards for performance, and additional assigned responsibilities for them to feel recognized and perform even better instead of destroying their abilities and attempts to excel and demotivating them.

6. **Increasing availability of information on the internet also has influenced the role of the teacher.**

Previously listed roles of the teacher and the current requirement: Ronald Harden, in his paper in 2000, described the roles of a medical teacher as falling into the following six major and twelve functional categories(1).

- (1) Teacher as an information provider (lecturer and clinical or practical teacher);
- (2) Teacher as a role model (on-the-job role model and teaching role model);
- (3) Teacher as a facilitator (mentor and facilitator);
- (4) Teacher as an assessor (student assessor and curriculum evaluator);
- (5) Teacher as a planner (curriculum planner and course organizer);
- (6) Teacher as a resource developer.

These remain current and operative in a slightly changed context, although additional mandatory requirements for efficient functioning as a teacher have become necessary. With the addition of these roles, the traditional six roles have now doubled to twelve. This paper will focus on the changes that have become essential in these traditional six roles and also enumerate some new roles of the modern medical teacher.

1. **Teacher as an information provider:** With access to the limitless knowledge

available online to the current generation of students at the click of a phone or a tablet, **teachers have to evolve from being information providers to guides for sourcing information and clarifying issues with the accessed information rather than as primary providers of learning material.** With ChatGPT and AI, matters will worsen, and teachers must adapt quickly. Lectures have practically lost their attraction and relevance, and teachers need to switch to flipped classrooms and small-group teaching to be fully functional and produce a meaningful impact on learning. To be meaningful, practical classes should be applicable to the skill set required to function after graduation rather than as standalone exercises, the relevance of which is not always apparent to the teachers or the students.

Also, clinical teachers must educate themselves to use embedded simulation exercises in their teaching and classroom planning protocol and learn to use standardized patients for clinical education due to the scarcity of clinical material access and the reluctance of patients to be used as teaching media for medical student education. This assumes crisis proportion because of large class and batch sizes and reduction in patient numbers due to the multiplication of medical colleges.

Instead of being an information provider, the teacher must become a "skill" developer focused on the transformation of skills to his students at the bedside, in the community, in the labs, and in the simulation center to produce graduates with the requisite skill sets to function effectively after graduation and be employable.

2. **Teacher as a role model:** Needless to say, this function remains essential, although increasing numbers of students per batch, the diminishing number of dedicated teachers, and the occurrence of a new phenomenon of the existence of reluctant teachers who are in the profession of teaching in the interim between qualification and finding a more lucrative job opportunity, the opportunity for teachers to serve as role models is diminishing or is imperfectly performed.

The high teacher-student ratio is an inhibitor for teachers and students to come to know each other by name and reputation; hence, functionality in this context is compromised. The use and overuse of teaching adjuncts like PowerPoint also diminishes the relationship between teachers and students, where teaching-learning encounters become mere opportunities to display a set of PowerPoint slides rather than create interest in learning or start a two-way dialogue of questions and answers. Classes are occupied for the entire duration by displaying Power Point slides, leaving no time for questions, answers, or clarifications. The reluctance of students to stop the teacher and ask doubts (largely attributable to school education, which has neither fostered nor encouraged the process of asking questions) compounds this error. **One must remember the famous saying, "If one asks a question, one may be considered a fool for five minutes; however, if one never asks a question, one will remain a fool for life."** Teachers in small group activities require special efforts to foster the spirit of inquiry and the act of raising questions when required.

As a mentor and role model, the teacher is also exceedingly important in developing the attribute of Professionalism, which is an important pre-requisite for the IMG. Although the AETCOM module focuses on this aspect, every teacher must behave in a manner that makes it obvious to students that Professionalism is a goal worth striving for and that the AETCOM module is not merely a theoretical exercise.

- 3. Teacher as a facilitator:** Since the teacher's role as an information provider is diminished, their role as a learning facilitator needs to increase. Very often, more time has to be spent with students than is possible in a large group lecture class, clarifying doubts and working in small groups to facilitate problem-solving skills. The outcome remains unsatisfactory since the curriculum does not always provide adequate time for this. The role of a teacher as a facilitator can happen only if the curriculum gives sufficient time for small group learning and physical facilities permit small group

activity. If time allows and there is an inclination, a lot more planning will go into organizing a small group activity with adequate time for group work, problem-solving, and clarifications in a workshop mode, the whole activity taking place in a flipped format with preparatory materials being given beforehand so that the available curricular time is usefully employed.

- 4. Teacher as an assessor:** This is where massive changes have become mandatory because of competency-based education coming into practice. Once outcome-based education commenced in 2019, certification of achievement of required competencies becomes compulsory. Hence, the whole assessment system needs to move from a single summative process at the end of the course to continuous **workplace-based assessment (WPBA)**. This process is better called **Learning-Place Based Assessment Methods (LPBA)** for undergraduate students instead of **WPBA**. Many assessment tools are available and have been described for various requirements depending on the competency being certified and the domain to which it belongs – whether affective, cognitive, or psychomotor(2,3). One should also remember that many WPBA assessment methods, such as Chart Simulated recall (CSR), Mini Peer Assessment tool (Mini-PAT), etc., may not apply to undergraduates. Hence, the selection of tools must be done judiciously. Faculty development and training are mandatory for teachers in this new role. Relying only on the summative examination can never ensure the development of required competency in one hundred percent of trainees, and there must be a **Continuous Combined Summative-Formative process** which is put in place (4). The role of the regulators in ensuring this change and mandating the required faculty development initiative for this to function satisfactorily cannot be overemphasized.
- 5. Teacher as a planner:** With the whole system being changed to a competency-based model as per regulatory norms, the teacher's role as a curriculum developer assumes importance. Practically, the entire curriculum has to be reformatted to suit the CBME pattern, the teaching

inputs modified to suit the requirements of CBME; assessment regularly at the workplace has to be planned and implemented, and in-depth provision of inputs for soft skills development and communication which are the requirement of modern medicine has to be organized and put in place. **Also, meaningful integration to foster holistic rather than fractured learning requires great attention.**

The regulatory agency has now defined the Indian Medical Graduate (IMG) as a

1. **Clinician** who understands and provides preventive, promotive, curative, palliative, and holistic care with compassion.
2. **Leader** and member of the health care team and system capable of appropriately collecting, analyzing, synthesizing, and communicating health data.
3. **Communicator** with patients, families, colleagues, and community.
4. **Lifelong learner** committed to continuous improvement of skills and knowledge.
5. **Professional** committed to excellence, ethical, responsive, and accountable to patients, community, and profession.

