Health Leadership and Quality of Life. 2022; 1:120
doi: 10.56294/hl2022120

ORIGINAL

Assessing the Preparedness of Healthcare Graduates for the Challenges of Modern Medicine

Evaluación de la preparación de los titulados sanitarios para los retos de la medicina moderna

Mukesh Parashar[1], Niranjan Sahu[2]

[1]Noida International University, School of Business Management. Greater Noida, India.
[3]IMS and SUM Hospital, Siksha 'O' Anusandhan (Deemed to be University), Department of Radiology. Bhubaneswar, India.

Cite as: Parashar M, Sahu N. Assessing the Preparedness of Healthcare Graduates for the Challenges of Modern Medicine. Health Leadership and Quality of Life. 2022; 1:120. https://doi.org/10.56294/hl2022120

Submitted: 10-08-2022 **Revised:** 28-10-2022 **Accepted:** 13-12-2022 **Published:** 14-12-2022

Editor: PhD. Prof. Neela Satheesh

ABSTRACT

Introduction: it explored how well healthcare graduates are prepared to face the changing demands of modern medicine. Given the rapid technological development and increasing complexity of patient care, it was important to evaluate whether current educational programs were preparing graduates with the requisite competence and knowledge.
Method: we conducted a cross-sectional survey among recent healthcare graduates from diverse medical schools. Preparedness and normalization-maintained readiness were assessed in several domains (e.g., clinical skills, communication, critical thinking, and adaptation to new technologies). Data were analyzed statistically to reveal deficits and strengths and targeted educational training were recommended.
Results: the results showed that although graduates felt adequately trained in fundamental clinical skills, they were poorly prepared in new areas like telemedicine and working on an interdisciplinary team." Many also felt they needed more training in using digital health tools and managing data. Critical thinking.
Conclusions: the study found that while healthcare graduates had a solid grounding in most core clinical skills, there was a considerable gap in their preparedness for the modern-day demands of medical practice. The way we train needs to change: include more education on emerging technologies, interdisciplinary team work and healthcare management. Enhancing these aspects may help train the next generation of health care professionals to better navigate and adapt to the complexities of modern medical systems.

Keywords: Preparedness; Telemedicine; Curricula; Interdisciplinary.

RESUMEN

Introducción: se estudió el grado de preparación de los titulados sanitarios para hacer frente a las cambiantes exigencias de la medicina moderna. Dado el rápido desarrollo tecnológico y la creciente complejidad de la atención al paciente, era importante evaluar si los programas educativos actuales preparaban a los graduados con la competencia y los conocimientos necesarios.
Método: se realizó una encuesta transversal entre recién licenciados en asistencia sanitaria de diversas facultades de medicina. Se evaluó la preparación y la normalización de la preparación en varios dominios (por ejemplo, habilidades clínicas, comunicación, pensamiento crítico y adaptación a las nuevas tecnologías). Los datos se analizaron estadísticamente para revelar los déficits y los puntos fuertes, y se recomendó una formación educativa específica.
Resultados: los resultados mostraron que, aunque los licenciados se sentían adecuadamente formados en habilidades clínicas fundamentales, estaban poco preparados en áreas nuevas como la telemedicina y el trabajo en un equipo interdisciplinar». Muchos también consideraban que necesitaban más formación en el uso de herramientas sanitarias digitales y la gestión de datos. Pensamiento crítico.

Conclusiones: el estudio concluyó que, aunque los graduados sanitarios tenían una base sólida en la mayoría de las competencias clínicas básicas, existía una brecha considerable en su preparación para las exigencias actuales de la práctica médica. Hay que cambiar la forma de formar: incluir más formación sobre tecnologías emergentes, trabajo en equipos interdisciplinares y gestión sanitaria. Potenciar estos aspectos puede ayudar a formar a la próxima generación de profesionales sanitarios para que se desenvuelvan mejor y se adapten a las complejidades de los sistemas médicos modernos.

Palabras clave: Preparación; Telemedicina; Planes de Estudios; Interdisciplinariedad.

