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Association of Early Clinical Exposure with Students' Confidence in Patient Care

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ABSTRACT

Background: Early Clinical Exposure (ECE) was designed to bridge the gap between theoretical learning and practical patient care, improving medical students' confidence and communication skills. ECE provides students with patient-centred care, the development of early engagement in clinical skills, history-taking, examinations, and interprofessional communication. Despite its addition to curricula, the specific elements of ECE that most effectively enhance confidence remain underexplored.

Methods: The study design was an observational, cross-sectional study, conducted at Nowshera Medical College that assessed the impact of ECE on student confidence across 110 medical students. Data were collected using a questionnaire, and confidence in various clinical tasks was scored on a 5-point Likert scale. Confidence scores were analysed using descriptive statistics, chi-square tests, and independent t-tests to assess associations between ECE frequency, quality, and confidence levels.

Results: The finding reveals gender and ECE frequency showed significant associations with confidence. Weekly ECE sessions were significantly associated with higher confidence levels ($p = 0.001$), while participation alone did not. Communication skills and motivation for active learning were positively impacted by ECE, with near-significant associations observed. However, the quality of ECE did not significantly affect confidence.

Conclusion: The study supports regular ECE as an important factor in developing medical students' confidence and communication abilities. Findings underscore the importance of structured, frequent ECE in fostering important clinical competencies, suggesting that medical curricula should prioritize hands-on experiences to prepare students for patient-centred care.

Keywords: Early Clinical Exposure, Medical Education, Student Confidence, Patient Care, Communication Skills, Clinical Competence

Introduction

Early clinical exposure (ECE) has become an essential part of modern medical curricula, targeting to introduce students to the realities of patient care from the beginning of their education¹. Traditionally, medical training emphasized the basic sciences in the initial years, with clinical communications postponed stages. This approach left many students feeling unprepared for the demands of patient care, mostly in interpersonal skills and clinical confidence. In recent years, medical institutions have progressively integrated ECE programs to bridge this gap, enabling students to engage in supervised patient interactions that contextualize theoretical learning and foster essential clinical skills^{2,3}.

ECE offers students the insight to practice patient-centred skills early on, which can enhance their confidence in clinical settings. Through ECE, students practised structured, surge exposure to patient interactions, history-taking, basic examinations, and interprofessional communication⁴, which are vital for building a foundation of confidence in medical practices. This early engagement also leads students to the emotional, ethical, and psychological aspects of patient care, development of empathy and a comprehensive approach to treatment⁵. Students involved in ECE programs feel at ease addressing patient concerns, which suggests that this exposure can decrease the early anxiety associated with clinical practice.

The impact of ECE on students' confidence extends beyond interpersonal skills, as it has a significant role in developing clinical reasoning and critical thinking abilities. ECE participants frequently gain an understanding of applying medical knowledge in real-life scenarios, permitting them to better integrate theoretical understanding with practical applications. This foundation can improve their problem-solving skills and improve their ability to navigate complex clinical situations. Furthermore, early exposure to clinical environments offers a safe space for students to receive feedback and reflect on their experiences, further strengthening their confidence and refining their skills⁶.

Studies report the positive impact of ECE on students' confidence in patient care, but the specific elements of ECE that most effectively foster this confidence remain underexplored⁷. This study seeks to fill this gap by examining key areas related to ECE's effect on students' self-confidence, including comfort in patient interactions, improvement of clinical examination skills, and the overall perceived benefits of ECE in personal and professional growth. The study uses a structured questionnaire to capture students' experiences with ECE, with an emphasis on aspects, frequency and quality of ECE sessions, comfort in patient interactions, and perceived readiness for clinical settings.

By assessing the association between ECE and student confidence in patient care, the rationale was to provide insights that can improve medical education. Understanding students' perspectives on the value and limitations of ECE can guide the development of effective clinical exposure programs, eventually ensuring that students are well-prepared for the demands of medical practice and capable of delivering high-quality patient care.

Methodology

The study design was an observational, cross-sectional analysis conducted at Nowshera Medical College. The objective was to assess the association between ECE and students' confidence in patient care. The study took place from January 2023 to January 2024, allowing for the observation of medical students at different stages of their training in a real-world setting.

