

Research Article

Perception of Early Clinical Exposure Among Medical Students After Phase I of the MBBS Programme at Defence Services Medical Academy

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Abstract

Early Clinical Exposure (ECE) introduces medical students to patients and clinical environments during the preclinical phase, facilitating integration of basic sciences with clinical practice. Evaluating students' perceptions is important for determining the educational value of ECE and identifying areas for curricular improvement. This study aimed to assess perceptions of ECE among medical students after Phase I of the MBBS programme at the Defence Services Medical Academy (DSMA). A cross-sectional survey was conducted among medical cadets who had completed Phase I of the MBBS programme at DSMA. Data were collected using a structured, self-administered questionnaire containing five-point Likert-scale items. The questionnaire assessed perceived usefulness, satisfaction with programme structure, confidence and skill development, challenges, and overall perception of ECE. Data were summarised using descriptive statistics. Students demonstrated predominantly positive perceptions of ECE. Most respondents agreed or strongly agreed that ECE helped them understand the relevance of basic sciences to clinical practice (91.8%), improved their understanding of diseases and patient care (89.0%), and enhanced early clinical reasoning skills (93.2%). ECE was also perceived to improve communication skills (91.8%), confidence in talking with patients (89.1%), observation of clinical signs (90.4%), and empathy and patient-centred attitudes (91.7%). Overall, 90.4% considered ECE a valuable component of their education, and 93.1% believed it should remain in the curriculum. Nevertheless, 89.0% agreed or strongly agreed that improvements to the ECE programme were needed. Medical students had favourable perceptions of ECE, particularly regarding integration of basic sciences with clinical practice and development of early clinical and professional skills. Continued implementation with systematic refinement of programme organisation and delivery may further enhance the educational value of ECE at DSMA.

Keywords

Early Clinical Exposure, Medical Students, Clinical Skills, Student Perception, Undergraduate Medical Education

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1. Introduction

Early Clinical Exposure (ECE) refers to the structured introduction of medical students to patients, healthcare environments, and clinical activities during the early stages of undergraduate medical education. Traditional medical curricula have generally separated preclinical sciences from clinical training, with the initial years predominantly devoted to foundational disciplines such as anatomy, physiology, biochemistry, and pathology. Although these subjects provide the scientific basis for clinical practice, students may perceive them as abstract when they are taught without direct connection to patient care. ECE has therefore emerged as an educational approach intended to bridge the gap between foundational sciences and clinical practice [1]. Contemporary health-professions education also emphasises integrated learning, educational outcomes, and responsiveness to changing healthcare needs [3, 6].

ECE may include supervised patient interactions, clinical demonstrations, hospital or ward visits, simulated patient encounters, skills-laboratory activities, communication exercises, and small-group discussions. By providing clinical context during the preclinical years, these activities can facilitate integration of theoretical knowledge with clinical application and promote meaningful, experience-based learning [2, 4, 18, 20].

In addition to supporting knowledge integration, early clinical experiences may influence students' motivation, engagement, confidence, communication, and professional development [2, 4, 15, 16]. Exposure to patients during the early stages of medical training may help students appreciate the relevance of basic science knowledge to patient care and begin developing their professional identity. However, early clinical encounters may also present challenges. Students encountering patients for the first time may experience anxiety, feel insufficiently prepared, or have difficulty adapting to unfamiliar clinical environments [5].

At the Defence Services Medical Academy (DSMA), ECE is incorporated into the Medical Year 1 and Medical Year 2 modular curriculum. Students participate in clinical demonstrations and observational experiences designed to familiarise them with clinical environments during their preclinical education. Evaluating students' perceptions is therefore important for determining the perceived usefulness, relevance, structure, and quality of these experiences.

Evidence regarding ECE within military medical education in Myanmar remains limited. Evaluation of students' experiences at DSMA may provide institution-specific evidence for curriculum development and contribute to the broader literature on early experiential learning in undergraduate medical education. Therefore, this study aimed to assess medical students' perceptions of ECE after completion of Phase I of the MBBS programme at DSMA.