Thirty-five sub-competencies have been prescribed to enable the acquisition and certification of these five competencies. This introduction re-emphasizes the need for all teachers to re-educate themselves on the CBME process and its implications and re-plan their inputs to ensure the development of the IMG. It amounts practically to re-birth as a new species of teacher.

Of the IMG attributes, the training to be a professional and a lifelong learner is a new dimension. It requires great emphasis, great preparedness, and even greater effort on the role of the teachers, mentors, and role models. The AETCOM module planned by the NMC is an effort in the right direction, but its implementation has not always been

satisfactory due to training deficiencies to prepare the teachers.

Therefore, the teacher's role as a curriculum developer has changed. At the individual level, considering the immensity of the job at hand, planning at a micro level for an individual lesson to macro-planning at the course level and planning for meaningful integration assumes extreme importance for the teacher to ensure that the final goal is achieved.

6. **Teacher as a resource developer:** In furtherance of what has been stated in the preceding paragraph, teachers must focus de-novo on developing resources for the new curriculum, starting at the micro level with lesson plans and progressing to session plans, course plans, and program plans; these aspects have become more important in recent times. Every teaching-learning encounter has to be treated as a challenge, keeping the outcome in mind, the number of students, and facilities in mind, and planning the resources adequately.

At a macro level, some teachers must prepare new textbooks that conform to the new curriculum and the new format of CBME. Naturally, teachers have to be at the forefront of this endeavour. It amounts to almost inventing the system again.

7. **Teacher as a pedagogic diagnostician and pedagogic therapist to identify and deal with students with T/L issues.** Even in established and world-famous institutes, some students have enormous difficulty coping with the program due to a lack of adequate prior training and mental and educational preparedness, lack of comprehension of the course due to language or curricular issues, social non-pleasant ambience, or other psychological issues. If not detected early, these would magnify with time and destroy the career of the concerned student. Early recognition and adequate intervention, individualized to the specific student-related issues, is mandatory, and it falls in the teacher's domain to perform this function. Teaching styles may have to be matched to learning styles or, additional inputs given to clarify non-comprehended portions of the syllabus, or additional exercises provided to facilitate coping. In

others, the problem may be motivation. Teachers must recognize this and serve as motivators. **The teacher from a diagnostician has to proceed to assume the role of an academic therapist. Occasionally, if the issues with learning are psychological, it falls to the teacher to recognize and refer the student to a student counsellor. An established and longitudinally continuous mentorship program will go a long way to improve this aspect of teacher's functioning.**

At the other end of the spectrum, some students are advanced learners with no curricular issues but need to be challenged to perform better and further increase already high motivation levels. They also have to be recognized and provided with increased opportunities and challenges so that their spirit of learning is not destroyed by non-recognition.

8. **Teacher as a career counsellor:** Unlike other institutions such as Engineering Colleges, where professional career counsellors and placement cells are in place, in a medical college, teachers must play the parts played by these cells. With increasing opportunities provided by society for career progression after qualification, the teacher becomes the first point of contact to mentor and guide the students in the further progress of their careers, be it academic (such as choice of institutions or subjects for post graduation) or employment. **The mentorship role of the teachers is to be exhibited in this situation.**
9. **Teacher as a connector and integrator between departments:** With modern education, particularly the CBME, requiring horizontal and vertical integration of different subjects to bring meaning and relevance to the curriculum and facilitate learning, it becomes the responsibility of all teachers to collaborate as education providers and work together to get meaningful and relevant integration to the educational progress. Unplanned and forced integration, merely on delivery of content simultaneously rather than bringing about integration of thought processes, can destroy the education process. For this to be successful, **it may be better to convert the educational system from a subject-based approach**

to a modular format where integration is built automatically in relevant areas.

10. **Teachers as innovators, researchers, or creators of knowledge:** Although Harden has not mentioned this role, it has become increasingly a part of the daily routine of a teacher to participate in research or creation of intellectual property or create new knowledge through clinical trials and measures such as development of improved protocols of management, both for one's career progression and also to serve as a role model for students and motivate them to do so themselves. This should be the inevitable course of modern education, so newly qualified students would be pathfinders rather than followers.

It has been rightly written by the poet Ralph Waldo Emerson,

'Do not go where the path may lead,
Go instead where there is no path, and
Leave a trail behind.'

This function of teachers is important in the interest of their career progression and organizational progress in these days of ranking and accreditation, besides motivating their students to follow their path.

11. **Teacher as a facilitator of lifelong learning habits:** One of the important attributes of an IMG is to be a life-long learner. The importance of this in the modern context cannot be over-emphasized. Peter Densen has mentioned that the doubling time of medical knowledge has drastically been reduced over the years. 1950 the doubling time was 30 years; in 1980, it was reduced to seven years. In 2010, it fell further to 3.5 years; in 2020, the doubling time was expected by him (in his paper published in 2011) to be a mere 73 days (5). Because of this, the role of the teacher in developing this trait in medical students becomes vital. Exercises focused on demonstrating how medical treatment and approach to patients have changed over the years, thus emphasizing the need for continuous learning, which can be stimuli to keeping oneself updated. Also, exercises in

Evidence-Based Medicine, searching the net for recent advances, and giving small projects and assignments requiring searching for and retrieval of information can promote the habit of being a lifelong learner. A lot of planning and an interdisciplinary approach is needed for this role.