Ethical approval was obtained from the Ethics Committee at Nowshera Medical College. All students were informed about the purpose of the study and provided written consent before participation. Confidentiality was maintained by coding all data and securely storing the information, accessible only to the primary investigator.

A total sample size of 110 students was targeted, and calculated to achieve a 95% confidence level and a 5% margin of error while accounting for variability in ECE involvements. A purposive sampling technique was used, selecting participants from all academic years to ensure a diverse range of ECE experiences. Precisely, students from first-year to final-year (fifth-year) levels were included, as each year characterised different levels of ECE engagement, from introductory exposure in initial years to more advanced clinical exposure in later years. This approach confirmed balanced representation and enabled comparisons across different academic stages.

Data were collected using a structured observational questionnaire. These tools were designed to capture information on both the extent and quality of ECE experiences and students' confidence in performing clinical tasks. The observational checklist recorded key details about ECE engagement, the timing of the initial exposure, the frequency of clinical sessions, and specific clinical skills experienced.

Students' confidence in various clinical skills was assessed using a structured rating scale in faculty evaluations. Each skill history-taking, patient interaction, clinical examination, and teamwork was scored on a 5-point Likert scale, where: 1 = Not confident at all, 2 = Slightly confident, 3 = Moderately confident, 4 = Confident and 5 = Very confident.

Faculty members scored each student's performance based on observed competencies during clinical sessions. 'Composite scores for each confidence category were calculated by averaging scores from multiple observations across different faculty members, this approach provided a reliable measure of each student's confidence level, confirming that each score reflected consistent performance over time'. 'For analysis, these composite scores were categorized to interpret overall confidence levels'. An average score of 4 or above was stratified as 'High Confidence' while scores below 3 were 'Low Confidence' The scoring method allowed for comparisons between groups, students with varying ECE exposure levels and those across different academic years.

To develop data accuracy and minimize observational bias, faculty members involved in student assessments received standardized training on using the observational checklist to ensure consistency in evaluations. 'Each student's participation in ECE was documented by recording the specific modules and clinical rotations they completed, along with details of the frequency (weekly, monthly, occasionally and rarely) and quality of ECE experiences as rated by faculty'. These data were accompanied by faculty performance evaluations, which provided insights into students' confidence and competence in patient care.

To confirm reliability, multiple faculty members conducted independent evaluations of each student's performance, and the results were averaged to obtain composite scores for each confidence measure. Moreover, students' clinical competence was assessed across standardized clinical tasks, patient history-taking and basic physical examination skills, aligning observations with defined competencies. This approach lessened potential biases from individual faculty perspectives and provided a comprehensive view of each student's confidence level.

Data were entered and analyzed using SPSS version 26.0. Descriptive statistics, including means, were calculated for the main variables. Chi-square tests were conducted to examine associations between categorical variables (ECE participation across different years), while independent samples t-tests were employed to evaluate differences in mean confidence levels by academic year and frequency of ECE engagement. A p-value of <0.05 was set as the threshold for statistical significance, ensuring robust analysis of the observed relationships.

Results

Table 1: demographic information and association with confidence in patient care, the only statistically significant finding in this table is the relationship between gender and confidence

in patient care, with a p-value of 0.016. However, other demographic factors such as age ($p = 0.51$) and year of study ($p = 0.48$) do not show statistically significant associations with confidence levels. This lack of significance implies that age and academic level do not strongly impact students' confidence in patient care.

Table 1: Demographic Information and Association with Confidence in Patient Care

Demographic Variable	Frequency (%)	p-value
Age		
18-20	26 (23.6 %)	0.51
21-23	27 (24.5%)	
24-26	19 (17.3%)	
27+	38 (34.5 %)	
Gender		
Male	58 (52.7%)	0.016
Female	52 (47.3%)	
Year of Study		
First Year	20 (20.9%)	0.48
Second Year	23 (20.9%)	
Third Year	16(14.5 %)	
Fourth Year	29 (26.4%)	
Final Year	19 (17.3%)	