2. Materials and Methods

2.1. Study Design and Setting

A cross-sectional survey was conducted at the Defence Services Medical Academy. The study period was from December 2025 to June 2026.

2.2. Study Participants

The study population consisted of medical cadets who had completed Phase I of the MBBS programme at DSMA. Participation was voluntary, and students who provided informed consent were included in the study. A total of 73 participants contributed to the Likert-scale analyses.

All questionnaire responses were reviewed for completeness before analysis. The demographic and perception data were analysed using the available responses for each item.

2.3. Data Collection Instrument

Data were collected using an anonymous, structured, self-administered questionnaire. Demographic information included age and gender. Perceptions were evaluated using five-point Likert-scale items ranging from 1 (strongly disagree) to 5 (strongly agree), an approach commonly used for measuring attitudes and perceptions [7].

The questionnaire comprised domains assessing perceived usefulness of ECE, satisfaction with the ECE programme, confidence and skill development, challenges and barriers, and overall perception. Open-ended questions were also included to capture students' comments on the most beneficial aspects of ECE, challenges experienced, and suggestions for improvement, consistent with established qualitative evaluation approaches [8].

2.4. Data Collection Procedure

Permission for data collection was obtained from the Rector of DSMA. The aims and objectives of the study were explained to the participants, and written informed consent was obtained before questionnaire administration. Standardised instructions for completing the questionnaire were provided to all participants.

2.5. Data Analysis

Data were entered using Microsoft Excel 2019 and analysed using SPSS version 22. Descriptive statistics, including mean, standard deviation, frequency, and percentage, were used to summarise the data. Results were presented in frequency-distribution tables.

2.6. Ethical Considerations

Ethical clearance was obtained from the Ethical Review Committee on Medical Research Involving Human Participants, DSMA. Participation was voluntary, and written informed consent was obtained from all participants. Privacy and confidentiality were maintained throughout the study.

3. Results

3.1. Demographic Characteristics

A total of 73 medical cadets participated in the survey. The mean age of participants was 20.5 ± 0.52 years. Of the participants, 52 (71.2%) were male and 21 (28.8%) were female, as shown in Table 1.

Table 1. Demographic characteristics of medical cadets.

Characteristic	Value
Age (years), mean $\pm$ SD	20.5 $\pm$ 0.52

Characteristic	Value
Male, n (%)	52 (71.2%)
Female, n (%)	21 (28.8%)

3.2. Perceived Usefulness of Early Clinical Exposure

Students demonstrated favourable perceptions regarding the usefulness of ECE. A total of 91.8% agreed or strongly agreed that ECE helped them understand the relevance of basic sciences to clinical practice, while 89.0% reported that ECE improved their understanding of diseases and patient care. In addition, 86.3% agreed or strongly agreed that ECE made basic science concepts easier to remember and apply.

The highest positive response in this domain concerned early clinical reasoning, with 93.2% agreeing or strongly agreeing that ECE improved their early clinical reasoning skills. Furthermore, 89.1% indicated that ECE increased their interest in studying medicine, 83.6% reported that it motivated them to learn basic sciences more deeply, and 89.0% believed that it supported early professional identity development.

Table 2. Perceived usefulness of Early Clinical Exposure.

Statement	Strongly disagree n (%)	Disagree n (%)	Neutral n (%)	Agree n (%)	Strongly agree n (%)
Helps understand relevance of basic sciences to clinical practice	1 (1.4)	2 (2.7)	3 (4.1)	43 (58.9)	24 (32.9)
Improves understanding of diseases and patient care	1 (1.4)	3 (4.1)	4 (5.5)	40 (54.8)	25 (34.2)
Makes basic science concepts easier to remember and apply	0	3 (4.1)	7 (9.6)	41 (56.2)	22 (30.1)
Improves early clinical reasoning skills	0	2 (2.7)	3 (4.1)	47 (64.4)	21 (28.8)
Increases interest in studying medicine	1 (1.4)	0	7 (9.6)	41 (56.2)	24 (32.9)
Motivates deeper learning of basic sciences	0	4 (5.5)	8 (11.0)	40 (54.8)	21 (28.8)
Supports early professional identity development	0	3 (4.1)	5 (6.8)	40 (54.8)	25 (34.2)

3.3. Satisfaction with the ECE Programme

Students generally expressed high levels of satisfaction with the structure and delivery of ECE. Approximately 76.7% agreed or strongly agreed that the duration of ECE sessions was appropriate. The content was considered appropriate for the students' level of study by 87.7%, while 87.6% considered the activities well organised.