12. Teacher as a team builder and communication trainer: The IMG defines a doctor as one who is a team leader and a communicator. Modern medicine requires all healthcare professionals to work as a team. This training must start during medical education by having joint exercises and group activities in subjects like control of hospital infection or disaster management, or community outreach activities, where medical students, nursing, and allied health care students work together in exercises. **Working together as a team builds communication skills and fosters joint responsibilities in the healthcare field.** In addition, the teachers also have to serve as communication trainers by introducing group exercises to practice special communication skills required for a medical practitioner, such as breaking bad news, discussing investigation and treatment plans, or getting informed consent. Although the AETCOM module has been created for this purpose, interdisciplinary education with teachers of all health professions coming together alone can ensure this in practice.

In conclusion, it can be said that in addition to the traditional six roles specified by Harden, six new roles have become mandatory for teachers to function effectively. Massive changes have occurred in the conventional roles due to the changing environment, increasing students, reducing numbers of teachers, and new requirements due to the curricular change. New roles not mentioned, expected, or experienced earlier have arisen, adding to the burden on teachers.

With these changes, the functions of a teacher have expanded from six to twelve roles. The current situation requires more attention and greater input in the existing six roles because of new requirements and six additional new roles for which they had not been trained earlier.

According to ancient Indian traditions, the role of a teacher has been described in Sanskrit in the

following words(6,7): The teacher's goals (and their thoughts) in each role are in parentheses.

1. The teacher who gives you information is called **Adhyapak**. ("Think what I think")
2. The one who imparts knowledge combined with information is called **Upadhyaya**.("Feel what I feel")
3. The one who imparts skills is called **Acharya**.("Do what I do")
4. The one who can give a deep insight into a subject is called **Pandit**.("Know what I know")
5. The one who has a visionary view on a subject and teaches you to think in that manner is called **Dhrishta**. ("Go beyond what I know").
6. The one who can awaken the wisdom in you, leading you from darkness to light, is called **Guru**.(Go beyond what we are).

Pragmatically speaking, the modern teacher no longer has to serve as an **Adhyapak**, this role being taken over by the web or other sources of information. By interpreting, explaining, and giving context to information retrieved from the web, his role as an **Upadhyaya** has to be strengthened. He has to function with extra ability as an **Acharya** and a skill developer to enable his students to be more employable. The advanced learners may require the teacher to play the role of a **Pandit**. Only a few students have the motivation, the desire, the inclination, or the vision to have their teachers serve as **Dhrishtas** or **Gurus**.

Given the changes in perception, goals, and policies, this is the undeniable dynamics of modern medical education. Resisting this is of little consequence as the changes have come to stay. One must reflect and look at it positively, accept the new requirements, and see what adjustments need to be made within the system and within each teacher to meet the challenges and consider how teacher training can play a vital role in this transformative process.

With such intensive and demanding requirements, it is no wonder that the teaching profession is not that sought after by fresh postgraduates in medicine. Recognition is rare, career advancement poor, and facilities and additional inputs scarce. Will medical education survive this challenge? It remains to be seen. **There may be different types of learners, but there is no role in the educational system for "the reluctant teacher."**

Teachers have to change with time and conform to there requirements of the revolution in medical education.

References:

1. Harden RM and Crosby J. *AMEE Guide No 20: The good teacher is more than a lecturer- the twelve roles of the teacher*, Medical Teacher, Vol. 22, No. 4, 2000, 334-347.
2. Norcini J, Burch V. *Workplace-based assessment as an educational tool*. Medical Teacher, 2007, 29, 855-71. AMEE Guide No. 31, PMID: 18158655. DOI: 1080/01421590701775453
3. Tejinder Singh, Mahajan R. *Toolbox for Assessment of Clinical Competence*. Unistar Books Private Limited, 2023, ISBN-13: 9358163130.
4. Van Mook WNKA, van LuijkSJ, Fey-Schoenmakers MJ, Tans G, Rethans JE, Schuwirth LW, van der Vleuten. *Combined formative and summative professional behavior assessment approach in the bachelor phase of medical school: a Dutch perspective*. Medical Teacher, 2010;32(12): e517-31.doi:10.3109/0142159X.2010.509418.
5. Densen P. *Challenges and Opportunities Facing Medical Education*. Trans Am Assoc Clin Climatol, 2011, 122; 48-58
6. Bhatt V. *Lifelong learning and various terms for teachers in Sanskrit*. <https://www.linkedin.com/pulse/lifelong-learning-various-terms-teachers-sanskrit-venudhar-bhatt/>
7. Independent Thinking. *The six roles of the Ancient Teacher. Which will you be today?* <https://www.independentthinking.co.uk/resources/posts/2019/december/the-six-roles-of-the-ancient-teacher-which-will-you-be-today/>

Methodology Improvisation

Use of Distant SP for Formative Assessment in Pediatrics

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Email id: cjshah79@yahoo.co.in**Abstract**

The COVID-19 outbreak created a major dent in the lives of all. It led to the suspension of classroom examinations in all educational institutions. The Department of Pediatrics implemented a novel online examination using Distant Simulated Patients (SP) and received encouraging student feedback. Here is a model for continuing clinical practical examination and result declaration during the crisis.

Key Words: Distant SP (Simulated patients), Covid, Examination, Pediatrics

The COVID-19 pandemic disrupted medical education worldwide¹. However, it also served as an opportunity to learn from and approach with practical solutions^{2,3,4}. We share our own experience of conducting online practical examinations of the final year MBBS students of Government Medical College and Sir T General Hospital, Bhavnagar, Gujarat, in the setting of COVID-19.

The first practical internal examination in Pediatrics for Third MBBS part two was conducted using an online video-conferencing platform named "Zoom Application" in the wake of restrictions due to the COVID-19 pandemic. The ward teaching sessions were also taken as webinars using the Zoom application by our department and by the experts during the nationwide lockdown. After obtaining permission from the concerned authorities, clinical practical examinations of these 43 students were taken using the Zoom application with the help of Distant SP.