Table 2 Early clinical exposure (ECE) participation and frequency, within this table, the frequency of ECE sessions is the only variable significantly associated with confidence, with a p-value of 0.001. This low p-value strongly indicates that students who participate in ECE more frequently, particularly weekly, exhibit higher confidence in patient care. Regular exposure to clinical environments appears to foster familiarity and comfort with clinical tasks, which translates to increased confidence. Conversely, ECE participation alone ($p = 0.399$) and the stage at which ECE began ($p = 0.123$) do not reach statistical significance, suggesting that occasional or late-starting ECE participation may not significantly enhance confidence. Additionally, the quality of ECE experience ($p = 0.53$) lacks a significant association, indicating that perceived quality alone does not drive confidence unless coupled with frequent clinical interactions.

Table 2: Early Clinical Exposure (ECE) Participation and Frequency

ECE Variable	Frequency (%)	p-value
Participation in ECE		
Yes	84(76.4%)	0.399
No	26 (23.6%)	
Stage ECE Began		
First Year	36 (32.7%)	0.123
Second Year	36 (32.7%)	
Third Year	38 (34.5%)	
Frequency of ECE Sessions		
Weekly	26 (23.6%)	0.001
Monthly	32 (29.1%)	
Occasionally	31 (28.2%)	
Rarely	21 (19.1%)	
Quality of ECE Experience		
Very High	16 (14.5%)	0.53

High	24 (21.8%)	
Moderate	31 (28.2%)	
Low	15 (13.6 %)	
Very Low	24 (21.8%)	

Table 3 confidence in patient care by ECE participation, and communication skills show a borderline significant association with ECE participation ($p = 0.05$), suggesting a trend where ECE participation may positively impact students' ability to communicate effectively in clinical settings. This significance, though marginal, hints at the role of ECE in fostering skills that are crucial for patient interactions. Other confidence statements, including comfort with history-taking, performing basic examinations, and feeling prepared for clinical work, have p-values above 0.05, indicating no statistically significant association with ECE participation. Thus, while most confidence areas remain unaffected, ECE might specifically support the development of communication skills, which is foundational for effective patient care.

Table 3: Confidence in Patient Care by ECE Participation

Confidence Statement	Mean Score (1-5)	p-value
I feel confident in my ability to take patient histories.	4.38	0.3
I am comfortable interacting with patients.	4.35	0.84
I am confident in performing basic clinical examinations.	4.29	0.4
I feel prepared to work in a real clinical setting.	4.26	0.13
ECE helped me develop critical thinking skills.	4.40	0.23
ECE enhanced my ability to communicate effectively.	4.20	0.05
I am more aware of practical applications due to ECE.	4.43	0.9
I am confident in establishing rapport with patients.	4.23	0.1
I am comfortable in team discussions about patient care.	4.40	0.7

Table 4 Perceived benefits of early clinical exposure, in terms of perceived benefits, motivation for active learning shows a borderline significance ($p = 0.05$), suggesting that ECE may encourage a more proactive and engaged approach to learning among students. This near-significant finding implies that students who participate in ECE might be more inclined to actively seek knowledge and practical skills. Although the results for other perceived benefits, anxiety reduction ($p = 0.18$) and confidence in handling unexpected situations ($p = 0.08$), are not statistically significant, the low p-values in these areas suggest that ECE could have potential benefits in reducing anxiety and boosting confidence, even if not conclusively proven in this sample.

Table 4: Perceived Benefits of Early Clinical Exposure

Perceived Benefit	Mean Score (1-5)	p-value
ECE helped reduce my anxiety related to patient care.	4.26	0.18
ECE improved my confidence in handling unexpected situations.	4.31	0.08
Early exposure motivates me to learn more actively.	4.33	0.05
ECE has been beneficial for my personal and professional development.	4.40	0.61

The analysis of significance across tables reveals key areas where ECE impacts student confidence. Frequent ECE sessions emerge as a critical factor, with a highly significant effect ($p = 0.001$), underscoring the importance of regular exposure in boosting confidence.