INTRODUCTION

Technological innovations, demographic shifts and changing patient expectations are revolutionizing healthcare delivery at a dizzying pace.[1] Now, with the intricacies of modern medicine taking over our health care system, graduates need a solid basis in science but also must be adaptable, able to communicate effectively and empathetically and have a host of professional skills.[2] We investigate the readiness of healthcare graduates to face the challenges of modern-day medical practice including the current education framework, integration of technology, the relevance of soft skills, and the need for continuous professional development.[3] Current educational framework Traditionally, healthcare education has focused on teaching biological sciences, clinical skills, and ethics, etc. Progressive aspects of medical and nursing schools include the incorporation of problem-based learning, simulation exercises, and interprofessional education into their curricula to better simulate the real-world experience.[4] But still, the questions will persist whether these graduates are really prepared for the demands of the contemporary healthcare environment. A major issue is, depth or breadth of the medical education.[5] While foundational knowledge is important, a flood of medical information and rapid specialization means that over time, graduates feel overwhelmed. There needs to be an ongoing evolution of curricula that reveal an equilibrium between providing adequate insight into science while developing practical expertise; delivering both a strong foundation and its effective application in the clinical context.[6] Tech Integration Technology has become a cornerstone of to-day medicine, with electronic health records, telemedicine, and AI-driven diagnostics becoming integral to healthcare delivery. Graduates need to be not only familiar and comfortable working with these technologies but also aware of the implications they hold for patient care, privacy,[7] and ethical practice. Many of today's educational programs incorporate digital literacy and data management skills into their curricula. Simulation-based training with the use of virtual reality and AI-enabled personalized learning platforms dispreading students for a tech-enabled healthcare workplace. But they need to be updated constantly to keep up with tech updates. Graduates also need to be trained to critically evaluate the limitations of these technologies, as well as keep the patient central to the process in the presence of a digital intervention.[8] Non-Technical Skills Riding on the technical part, non-technical skills like communication, empathy, teamwork, and cultural competency, take precedence over everything in today's healthcare. These competencies are essential for proper interaction with patients, teamwork in an interdisciplinary setting, and dealing with ethical dilemmas factors that directly affect patient outcomes and satisfaction.[9] Medical school programs increasingly acknowledge the importance of such skills, including training in communication and ethical decision-making. To deepen these competencies, experiential learning opportunities are being used, including community-based projects and patient interaction simulations.[10] Legislation as well as regulation can also go farther to bring attention to the importance of emotional intelligence and compassion in healthcare, which are often the hardest areas to instill and to measure.

The main contribution of the paper has the following:

- The findings underscore the need for updating existing medical curricula to include emerging technologies in healthcare, a stronger focus on patient-centered care and increased interprofessional collaboration, all equipping graduates for 21st-century healthcare challenges.
- It assesses graduates on the basis of those hands-on skills, critical thinking, and adaptability needed to succeed in the complexity of modern healthcare — helping institutions prepare and train future physicians to meet those needs.
- Such assessments inform policymakers on how to set up frameworks and standards in education for the health professions, which helps to ensure that these professions meet the needs of modern medicine, resulting in a positive impact on overall healthcare delivery and patient outcomes.

METHOD

Challah, K. T., teal. Modern teaching and learning methods in medical education, such as active learning, problem-based learning, team-based learning, simulation-based training, flipped classroom, and online learning have been elaborated in separate articles . They encourage students to think critically, work in a collaborative

manner, and problem-solve within a clinical context. Walker, L. E., et al. have explored this paper, which focused on student experiences and understanding of interprofessional education during rural placement. Qualitative and quantitative methods were utilized together to collect data, and the results indicated positive experiences by students Relatedly, perception of interprofessional education value for future rural practice was reported. Busch, W. S., teal. Obesity is a common health issue that should be a focus for training medical students to treat obese patients . Obesity education is often not a priority in medical schools which can leave students unprepared to treat patients with obesity, leading to poor patient outcomes and the need for more education in this area. Buerkle Jr et al. Chang Ch. et al. Propose a health-crisis management framework. This may involve identifying potential risks, establishing protocols and procedures, allocating resources, and engaging with multiple stakeholders to avert and minimize the effects of a health crisis. Buchner, H., et al. points out that the challenges posed by COVID-19 pandemic which have never experienced before to the world. Responses to this crisis that are bold include wide-reaching vaccination campaigns, strict safety protocols, and targeted economic support for impacted individuals and businesses. Also, the need for global cooperation and solidarity to address this health crisis has also been reinforced.