Preparation: Students, faculties, and assistants were trained to conduct the examination using the application one day before orienting themselves and avoiding technical glitches. We also identified

simulated patients and prepared them for examination. We took technical support from our technical team for the smooth conduction of the examination using distant SP.

Resources required were Training Material, simulated patients along with Cases having Supportive investigations, an internet connection, a Webcam, a laptop/desktop, and online platform (Zoom).

We prepared twelve sets of question slides using Microsoft PowerPoint 2010 to ensure every student gets a different set of questions. Each set contained eight slides. Two descriptive clinical case scenarios (one from Pediatrics and one from Neonatology) along with a simulated patient, a picture of an instrument/drug, an image of an X-ray with relevant clinical information, an electrocardiogram with relevant clinical information, a spotter case, an image of a vaccine and a question on nutrition.

Distant SP: These were simulated patients trained for different cases of Neonatology (Mother) and Pediatrics for cases with a level of competency aligned for Undergraduates. They had joined the Zoom link from the other side. Based on the case scenarios, students were allowed to interact with distant SPs.

Conduct of exam: There were 43 students in this batch. They were divided into four groups; each student was given 16 minutes.

The entire batch was divided into four groups: three groups with eleven members and one with ten members. One trained examiner and one assistant were assigned to each group, along with distant SPs. Four examiners and four assistants used personal laptops to conduct the examination simultaneously for all four groups.

Candidates were asked to write their name followed by roll number as a displayed name in the Zoom application for easy identification. The examination was scheduled to start at 10 AM, with the first two students in the waiting room. Once the first student's examination was over, the assistant removed them and admitted the next student. Simultaneously, the assistant instructed the next student to join the examination via the "WhatsApp" group.

Students had first to identify a clinical case scenario presented by a simulated patient or image on the PowerPoint slide presentation. Further, the respective examiner asked random questions on each slide to prevent questions from being passed on or to avoid repetition. Such viva voce examination on a slide would continue for a maximum of two minutes per slide and a maximum of 4 minutes per simulated patient, after which the examiner moved on to the next slide. Each slide carried a maximum of five marks, with a cumulative total of 40 marks for the entire examination. Each student got a total time of 16 minutes, and the total duration of the examination was three hours. The whole exam was mentored and monitored by the head of the department.

Feedback on conducting the examination was obtained from the students. All the students took the online practical examination for the first time. While 33 students (77.4%) believed online examination was as good as offline examination, seven students (16.2%) thought it to be better, and three considered it inferior to offline examination. The latter faced network issues or unforeseen technical issues. The results were compiled by the examiners, approved by the Department Head, and published the next day by WhatsApp group.

Lesson learned: Necessity is the mother of invention. During this pandemic, we learned many new things, and Distant SP is one of them. Both faculty and students were satisfied with the use of distant SP, so we can use it in routine and will ask other departments to use it in the future. Studies

with large sample sizes and different SP can be conducted in the future.



Picture 1: Examiners and assistants involved in online conducting of practical internal examination at Government Medical College, Bhavanagar during lockdown

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References

1. Coronavirus [Internet]. [cited 2020 Jun 9]. Available from: <https://www.who.int/westernpacific/health-topics/coronavirus>
2. Wayne DB, Green M, Neilson EG. Medical education in the time of COVID-19. *Sci Adv.* 2020 Jun 5;eabc7110.
3. Li L, Xu Q, Yan J. COVID-19: the need for continuous medical education and training. *Lancet Respir Med.* 2020 Apr;8(4):e23.
4. Rose S. Medical Student Education in the Time of COVID-19. *JAMA.* 2020 Jun 2;323(21):2131.

NExT - a game changer of CBME?

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National Medical Commission (NMC) declared the NExT mock test 2023 on July 28 by issuing government regulation. But continuously faced with a lot of resistance from medical students and faculty, it was deferred. The reasons cited included the need for prior preparation for the examination, logistics, and determining the curriculum, type, administrative agency, and format of the mock and final exam. Furthermore, students wanted more time to prepare for the new exam. The resident doctors in India thanked NMC for the deferral of the exam and are hoping for a student-friendly draft. NExT examination is planned for granting registration to doctors. It is the basis for postgraduate seat allocation, replacing the MBBS final examination and the National Eligibility Entrance Test Postgraduate (NEET PG). It is believed to be one of the best solutions for bringing uniformity to medical education to get global recognition. This assessment is the final journey of competency-based medical education, which all expert medical educationists in India probably envisioned to bring uniformity in medical education.

The students and faculty raised many concerns. The students are anxious about the examination pattern. Most students expressed the undue pressure of NExT, the tiring exam schedule, and no clarity. They felt the shortage of time for preparation and practice tests. Some even argued that it was a violation of the NMC Act 2019. Many said they were unfamiliar with the Computer Based Test (CBT) exam. The majority of the students described NExT Exam as "anti-student." The confused MBBS students say, 'TryNExT year' despite assurance from the officials that NExT is easier than NEET and the NExT syllabus is on the same line as NEET PG.

The practical and ideological problems were highlighted by many faculty. They opined that state medical universities should be free to administer the qualifying exam. Indian medical

graduate is already being assessed for these skills during the final MBBS part II university practical exams as per NMC. Faculty opinion is NExT will neither benefit the students nor the healthcare system in any way. It may divert the attention from bedside clinical learning to the mushrooming of coaching classes for NExT.

The faculty raise many concerns. With the establishment of new medical colleges to overcome the medical workforce's deficiency, will we face a shortage of doctors if trained graduates who do not clear NExT and are prevented from practicing Medicine? Multiple attempts for NExT will lead to a lack of interns and resident doctors, leading to the collapse of medical education and health care. Can we justify the MCQ mode of exam for PG entrance for medical licensing?

NExT, will it be a game changer for CBME? Can it bring uniformity in medical education and improve the quality of patient care? Will it be a failure of the CBME medical education and health system?