Additionally, gender shows a significant association with confidence, hinting at possible gender-related differences in self-perception in clinical tasks. The borderline significance observed in areas such as communication skills and motivation for learning highlights ECE's potential to cultivate essential clinical competencies, even if it does not universally increase all aspects of confidence. This pattern of significance suggests that while ECE's overall impact on confidence is nuanced, targeted and frequent ECE exposure could enhance specific skills crucial for patient care.

Discussion

The findings of this study contribute to a nuanced understanding of early clinical exposure (ECE) and its impact on medical students' confidence in patient care. Consistent with prior studies, our results indicate that gender significantly influences confidence, with male and female students displaying differing levels of self-assurance in clinical skills. Previous research highlights that gender-related differences in self-evaluation and confidence may stem from diverse learning styles and sociocultural influences^{8 9}. Tailoring support based on gender could, therefore, be beneficial in fostering confidence more equitably among students.

Interestingly, neither age nor academic year showed a significant association with confidence levels, diverging from the common assumption that experience and maturity inherently lead to increased confidence. This result was in line with some studies suggesting that academic progression alone does not necessarily translate to higher self-efficacy in clinical tasks^{10 11}. Instead, it points to the possibility that structured clinical experiences—rather than just academic advancement—play a more critical role in building confidence. This reinforces the importance of ECE in a medical curriculum, particularly in the early years, as a means of bridging the gap between theoretical knowledge and practical application.

While overall participation in ECE was not significantly associated with confidence levels, the frequency of ECE sessions emerged as a crucial factor. Students engaged in weekly ECE sessions reported higher confidence, which supports the study theory of experiential learning, where consistent, hands-on practice was essential for skill acquisition^{12 13}. Studies by studies similarly suggest that frequent clinical exposure promotes familiarity with patient interactions and clinical procedures, thereby enhancing students' confidence over time^{14 15}. This result underscores the value of regular clinical exposure, as opposed to sporadic ECE, in fostering self-assurance in medical practice.

Furthermore, our study found a near-significant relationship between ECE and improved communication skills, indicating ECE's potential to enhance this critical competency. Communication is essential for effective patient care and is recognized as a core clinical skill in the medical field. These results align with research, which emphasizes the role of clinical experience in developing communication skills that cannot be fully realized through theoretical learning^{16 17}. Moreover, the borderline significance observed in students' motivation for active learning aligns with previous findings that ECE can cultivate a proactive approach to learning, potentially due to the real-world relevance it brings to theoretical knowledge¹⁸.

The quality of ECE sessions, however, did not significantly impact confidence levels. This may suggest that while quality is valuable, the mere frequency of ECE could be more impactful in skill and confidence development. This aligns with the findings of studies which argue that regular, formative experiences can support learning effectively even when quality varies, as long as students are given frequent opportunities to apply and practice their skills¹⁹.

This study supports the role of regular and structured clinical exposure in enhancing medical students' confidence in patient care. While demographic factors and gender appear to influence confidence, variables like age and academic progression do not show a significant impact, suggesting that practical experience is more critical than mere academic advancement. Weekly

ECE sessions were associated with greater confidence, emphasizing the need for consistency in clinical exposure to support confidence and skill acquisition in patient care.

These findings reinforce the recommendations experiential learning framework, advocating for continuous, hands-on opportunities that go beyond theoretical instruction^{20 21}. Moreover, ECEs to enhance communication skills and active learning motivation underline its impact on critical competencies important for patient-centred care. Future research should investigate the long-term effects of ECE on confidence, and explore tailored interventions to address gender differences. This could provide valuable insights for curriculum development, ultimately preparing students to be more competent and confident healthcare professionals.

Conclusion

The critical role of consistent ECE in improving medical students' confidence in patient care. Although demographic details and gender affect confidence levels, neither age nor academic progression alone significantly affects self-assurance in clinical skills. The weekly ECE sessions showed a strong positive association with confidence, highlighting the significance of regular, structured patient interactions in building competency. Moreover, ECE has the potential to develop an important role in communication skills and encourage active learning among students. These findings suggest that medical curricula should highlight, hands-on clinical experiences to develop confident, skilled practitioners equipped for patient-centred care. Future research exploring the long-term ECE effect and gender-specific confidence support could further improve educational strategies for rising well-prepared healthcare professionals.

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