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Early clinical exposure: Dynamics, opportunities, and challenges in modern medical education

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Abstract:

INTRODUCTION: Applications of early clinical exposure (ECE) are wide-ranging and reflect the important role that ECE plays in medical education. This review article aimed to highlight the dynamics, opportunities, and challenges of ECE in medical education.

STUDY METHODOLOGY: This review article was conducted through a comprehensive search of electronic databases including PubMed, Scopus, Web of Science, and Google search engine. The keywords used for the search were “early clinical exposure,” “medical education,” “clinical skills,” “patient contact,” and “medical students. The inclusion criteria for selecting the articles were that they should be written in English, peer-reviewed, and provide insights into the dynamics, opportunities, and challenges of ECE in medical education.

RESULTS: ECE allows students to gain a deeper understanding of the patient experience, and to develop empathy and a patient-centered approach to care. ECE can also help to improve recruitment and retention of medical students, by providing a more engaging and rewarding learning experience.

CONCLUSION: ECE is a promising teaching method that has the potential to improve clinical skills and patient outcomes. However, it also poses some challenges that must be addressed to ensure its effective implementation.

Keywords:

Early clinical exposure, integrated teaching, medical education

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Introduction

The concept of early clinical exposure (ECE) has evolved over time, but it has its roots in the early days of modern medical education in the late 19th century.^[1,2] In the past, medical education primarily consisted of lectures, with minimal practical training.^[3] However, in the late 19th century, there was a growing recognition that medical students needed more practical experience to be better prepared for clinical practice.^[4-6] Today, ECE programs are an integral part of medical education in many countries around the world.^[7-13] ECE programs come in many different forms, including shadowing programs, clinical immersion

programs, and community-based clinical experiences. They are designed to provide students with direct patient contact, as well as opportunities to observe and participate in clinical care, under the supervision of experienced clinicians.^[7] Overall, the history of ECE reflects a growing recognition of the importance of practical training and clinical experience in medical education, and the ongoing efforts of medical educators to find innovative ways to help medical students develop the knowledge, skills, and attitudes they need to become effective and compassionate physicians.^[8]

Materials and Methods

This review article was conducted through a comprehensive search of electronic

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databases including PubMed, Scopus, Web of Science, and Google search engine. This review article aimed to highlight the dynamics, opportunities, and challenges of ECE in medical education. The keywords used for the search were “early clinical exposure,” “medical education,” “clinical skills,” “patient contact,” and “medical students. The inclusion criteria for selecting the articles were that they should be written in English, peer-reviewed, and provide insights into the dynamics, opportunities, and challenges of ECE in medical education.

After the initial search, 68 articles were identified. The titles and abstracts of these articles were screened to assess their relevance to the research objective. After this initial screening, 40 articles were selected for full-text review. The full-text articles were then evaluated for their quality, relevance, and contribution to the research question. Finally, 31 articles were included in the review.

The included articles were critically evaluated and their findings were analyzed. The results were synthesized and organized into the following themes: (1) the definition and dynamics of ECE, (2) the benefits of ECE, (3) the challenges of ECE, (4) the strategies to enhance the effectiveness of ECE, and (5) the future directions for research in ECE.

Exclusion criteria: We excluded articles that did not meet the above criteria. We also excluded articles that were not published in English.

The analysis of the articles was conducted using a narrative synthesis approach. This approach involved the identification of common themes, dynamics, patterns, and relationships across the articles. The findings were then synthesized into a coherent and comprehensive narrative that addressed the research aim as summarized in Table 1.

Early Clinical Exposure (ECE) – Applications^[7,8]

ECE (ECE) has several applications in medical education and is considered an important part of training for future physicians.

Here are some of the major applications of ECE:

1. **Developing clinical skills:** ECE provides students with the opportunity to develop clinical skills such as communication, physical examination, and clinical reasoning. By engaging with patients early in their training, students can learn to apply theoretical knowledge to real-world situations and develop confidence in their ability to interact with patients.^[7,9]
2. **Understanding the patient experience:** ECE allows students to gain a deeper understanding of the patient experience, and to develop empathy and a

patient-centered approach to care. By interacting with patients and observing clinical care, students can learn about the challenges patients face, and develop a greater appreciation for the social and cultural context of illness.^[14]