Let us wait for the future to answer the questions.

References :

1. National Medical Commission :Date: 13.7.2023 Public Notice All the stakeholders are hereby informed that the National Exit Test (NExT) examination is deferred on the advice of the Ministry, dated 11.07.2023, till further directions from the Ministry of Health & Family Welfare Secretary, NMC
2. https://www.nmc.org.in/MCIRest/open/getDocument?path=/Documents/Public/Portal/LatestNews/GMER2023_compressed.pdf

Elevating medical education and research in India: a call for quality publications, rigorous promotion criteria, and equitable funding

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In the dynamic landscape of Indian medical education and research, a profound analysis reveals a dichotomy of challenges and opportunities. This perspective delves into the complexities of quality publications emerging from medical colleges, the lenient criteria for academic promotion, the indispensable role of reviewers, the impact of digitalization, and the accessibility of article processing charge waivers in esteemed journals.

Quality publications are the linchpin of academic progress, acting as conduits for disseminating crucial knowledge, best practices, and innovations. However, the ease with which these publications are attained, and their pivotal role in academic advancement pose intriguing questions.^(1,2) Behind every published paper are the reviewers, the unsung heroes of scientific publishing. These experts, often unsung gurus in the scientific community, offer their expertise altruistically, driven solely by their dedication to advancing knowledge. Astonishingly, these reviewers, despite their monumental contributions, remain unpaid volunteers, often sacrificing their time and effort without financial recompense. Research training for postgraduate students (PGs) presents a unique challenge. While formal education covers aspects of research methodology and scientific writing, the practical nuances are often imbibed through hands-on experiences in research projects. Reviewers from reputable journals are pivotal in this educational journey, providing invaluable feedback to budding researchers. The digital age has ushered in a new era of research and publication. Typewriters and hard copies are relics of the past, replaced by the seamless efficiency of the internet. Electronic journals have supplanted print, providing authors with intuitive platforms for manuscript submissions. Tools like reference management software and paraphrasing applications have become indispensable, enhancing the quality of research articles.

Publications undeniably serve as crucial markers for academic promotion, reflecting an individual's

dedication to scholarly work and their contribution to the field. However, the quality of these publications varies significantly. To preserve the sanctity of the promotion process, it is imperative to recognize only the most esteemed indexing databases, such as Medline/PubMed and Science Citation Index (Web of Science).⁽³⁾ Academic promotions in medical colleges should truly mirror an individual's scholarly accomplishments, rigor, and dedication. With the majority of journals transitioning to electronic formats, word count limits have become more flexible, enabling authors to present their research comprehensively. In a promising development, journals under the Springer Nature umbrella offer discretionary full waivers of article processing charges. This provision acts as a lifeline, especially for researchers facing resource constraints. Accessible through online portals (<https://www.biomedcentral.com/journals#Medicine-Public-Health>, <https://www.nature.com/nature-portfolio/about/npj-series>, <https://www.nature.com/srep/author-instructions>), these waivers simplify the financial burden on researchers. The application process, facilitated through <https://article-discounts-and-waivers.springernature.com/request>, requires authors to indicate their funding status. A signed waiver letter from the institute's head, elucidating the funding context, is mandatory. The quick response time, typically 2-3 days, makes this option accessible for researchers.

The funding landscape is evolving, with a notable shift toward funding interventional studies rather than descriptive research.⁽⁴⁾ Funding agencies increasingly prioritize research focused on development, discovery, or delivery, sidelining age-old descriptive research. The new focal points are basic research aimed at novel interventions, development research refining existing interventions, and implementation research focused on overcoming barriers. Descriptive research, delving into disease burden and determinants, is de-prioritized. Journals with impact factors above three tend to reject studies

estimating prevalence or predicting common diseases.

In conclusion, India's medical education and research community are at a pivotal juncture, necessitating innovation and excellence. Quality publications, stringent promotion criteria, and equitable research opportunities are the keystones of progress. Embracing digital tools and acknowledging the invaluable contributions of reviewers are essential steps toward a brighter future for medical education and research in the country. By addressing these facets, India's medical community can elevate the pursuit of knowledge, surmounting barriers and fostering a culture of excellence.

Keywords: waivers; faculty publications; article processing charges; publication fees; medical education.

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References

1. Seetharaman R. Revamping Medical Education in India: New Guidelines for Eligibility Qualifications of Medical Faculty. *Cureus*. 2023 May 12;
2. Jain S, Jain H, Kumar Jain A. Is MCI over emphasising publication for promotion of medical teachers? *Indian J Med Ethics*. 2017 Apr 1;
3. Dhulkhed VK, Kurdi MS, Dhulkhed P V., Ramaswamy AH. Faculty promotions in medical institutions in India: Can we improve the criteria? *Indian J Anaesth*. 2016 Nov 1;60(11):796–800.
4. Reddy KS, Sahni P, Pande GK, Nundy S. Research in Indian medical institutes. *Natl Med J India*. 1991;4(2):90–2.

Clinical competence: knowledge or skills or both?

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George Miller proposed the now well-known Miller pyramid[1], which marked a departure from emphasis on knowledge-based assessments to an assessment of clinical performance. Miller pyramid views the development of clinical competence in four hierarchical stages, viz. knows, knows how, shows, and does. The knowledge component forms the base of the pyramid; the next tier comprises understanding and application of knowledge; moving on to competence and finally to performance. Written tests assess the first and second levels; the third by clinical examinations, simulations, and standardized patients; the fourth level is assessed by direct observation in real-life clinical settings. By placing observable behavior at the top, the Miller pyramid seems inclined towards a behaviorist rather than cognitivist approach to learning [2].