Table 1. Comparative Analysis of Existing Models

Author	Year	Advantage	Limitation
Challa, K. T., et,al.	2021	Increased engagement and motivation of students through the use of interactive and technology-enhanced methods, leading to improved learning outcomes.	Increased student engagement and participation, leading to better understanding and retention of complex medical concepts.
Walker, L. E., et,al.	2019	Collaboration among students from different healthcare disciplines can improve their understanding and teamwork skills, leading to better patient care in rural areas.	Increased understanding and collaboration among healthcare professionals lead to improved patient outcomes in rural areas.
Butsch, W. S., et,al.	2020	Improved patient outcomes and quality of care through increased understanding and awareness of obesity in medical students.	Increased awareness and education on obesity in medical schools can equip future physicians with the knowledge and skills to address.
Burkle Jr,et,al.	2019	Improved preparedness and structured response to health crises, leading to more efficient and effective management and mitigation.	Insufficient resources and infrastructure can limit the effectiveness of a health-crisis management framework..
Bauchner, H., et,al.	2020	Increased speed and effectiveness of containing the spread and saving lives due to swift and decisive actions taken.	limited global collaboration, political agendas, lack of resources, economic impact, unequal distribution of vaccines and treatments
Kulasegaram, K., et,al.	2018	Beyond assessments provide instant feedback, allowing students to adjust their learning strategies and improve their understanding.	One limitation of Beyond “formative” assessments to enrich student learning may lie in their overemphasis on student-teacher collaboration rather than student-student collaboration.
Elsalem, L., et,al.	2020	Increased flexibility and convenience for students to take exams from the comfort and safety of their homes.	Lack of physical supervision may make it easier for students to cheat, potentially compromising the integrity of the exams.
Kalbarczyk, A., et,al.	2019	Helps students adequately prepare for the challenges of global health work, promoting a more meaningful and impactful experience.	Possible limitations could be a biased selection of studies or a lack of generalizability to all global health electives.
Mardani, A., et,al.	2021	The advantage is that it allows for a more systematic and accurate evaluation of complex healthcare and medical issues using mathematical models and data analysis techniques.	Limited by availability of data, subjectivity in defining fuzzy sets and determining membership degree, and lack of domain expertise.
AlMekkawi, M., et,al.	2020	One advantage of new graduate nurses’ readiness to practice is their ability to adapt quickly to changing healthcare environments.	Adaptation to the complex demands of an actual healthcare setting may be challenging to assess accurately.

Gunasegaram, K., teal. have discussed. In addition to “formative” assessments, teachers implement techniques that enable them to gather evidence of student learning to adjust their instructional strategies and to give students focused and impactful feedback. These include all formal and informal measures, including

performance tasks, observation, self-assessment, as well as tests and quizzes. Elsabe, L., et al. the transition to remote online exams due to the COVID-19 pandemic can induce stress and behavioral modifications right away is widely explored by (Aldhafeeri et al. . The strange nature and technical challenges of online examinations can cause increased anxiety and pressures to perform well, leading to changes in study habits, sleep patterns, and general well-being. Abramczyk, A., teal. have discussed. The review describes the availability of and content of pre-departure materials for students going on global health electives. It assesses the effectiveness of these resources in preparing students for their international exchange experience and identifies potential areas for growth. These insights can guide the development and refinement of resources to support future participants. Mardini, A., et al. debated how decision making and fuzzy sets theory could be used in health and medical settings to solve complex problems by multiple factors and uncertainty. This methodology can offer a systematic and organized process for evaluating medical conditions, making informed decisions, and enhancing patient outcomes.Breaking down the steps into sequential groups can help facilitate respect between medical professionals and minimize time pressures. Maekawa, M., teal. A narrative literature review of the work readiness of new graduate nurses has been discussed documenting factors affecting new graduate nurses readiness to enter the workforce. It emphasized their challenges in moving from student to practitioner, and the support and resources needed to be successful in practice. In general, it highlighted on the need for continued guidance and mentorship for ngs to successfully perform in their positions.