3. **Fostering professional development:** ECE can help students develop professional attitudes and behaviors, such as respect for patients, collaboration with other healthcare professionals, and a commitment to lifelong learning. By observing and participating in clinical care, students can learn about the importance of teamwork, effective communication, and ethical decision-making.^[15]
4. **Improving recruitment and retention:** ECE can also help to improve recruitment and retention of medical students, by providing a more engaging and rewarding learning experience. By allowing students to engage in clinical care early in their training, they are more likely to feel a sense of purpose and engagement and to be motivated to continue their studies.^[16]
5. **Developing future leaders:** Finally, ECE can help to develop future leaders in healthcare, by providing students with the skills and experiences they need to make a positive impact in the field. By developing a patient-centered approach to care, and learning about the social and cultural context of illness, students can become advocates for healthcare equity, and work to address healthcare disparities in their communities.
6. **Shadowing opportunities:** Medical students may be able to shadow physicians, nurses, or other healthcare professionals to observe clinical care in action. This provides an opportunity for students to observe the daily work of healthcare providers, and to begin developing their clinical observation skills.
7. **Community health projects:** Medical students may participate in community health projects that allow them to work directly with patients and community members. This can provide exposure to patients with different backgrounds and health concerns and can help students to develop empathy and cultural sensitivity.
8. **Elective rotations:** Some medical schools offer elective rotations that allow students to explore clinical areas of interest, such as surgery, pediatrics, or psychiatry. These rotations provide an opportunity for students to gain exposure to the clinical environment and to begin developing clinical skills in a specific area of interest.
9. **Global health programs:** Some medical schools offer global health programs that allow students to participate in clinical care or research projects in other countries. This provides an opportunity for students to gain exposure to different healthcare systems, cultures, and patient populations.

Table 1: Comparison of study results

Study	Covering domains	Results (Knowledge, Skill, Attitude) [domain wise]	Sample size
1. MC Tayade's study (India) ^[7,8]	K-S-A	Highly significant impact over all three domains (K-S-A), 88.25% of students found it interesting and helpful	820
2. Marjorie's study (USA) ^[9]	K-S-A	Highly significant impact over all three domains (K-S-A) 93.36% of students found it interesting and helpful	190
3. M. Khabhaz's study ^[10] (Iran)	A	80.01% of students stated ECE help for making a positive attitude	298
4. Justin G. Peacock's study ^[11] (USA)	A	72% of students stated regular practical sessions should be replaced by ECE	47
5. Donna Windish's study ^[12] (USA)	A	50% of faculties strongly agree, students are not prepared while facing clinical posting years and should make necessary changes in the pattern	140
6. Bernhard Von Below's study ^[13] (Sweden)	A	70% of students agree, ECE increases motivation and confidence in practice	86

K=Knowledge; S=Skill; A=Attitude

Applications of ECE are wide-ranging and reflect the important role that ECE plays in medical education. By providing students with the opportunity to engage with patients and observe clinical care early in their training, ECE can help to develop the clinical skills, professional attitudes, and patient-centered approach that are essential for success as a physician.^[9-11]

Early Clinical Exposure (ECE) – Dynamics^[7-9]

The dynamics of ECE in medical education can be complex and can vary depending on the specific program and the goals of the educational institution. Here are some of the key dynamics that are often associated with ECE:

- 1. Student-teacher relationships:** ECE programs rely on close relationships between students and clinical teachers, who act as mentors and role models for students. These relationships are essential for helping students to develop clinical skills and professional attitudes, and for providing guidance and support during the learning process.
- 2. Patient-centered approach:** ECE emphasizes a patient-centered approach to care, in which students learn to view patients as partners in their care, and to consider the social and cultural context of illness. This approach is designed to help students develop empathy, communication skills, and a commitment to providing high-quality, patient-centered care.
- 3. Balancing exposure with safety and confidentiality:** ECE programs need to be carefully designed to ensure that patient safety and confidentiality are protected at all times, while also providing students with adequate exposure to clinical care. This can be a delicate balancing act and requires careful planning and oversight to ensure that both objectives are met.
- 4. Supporting diversity and cultural competence:** ECE programs need to ensure that students are exposed to a diverse range of patients and clinical settings, to help them develop cultural competence and sensitivity to the needs of different patient populations. This can be challenging, especially in settings where there may be limited diversity in the patient population.

- 5. Integration with other aspects of medical education:** ECE programs need to be integrated with other aspects of medical education, such as basic science education and clinical rotations. This requires coordination and collaboration between different departments and educators, to ensure that ECE is integrated into a broader educational framework.