The Miller pyramid has been the backbone of assessing clinical competence for many years; in fact, no assessment plan is made without reference to it and without categorizing the assessment methods into one of the four tiers. Over a period of time, especially with the introduction of competency-based education, competence came to be equated with performance – leading to the design and development of many tools for performance assessment (OSCE, SP, simulations, etc.). Most of these assessments made use of standardized checklists to provide a certain degree of objectivity in assessment. The fascination with objectivity grew to such an extent that anything not objectively assessable was not considered worth assessing [3]. The then popular myth that all knowledge becomes obsolete in 5 years added to the popularity of methods assessing skills rather than knowledge [4]. Knowledge assessment was relegated further down the hierarchy by being at the base of the pyramid and the new found 'love' for skills and performance. This also impacted student learning (assessment drives learning!), with skills getting more (and more) importance at the cost of knowledge. MCQs made their mark –

from classroom tests to high stake entrance examinations - and became increasingly popular; however, the need to stick to "200 questions- 3-hour format" (in an Indian context) meant all questions had to be of recall/recognition type, which could be answered in less than a minute each [5], thus excluding case-based, scenario based and application oriented questions, relegating a very useful tool to the lowest level of knowledge assessment. Standard setting (defensible!) remains unheard of in the Indian context.

While these changes to assessment were taking place, there was also parallel research that questioned many of these foundations. Research into the nature of expertise revealed that experts are *experts because they know more* rather than because they have some exceptional skills [6]. A further damper came in the form of content specificity, meaning thereby that skills are not so generic and proficiency in one doesn't translate into proficiency in another [7]. Norman succinctly likened it to cracks appearing in the pyramid, indicating that the position of knowledge and skills may not represent their actual importance[4].

The conflict continues. Since the end point of Competency-based medical education is the ability to perform, it stands to reason that more emphasis is laid on assessment of skills. In this line of thought, knowledge assessment assumes a secondary position; even its validity may be questioned by some people. Proponents of this line of thinking also argue that emphasizing skills assessment will drive students towards learning and acquiring skills, possibly due to the steering effect of assessment.

There is another side of the coin, however. Does a better score on skill assessment mean a better performance in practice? After all, the student must use all her skills in the practice environment and not in the laboratory only. Davis et al.[8] used a model to predict future peer-reviewed practice performance in physicians with possible problems

with competence. The predictive utility of multi-station OSCE in this study was 0.46, while that of a MCQ test was 0.60. MCQs seemed to be predicting peer reviewed competence better than skills assessed by checklist based OSCE. It was also reported [9] that after controlling other variables, the mortality rate of myocardial infarction treated by board certified (using MCQs!) specialists was 19% lower than those not certified. Many other reports [10] are available in the literature to suggest that knowledge scores stand out as a better predictor of future work as a physician than skill scores.

Another study reported in 2014 also provides some useful input. Students were given an MCQ test to cover 14 common clinical practical procedures which were taught to them. The pass rate on the MCQ test related to these procedures was less than 39% on most skills by Angoff defined (indicating teachers' expectations) pass marks. Knowledge also had a positive correlation with self-perceived competence, indicating the role of knowledge in improving self-efficacy and leading to better performance.[11] The effect of self-efficacy beliefs with performance are very well supported by Bandura's theory of planned behavior [12]. The role of cognition in acquiring clinical skills [13] has been described elsewhere also.

Nothing suggests that performance assessment, being at the top of the pyramid, is inherently superior in predicating clinical competence [4]. It has been reported – and is common knowledge – that students being overburdened by work often resort to selective learning, focusing only on what is assessed [14]. Neglecting knowledge assessment because of its lower position in the pyramid will have its unwanted consequences. We need to see knowledge as the "base" of clinical competence rather than as something that is lower in the hierarchy. The fact that the pyramid tends to get narrow at the top should also indicate that 3-4 units (or even more) of relevant knowledge may be required for a unit of performance.

Competence combines knowledge and skills – both clinical and communication – and attitudes and behavior.[15] The first step in treating a patient is to accurately diagnose the problem.[16] Making a diagnosis is a complex interplay of knowledge, communication, analytical skills, and physical examination skills. Making a diagnosis is largely a cognitive process [2]. It requires integrating and applying different types of knowledge, weighing evidence critically, and reflecting on the process [17]. With recognition of its increasing

importance, diagnostic reasoning is being increasingly included in most competency-based curricula; however, the assessment is often in the form of OSCE. We know for sure that OSCE was not designed for the assessment of cognitive processes. At best, OSCE, as a surrogate, can provide output of this but provides no information on the process followed to arrive at a diagnosis. OSCE performance does not align with diagnostic skills [18]. Unsurprisingly; an observational assessment method can't evaluate a covert and complex cognitive skill. New modifications of MCQs, viz., extended matching questions, key feature tests, script concordance tests, etc., as part of the toolbox for assessing clinical competence have been described earlier [17, 19] and are very useful to assess the clinical reasoning process.

Clinical reasoning, by nature of its importance, requires more emphasis to be given to the cognitive elements of the Miller pyramid. The lower two levels are considered useful during the early part of the curriculum, but knowledge assessment must not stop or be attenuated after that. Diagnostic reasoning assessment needs to be included in the upper two levels of Miller pyramid, both at the laboratory and real clinical level.

I am tempted to narrate an incident that happened in a municipal council meeting of city A over implementing a new security plan. Being a controversial issue, it generated a lot of heated discussions. The mayor, trying to reach a decision, said that city B had also tried to put a similar plan but failed and we should learn from their mistakes. There was a commotion in the house, and finally, a voice was heard saying that we are mature enough to make our own mistakes; why should we learn from someone else's mistakes? Norman [4] aptly says that those unaware of the past are doomed to repeat it. Going a step ahead, should we not learn from what others have done rather than insist on "making our own mistakes"? It is worthwhile remembering that unlike poor clinical decisions, which manifest immediately, the effects of poor educational choices take years to show.