DEVELOPMENT

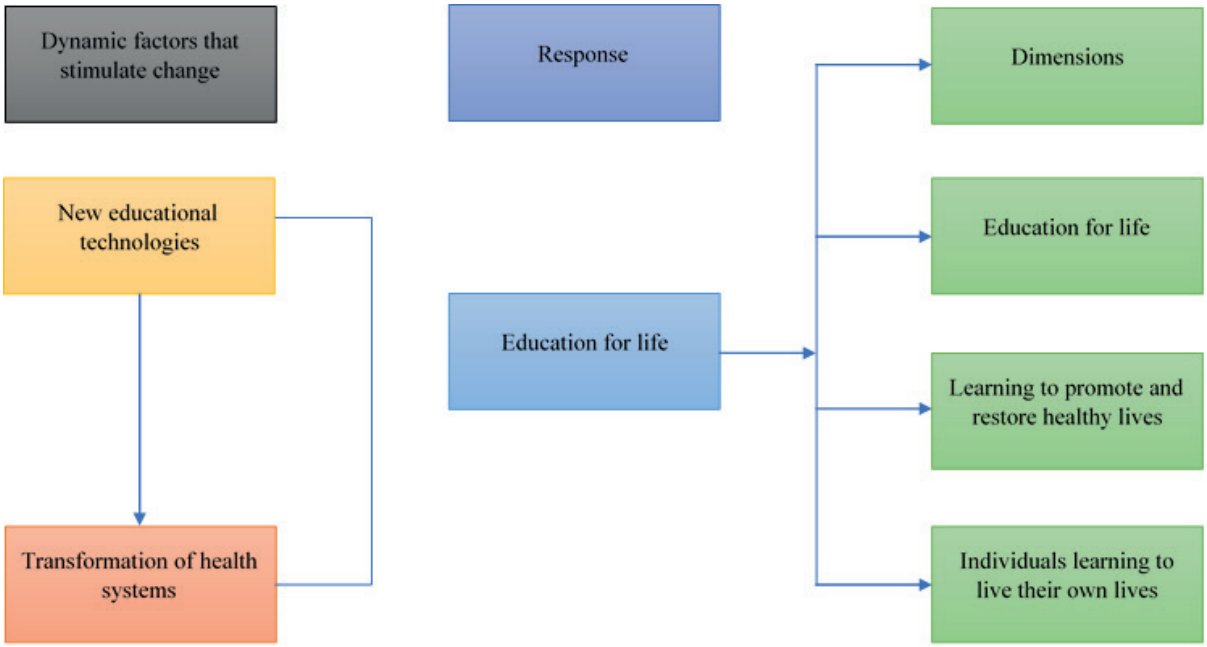

Figure 1. Development Model

How to check that the training of the health care graduates is adequate to prepare them to become practitioners for the 21st century is proposed. A comprehensive and multifaceted approach to ASU will be based on a combination of methods, including but not limited to standardized tests, simulated clinical scenarios, and clinical assessments performed in real clinical settings. Industry experts in medical education, healthcare practice, and policy will work with stakeholders to establish core competencies, which are key to meeting contemporary medical challenges including — but not limited to — acquisition of technological skills, interdisciplinary collaboration, patient-centered methodology, medical ethics, and the flexibility to learn new information as it becomes available. The framework will also focus on continuous feedback improvement to allow education institutes to update their curricula based on the gaps identified. We will prepare people to respond to an ever-evolving world by forensically remapping the training sector and using things like virtual features simulated scenarios and aspects of AI system assessment tools to be at the cutting edge. Stakeholder workshops and pilot programs will take place on a regular basis in order to continuously iterate on the framework to ensure its relevance and effectiveness. In essence, this phenomenon aims to align academic training with clinical practice thereby better-propelling healthcare graduates into the field.

Response is purely a cognitive process wherein you are in a position to respond to certain stimuli or situations. In education for life, response is the process of receiving information and knowledge. This could be their engagement level, the questions they ask and their application of learning. On the other hand dimensions

are aspects of education for life with a more holistic learning experience. These dimensions spans not just academic knowledge, but also social, emotional, and physical skills. Education for Life works to cultivate the growth of students in all these directions, in preparation for the long term challenges of adult life. Figure 1 shows the Development Model.

This is because education for life is about the overall holistic development of individuals, which is not limited to academic success but for personal growth as well. This involves equipping students with life skills while they study so that they appreciate education and develop into responsible, productive members of society. Knowing your student's refinement as a learner, education for life prepares students with practical skills and understanding vital to facing life and are independent learners. Students will achieve practical knowledge in schools rather than memorizing study materials to pass their exams. In summary, the blend of response, dimensions and education for life form a comprehensive and pragmatic view of education that equips learners to excel throughout their lives.