The dynamics of ECE can be complex but are designed to provide students with a well-rounded educational experience that prepares them for the challenges of clinical care. By providing students with early exposure to clinical care, and emphasizing a patient-centered approach to care, ECE can help to foster the development of clinical skills, professional attitudes, and a commitment to providing high-quality, patient-centered care.

Early Clinical Exposure (ECE) – Research Review

The significant impact of ECE on all domains was observed in worldwide studies.

Early Clinical Exposure: Implementation Challenges^[14-25]

While ECE can provide many benefits to medical students, there are also some challenges that need to be considered. Here are some of the main challenges associated with ECE:

- 1. Balancing clinical exposure with other educational priorities:** ECE programs need to be carefully designed to ensure that they don't detract from other important educational priorities, such as basic science education. There is a risk that ECE could be seen as a "quick fix" for a lack of clinical experience, rather than an integral part of a broader educational program.
- 2. Ensuring patient safety and confidentiality:** ECE programs need to be designed to ensure that patient safety and confidentiality are protected at all times. Students must be properly trained in areas such as infection control and patient privacy and must be supervised by experienced clinicians to ensure that they don't compromise patient care.

3. **Managing student anxiety and stress:** Engaging with patients can be a stressful experience for some students, especially if they have limited experience in clinical care. ECE programs need to be designed to provide adequate support and resources to help students manage their anxiety and stress, and to prevent burnout.
 4. **Addressing diversity and cultural competence:** ECE programs need to be designed to ensure that students are exposed to a diverse range of patients and clinical settings, to help them develop cultural competence and sensitivity to the needs of different patient populations.
 5. **Evaluating the impact of ECE:** ECE programs need to be evaluated to ensure that they are achieving their intended outcomes, such as improving clinical skills and fostering professional development. This can be challenging, as the impact of ECE may not be immediately apparent, and may be influenced by a range of factors outside the control of the educational program.
3. **Cultural barriers:** Some countries are diverse with a wide range of cultures, languages, and healthcare practices. This can create challenges for ECE programs, as students may need to learn to navigate cultural differences and communicate effectively with patients from different backgrounds.
 4. **Limited diversity in patient populations:** In some countries, there may be limited diversity in the patient population, which can make it difficult for students to develop cultural competence and sensitivity to the needs of different patient populations.
 5. **Integration with medical curricula:** ECE programs need to be integrated with other aspects of medical education, such as basic science education and clinical rotations. In some countries, this can be challenging due to the complex and varied medical education system, which can vary widely from state to state.

Overall, ECE programs face a range of challenges, and need to be carefully designed to ensure that they are effective and beneficial for medical students. By addressing these challenges, ECE programs can help to prepare future physicians for the clinical challenges they will face and to develop the skills and attitudes needed to provide high-quality, patient-centered care.

Overall, early clinical exposure, ECE opportunities are designed to help medical students develop clinical skills and professional attitudes and to prepare them for the challenges of clinical care. By providing exposure to clinical care early in their educational journey, medical students can begin developing the skills and attitudes needed to provide high-quality, patient-centered care.

Early Clinical Exposure (ECE) – Challenges in Medical Education System^[7,8]

ECE in medical education can face some unique challenges in various manners in different countries. Here are some of the key challenges that can arise in developing countries:

1. **Limited resources:** In many developing countries, there may be limited resources available for ECE programs, such as clinical skills training centers, simulation labs, or other similar facilities. This can make it difficult to provide students with high-quality ECE experiences.
2. **Safety concerns:** In countries that have a large population and a complex healthcare system (like India) and safety concerns can be a major challenge for ECE programs. Ensuring that students are safe and that patient confidentiality is protected can be difficult, especially in busy clinical settings.

However, the success of ECE in medical education setup will be possible only when there will be active participation of faculties, integration-based ECE modules (horizontal as well as vertical), explicitly stated specific learning objectives, development of appropriate cases/material for a classroom setting, observation guides for a hospital setting and designing relevant and feasible projects for a community setting.^[26-31]

Conclusion

ECE is a promising teaching method that has the potential to improve clinical skills and patient outcomes. However, it also poses some challenges that must be addressed to ensure its effective implementation. Future research should focus on identifying best practices for ECE and addressing the logistical and ethical challenges associated with this teaching method.

Despite these challenges, there are also many opportunities for ECE in the medical education system. With careful planning and support, ECE programs can help to prepare medical students for the challenges of clinical care and to ensure that they have the skills and attitudes needed to provide high-quality, patient-centered care.

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Conflicts of interest

There are no conflicts of interest.

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