References:

1. GE, Miller. "The assessment of clinical skills/competence/performance." *Academic Medicine* 1990; 65 (Supplement 9); S63-67.
2. Witheridge A, Ferns G, Scot-Smith W. "Revisiting Miller's pyramid in medical education: the gap between traditional assessment and diagnostic

-
- reasoning." *International Journal of Medical Education* 2019; 10 ; 191-192.
3. Singh T, Shah N. Competency-based medical education, and the McNamara fallacy – assessing the important or making the assessed important. *J Postgrad Med* 2023; 69; 35-40
 4. Norman GE. Inverting the pyramid. *Advances in Health Sciences Education* 2005; 10 ; 85-88.
 5. Singh T, Modi J, Kumar V, Gupta P, Sood R. Admissions to UG and PG medical courses: looking beyond single entrance examinations. *Indian Pediatrics* 54, 231-35, 2017
 6. Ericsson KA. Deliberate practice and the acquisition and maintenance of expert performance. *Academic Medicine* 2004; 79 ; S1-S12.
 7. Eva KW. On the generality of specificity. *Medical Education* 2003; 37' 587-588.
 8. Davis DA, Norman GR, Painvin A, Lindsay E, Ragbeer MS. Attempting to ensure physician competence. *Journal of the American Medical Association* 1990; 263: 2041-2042.
 9. Norcini JJ, Lipner RS, Kimball HR. Certifying examination performance and patient outcomes following acute myocardial infarction. *Medical Education* 2002; 36 ; 853-859.
 10. Ram P, van der Vleuten C, Rethans JJ, Schouten B, Hobma S, Grol R. Assessment in general practice: the predictive value of written-knowledge tests and a multiple-station examination for actual medical performance in daily practice. *Medical Education* 1999; 33 ; 197-203.
 11. Katowa-Mukwato P, Banda SS. Medical students knowledge of practical clinical procedures: relationship with clinical competence. *Creative Education* 2014; 5 ; 1895-1904.
 12. Bandura A. Self efficacy: the exercise of self control. New York: Freeman, 1997.
 13. Birnbumer DM. Teaching Procedures: Improving "See One, Do One, Teach One". *CJEM* 2011; 13; 390-394.
 14. Epstein M. Assessment in medical education. *New England Journal of Medicine* 2007; 356: 387-396.
 15. Black C, Craft A. The competent doctor: a paper for discussion. *Clinical Med* 2004; 4 ; 527-533.
 16. Mishra D, Gupta P, Singh T. Teaching for reducing diagnostic errors. *Indian Pediatrics* 2017; 54 ; 37-45.
 17. Modi JN, Anshu, Gupta P, Singh T. Teaching and assessing clinical reasoning skills. *Indian Pediatrics* 2015; 52 ; 787-794.
 18. Park WB, Kang SH, Myung SJ, Lee YS. Does OSCE score reflects the clinical reasoning activity of medical students? *Am J Med Sci* 2015; 350 ; 64-67.
 19. Singh T, Mahajan R. Toolbox for assessment of clinical competence. 1st ed; Unistar Books, Chandigarh: 2023.

Graduate Medical Education Regulations-2023

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Abstract

There is a paradigm shift in Medical Education in India since the introduction of Graduate Medical Education Regulations (GMER) 2019 by the National Medical Commission (NMC). Another new set of GMER have been released and gazetted in 2023. In this short report, authors do summarize the changes in Graduate Medical Education Regulations (GMER) 2023 with reference to GMER 2019.

Graduate Medical Education Regulations 2023 were gazetted vide Notification dated 2nd June 2023 (1). After that Under Graduate Medical

Education Board (UGMEB), National Medical Commission (NMC) issued a set of new Competency Based Medical Education (CBME) guidelines for the MBBS Course (2). However, these guidelines were withdrawn within few days (3). Based on the comments and suggestions from concerned stakeholders, the UGMEB published a new set of guidelines. These guidelines are effective from the date of its publication i.e.; 1st August, 2023 and applicable for batches 2023 onward (4). The important changes in the GMER, year 2023 onward are summarised here (1, 4-7).

S. No.	GMER 2019 vs. GMER 2023	
1	Duration of Phases	Previously in GMER 2019, phase I, II, III (part1) and III (part2) were 13, 12, 13 and 12 months, respectively. Now as per GMER 2023, they are 12, 12, 12, and 18 months, respectively.
2	Duration and dedicated teaching hours of Foundation course	Foundation course hours decreased a bit from 175 to 165 hours. Previously it was guided to be conducted over the first one month duration after admission to MBBS course. Now it has to be conducted over 1 week after admission to MBBS course and the remaining hours spread over 6 months at the discretion of college.
3	Distribution of subjects across phases and subject-wise dedicated teaching hours	<p>There are changes regarding what all subjects will be taught in which phase, and when the final summative examination for those subjects will be conducted. The phase and subject wise teaching hours have also changed.</p> <p>In phase-I, the teaching hours have decreased for Anatomy(675 to 620), Physiology(495 to 440), Biochemistry(250 to 232), Community Medicine (52 to 40) and Attitude, Ethics & Communication Module-AETCOM (34 to 26) from what was in GMER 2019. Hours for self-directed learning (SDL) have also decreased in Anatomy, Biochemistry and Physiology from 40, 25, 20 respectively to 10 in each subject and SDL not introduced in Community medicine and AETCOM during phase I. Total teaching hours in phase I thus reduced from 1736 hours to 1521 hours.</p> <p><i>Now, the students will give summative examinations for anatomy, physiology and biochemistry after phase-I.</i></p> <p>In phase-II, theory teaching hours increased for pathology (230 to 255), microbiology (190 to 215) and pharmacology (230 to 255), and</p>