RESULTS AND DISCUSSION

Here are some key findings as to how prepared they feel: The outcomes suggest that graduates may have an adequate foundation in terms of medical knowledge but both technical expertise and interdisciplinary collaboration alongside patient-centered care preparedness are frequently lacking. With medical technology continually evolving and healthcare systems becoming increasingly complex, the skills needed go far beyond what is typically taught in medical school. As new doctors, the majority of graduates have a strong understanding of the fundamental technical skills, but they lack experience applying these skills in diverse and high-stakes environments. It is still a challenge to incorporate new technologies like telemedicine and electronic health records into practice. Communication is one aspect that must be worked on to be a good doctor since you will have to provide patient care, but also work as part of a multidisciplinary team. ChatGPT Hope =Future medical professionals, increasing opportunities for learning; focusing on different abilities like adaptability, critical thinking and use of modern technologies etc. In addition, collaborations between academic institutions and healthcare facilities could provide students with hands-on learning experiences that are ultimately an appropriate fit for the realities of modern medicine. Additionally, due to the rapid advancement of medical science, it is critical to develop a culture of lifelong learning and professional development. Educational deficits need to be identified and corrected in order to train clinicians who will be able to meet the requirements and complexities of modern and future healthcare.

Knowledge and skills assessment

This essential process evaluates the knowledge and skills of healthcare graduates to determine their readiness for the challenges of modern medicine. This refers to the assessment of theoretical knowledge and practical skills that graduates have acquired during education and training. It also tests their critical thinking, problem-solving, communication and teamwork skills, which are necessary to succeed in the workplace and are essential for healthcare professionals to drive practice change. This assessment can comprise of multiple-choice exams, practical exams, standardized patient interactions, and simulation-based exercises. Figure 2 shows the Computation of Knowledge and skills assessment Model.

Table 2. Comparison of Knowledge and skills assessment

No. of Inputs	Comparison Models				
	HC	DH	OM	HP	Proposed Model
100	34,7	30,1	35,6	32,4	31,9
200	29,8	33,5	34,2	31,1	30,7
300	36,4	32,9	30,3	35,1	29,7
400	31,6	29,3	33,8	36,1	34,5
500	32,2	34,9	29,5	30,4	35,3

These assessment methods may help to evaluate the graduates' understanding and demonstration of medical knowledge, clinical reasoning, and other hands-on skills.

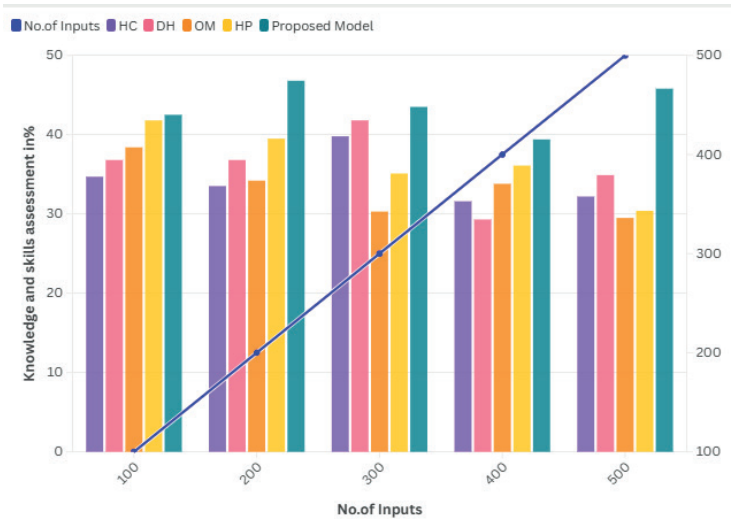

Figure 2. Computation of Knowledge and skills assessment Model

Critical thinking and problem solving

Healthcare graduates need to be able to think critically and solve problems to prepare themselves in the rapidly changing healthcare environment. These skills enable them to dissect complex situations, reason clinically, and create new strategies to meet challenges. This is a reminder that healthcare graduates cannot afford to ignore more technical aspects if they want to strengthen their critical thinking and problem-solving skills. Figure 3 shows the Computation of Critical thinking and problem-solving Model.