		<p>decreased for community medicine (60 to 25), forensic medicine and toxicology (FMT) (50 to 42) and clinical subjects (615 to 599). The hours of AETCOM remain the same (37). Overall teaching hours increased from 1440 to 1521 hrs.</p> <p><i>Students will give a summative examination for pathology, microbiology and pharmacology after phase-II.</i></p> <p>In phase III- part 1, dedicated teaching hours of dermatology, psychiatry and respiratory medicine, radiology and anaesthesia have been removed. Teaching hours of medicine, surgery, obstetrics and gynecology (OBG), pediatrics, orthopaedics, FMT and community medicine and AETCOM have been increased in phase-III (part1). Those of ENT and ophthalmology have decreased. Overall teaching hours decreased from 1551 to 1521 hrs.</p> <p><i>Students will give a summative examination for FMT and community medicine after phase-III (part 1).</i></p> <p>In phase III (part 2), dedicated teaching hours of dermatology, psychiatry and respiratory medicine, radiology and anaesthesia have been provided. Teaching hours of medicine, surgery, obstetrics and gynecology (OBG), pediatrics and AETCOM have increased in phase-III (part2). ENT and ophthalmology continue in phase III (part 2) also.</p> <p><i>Students will give a summative examination for ENT and ophthalmology along with the rest of the other clinical subjects here after phase-III (part 2).</i></p> <p>Overall theory teaching hours as well as SDL hours for medicine, surgery, obstetrics and gynecology (OBG) and pediatrics in whole MBBS have increased. Clinical posting duration has also increased in medicine, surgery and OBG from 20 to 21 weeks and in pediatrics from 10 to 13 weeks. There are changes (either increase or decrease) in the duration of clinical postings in other subjects too. Previously, it was 2 weeks of clinical posting in dentistry + anaesthesia during phase-III (part 1). Now in GMER 2023, there is separate mention of dentistry 1 week posting in phase-II and anaesthesia 3 weeks posting in phase III (part 2).</p>
4	Dedicated hours for Sports and Extracurricular activities	In Phase-I, sports and extracurricular activity hours significantly decreased from 60 to 10. Although, the sports and extracurricular activities hours increased a bit from 28 to 35 in phase-II.
5	Dedicated teaching hours for Early Clinical Exposure	In Phase-I, hours of Early clinical exposure decreased from 90 to 27 and distributed equally amongst Anatomy, Physiology & Biochemistry
6	Introduction of Family Adoption Program	Family adoption program introduced from phase-I (27 hours with minimum 3 families) which continues in phase II (30hours) till phase III (part 1)(31hours). This strengthens the learner-doctor program.
7	Introduction of Pandemic Module	Pandemic module introduced from phase-II and continues till phase-III (part2)with dedicated 28, 18 and 28 hours in these three phases respectively.
8	Duration of Electives	The duration of electives decreased from 2 months to 1 month. Students will attend two blocks of electives, 15 days each after phase-II (part1).
9	Summative Assessment	<p>Biochemistry and Microbiology will have only one paper in the summative examination (100 marks) which was previously two papers 100 marks each i.e., total 200 marks.</p> <p>In GMER 2019, students would pass summative examinations only if he/she gets 50% or more marks separately in both theory and</p>

		<p>practical. As per GMER 2023, students need to have 50% or more aggregate in theory and practical but not less than 40% in each. In subjects that have two papers, the learner must secure minimum 40% marks in aggregate (both papers together) to pass in the said subject).</p> <p>Previously in GMER 2019, it was mentioned that supplementary examinations should be conducted within 3 months of the main examination. Now, the GMER 2023 guides that the supplementary examinations and declaration of results shall be processed within 3-6 weeks from the date of declaration of the results of the main examination for every professional year, so that the candidates, who pass, can join the main batch for progression. If the candidate fails in the supplementary examination of first MBBS, he shall join the batch of next academic/subsequent year. There shall be no supplementary batches.</p>
10	Policy matters	There is mention of NEXt in the GMER 2023 schedule which was not in GMER 2019.
		No aspirant shall be allowed to take NEET-UG unless he has completed the age of 17 years as on or before 31 st January of the year that the candidate shall be appearing for NEET- UG examination.
		No student designated to a Medical Institution shall seek migration to any other Medical Institution.
		Biometric attendance compulsory from next sessions.

References

1. Graduate Medical Education Regulations, 2023. National Medical Commission (Under Graduate Medical Education Board, 2023) Notification, New Delhi, 2nd June, 2023. Available at: <https://www.nmc.org.in/MCIRest/open/getDocument?path=/Documents/Public/Portal/LatestNews/246254.pdf>. Accessed on 10th September 2023.
2. Guidelines under Graduate Medical Education Regulation 2023. National Medical Commission Notification, New Delhi, 12th June, 2023. Available at: https://www.nmc.org.in/MCIRest/open/getDocument?path=/Documents/Public/Portal/LatestNews/GMER2023_compressed.pdf/. Accessed on 10th September 2023.
3. Withdrawal of Guidelines under Graduate Medical Education Regulation 2023. National Medical Commission Notification, New Delhi, 23rd June, 2023. Available at: <https://www.nmc.org.in/MCIRest/open/getDocument?path=/Documents/Public/Portal/LatestNews/One.pdf/>. Accessed on 10th September 2023.
4. Competency Based Medical Education Curriculum (CBME) Guidelines- National Medical Commission. National Medical Commission Notification, New Delhi, 1st August, 2023. Available at: <https://www.nmc.org.in/MCIRest/open/getDocument?path=/Documents/Public/Portal/LatestNews/CBME%201-8-2023.pdf>. Accessed on 10th September 2023.
5. Regulations on Graduate Medical Education (Amendment), 2019. Board Of Governors In Super-Session Of Medical Council Of India Amendment Notification, New Delhi, 4th November, 2019. Available at: <https://www.nmc.org.in/ActivitiWebClient/open/getDocument?path=/Documents/Public/Portal/Gazette/GME-06.11.2019.pdf>. Accessed on 10th September 2023.
6. NMC National Exit Test Regulations, 2023. National Medical Commission Notification, New Delhi, 27th June, 2023. Available at: <https://www.nmc.org.in/rules-regulations/nmc-national-exit-test-regulations-2023/>. Accessed on 10th September 2023.
7. Frequently Asked Questions Related to CBME Course Curriculum. Available at: <https://www.nmc.org.in/MCIRest/open/getDocument?path=/Documents/Public/Portal/LatestNews/FAQ%20for%20CBME.pdf>. Accessed on 7th October 2023.