Table 3. Comparison of Critical thinking and problem solving

No. of Inputs	Comparison Models				
	HC	DH	OM	HP	Proposed Model
100	33,2	29,4	31,7	35,4	36,6
200	32,8	35,2	34,0	30,9	31,2
300	29,1	33,7	36,2	32,5	34,3
400	35,8	31,4	30,6	34,6	33,0
500	32,0	36,3	29,9	35,5	30,8

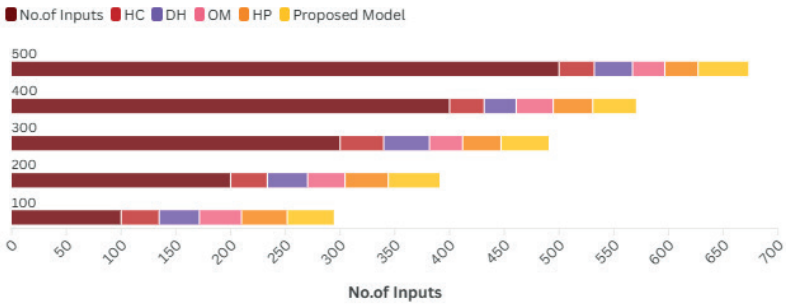

Figure 3. Computation of Critical thinking and problem-solving Model

Moreover, they can help in practical decision-making and problem-solving in this field by developing communication and collaboration skills. By valuing critical thinking in the education of medical professionals, we encourage a generation that approaches the complexities of modern medicine holistically with the ability to critically assess and administer care that will benefit their patients.

Interprofessional teamwork

Interprofessional teamwork refers to the collaboration and coordination among healthcare professionals from different disciplines to provide high-quality patient care. The main components of interprofessional teamwork include effective communication, mutual respect, and shared decision-making. Figure 4 Computation of shows the Interprofessional teamwork Model.

https://doi.org/10.56294/hl2022120

Table 4. Comparison of Interprofessional teamwork

No. of Inputs	Comparison Models				
	HC	DH	OM	HP	Proposed Model
100	30,0	34,1	36,5	29,6	35,7
200	31,8	33,4	35,0	36,0	32,3
300	30,5	29,2	31,3	34,8	35,9
400	36,7	32,6	33,1	29,0	31,0
500	34,4	35,2	30,9	32,1	33,6

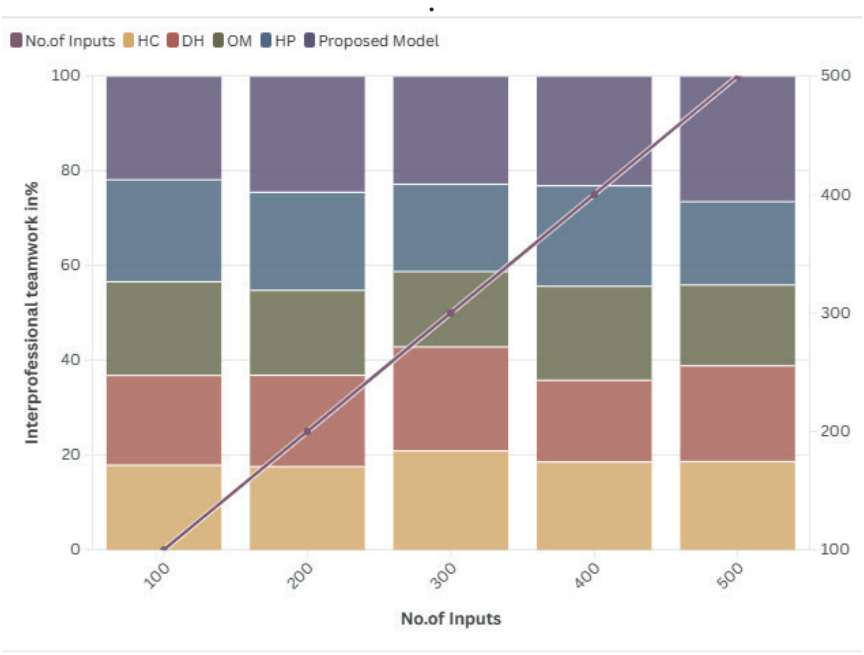

Figure 4. Computation of Interprofessional teamwork Model

To assess the preparedness of healthcare graduates for the challenges of modern medicine, factors such as their understanding of interprofessional teamwork, their ability to work in a team, and their communication skills must be evaluated. Additionally, their knowledge of ethical and cultural considerations, as well as their adaptability and critical thinking skills, are also important indicators of their readiness to tackle the complexities of modern healthcare.

CONCLUSIONS

Thus, it can be concluded that healthcare graduates are not sufficiently prepared to face the challenges of 21st-century medicine as implied by many studies and literature references. As a result, they are not aware of, nor do they have the requisite knowledge, skills and competencies in disciplines such as interdisciplinary teamwork, patient-centered care, cultural competency, and technology implementation (IOM, 2010). Readiness is critical, and the absence of systems in place can cause poor outcomes for patients and healthcare systems alike. Today's healthcare landscape is more complex than ever, with rapid advances in technology, diverse patient populations, and an increasing focus on collaborative care. As the healthcare landscape is continuously changing, so is the demand for healthcare professionals. However, despite the growing awareness of the need for these skills and their demonstrated relationship to health-related outcomes, there is a lack of integration of these skills into health care professional training curricula. Most programs maintain a traditional orientation toward medical knowledge and clinical skills, resulting in insufficient attention to the formation of critical competencies. This underscores the necessity of reform in the education and training of healthcare professionals to better prepare them for the challenges of modern medicine. Identifying Root Causes and Addressing the Gaps: A Plan of Action There is currently a lack of common curriculum, interprofessional education, experiential learning opportunities, and cultural competency among healthcare professionals, which have been proposed as solutions to develop healthcare professionals' cultural competencies and mitigate culture shock (238,239,240). Therefore, curriculum should also be continually developed and updated according to the changes being made

in the field of healthcare to provide better standards. Ultimately, the issue of healthcare graduates being prepared for the challenges of modern medicine involves multiple facets and will require contributions and action from all parties involved. With healthcare challenges constantly evolving, adequate preparation of healthcare graduates will ensure their proficiency in delivering high-quality and patient-centered care.

BIBLIOGRAPHIC REFERENCES

1. Challah, K. T., Sayed, A., & Acharya, Y. (2021). Modern techniques of teaching and learning in medical education: a descriptive literature review. Mede Publish, 10.

2. Walker, L. E., Cross, M., & Barnett, T. (2019). Students' experiences and perceptions of interprofessional education during rural placement: A mixed methods study. Nurse education today, 75, 28-34.

3. Busch, W. S., Kushner, R. F., Alford, S., & Molars, B. G. (2020). Low priority of obesity education leads to lack of medical students' preparedness to effectively treat patients with obesity: results from the US medical school obesity education curriculum benchmark study. BMC medical education, 20, 1-6.

4. Buerkle Jr, F. M. (2019). Challenges of global public health emergencies: development of a health-crisis management framework. The Tohoku journal of experimental medicine, 249(1), 33-41.

5. Buchner, H., & Hartstein, J. (2020). A bold response to the COVID-19 pandemic: medical students, national service, and public health. Jama, 323(18), 1790-1791.

6. Gunasegaram, K., & Gangadhara, P. K. (2018). Beyond "formative": assessments to enrich student learning. Advances in physiology education, 42(1), 5-14.

7. Elsabe, L., Al-Azzam, N., Jumu'ah, A. A., Obeidi, N., Indiana, A. M., & Chaiwallah, K. A. (2020). Stress and behavioral changes with remote E-exams during the Covid-19 pandemic: A cross-sectional study among undergraduates of medical sciences. Annals of Medicine and Surgery, 60, 271-279.

8. Abramczyk, A., Nagourney, E., Martin, N. A., Chen, V., & Hanston, B. (2019). Are you ready? A systematic review of pre-departure resources for global health electives. BMC medical education, 19, 1-10.

9. Mardini, A., Hooker, R. E., Oulu, S., Yihan, S., Nashi, M., Sabzi, H. Z., & Fei, G. C. (2021). Application of decision making and fuzzy sets theory to evaluate the healthcare and medical problems: a review of three decades of research with recent developments. Expert Systems with Applications, 137, 202-231.

10. Maekawa, M., & El Khalil, R. (2020). New graduate nurses' readiness to practice: a narrative literature review. Health Professions Education, 6(3), 304-316.

FINANCING

None.

CONFLICT OF INTEREST

None.

AUTHORSHIP CONTRIBUTION

Conceptualization: Mukesh Parashar, Niranjan Sahu.
Data curation: Mukesh Parashar, Niranjan Sahu.
Formal analysis: Mukesh Parashar, Niranjan Sahu.
Drafting - original draft: Mukesh Parashar, Niranjan Sahu.
Writing - proofreading and editing: Mukesh Parashar, Niranjan Sahu.