Support from instructors and facilitators was rated particularly favourably, with 90.4% agreeing or strongly agreeing that they were supportive. In contrast, group size received the lowest positive rating in this domain, with 69.9% considering it appropriate. Approximately 79.5% felt comfortable interacting with patients, 85.0% considered the clinical environment conducive to learning, and 89.1% reported receiving clear instructions during ECE.

Table 3. Satisfaction with the Early Clinical Exposure programme.

Statement	Strongly disagree n (%)	Disagree n (%)	Neutral n (%)	Agree n (%)	Strongly agree n (%)
Duration of sessions is appropriate	0	8 (11.0)	9 (12.3)	45 (61.6)	11 (15.1)
Content matches level of study	0	3 (4.1)	6 (8.2)	50 (68.5)	14 (19.2)
Activities are well organized	0	3 (4.1)	6 (8.2)	39 (53.4)	25 (34.2)
Instructors and facilitators are supportive	0	1 (1.4)	6 (8.2)	40 (54.8)	26 (35.6)
Group size is appropriate	0	12 (16.4)	10 (13.7)	37 (50.7)	14 (19.2)
Comfortable interacting with patients	0	3 (4.1)	12 (16.4)	44 (60.3)	14 (19.2)
Clinical environment is conducive to learning	1 (1.4)	1 (1.4)	9 (12.3)	41 (56.2)	21 (28.8)
Receive clear instructions during ECE	1 (1.4)	3 (4.1)	4 (5.5)	48 (65.8)	17 (23.3)

3.4. Confidence and Skill Development

ECE was perceived to have a positive influence on students' confidence and early clinical skills. A total of 91.8% agreed or strongly agreed that ECE improved their communication

skills, and 89.1% reported increased confidence in talking with patients.

Similarly, 90.4% believed that ECE helped them observe clinical signs effectively, while 91.7% agreed or strongly agreed that ECE contributed to the development of empathy and patient-centred attitudes.

Table 4. Perceived effects of ECE on confidence and skills.

Statement	Strongly disagree n (%)	Disagree n (%)	Neutral n (%)	Agree n (%)	Strongly agree n (%)
Improves communication skills	0	1 (1.4)	5 (6.8)	44 (60.3)	23 (31.5)
Increases confidence in talking with patients	0	3 (4.1)	5 (6.8)	38 (52.1)	27 (37.0)
Helps observe clinical signs effectively	0	3 (4.1)	4 (5.5)	40 (54.8)	26 (35.6)
Develops empathy and patient-centred attitudes	1 (1.4)	0	5 (6.8)	42 (57.5)	25 (34.2)

3.5. Challenges Associated with ECE

Despite the favourable overall perceptions, some students reported challenges during ECE. Approximately 27.4% agreed or strongly agreed that they experienced anxiety or

stress, while 23.2% perceived an increase in workload pressure. About 24.6% reported that ECE sessions felt rushed.

Difficulty communicating with patients was reported by 28.8% of students. Furthermore, 24.6% agreed or strongly agreed that the clinical environment could be overcrowded.

Table 5. Perceived challenges associated with Early Clinical Exposure.

Statement	Strongly disagree n (%)	Disagree n (%)	Neutral n (%)	Agree n (%)	Strongly agree n (%)
Feel anxious or stressed during ECE	7 (9.6)	25 (34.2)	21 (28.8)	18 (24.7)	2 (2.7)
ECE increases workload pressure	5 (6.8)	31 (42.5)	20 (27.4)	15 (20.5)	2 (2.7)

Statement	Strongly disagree n (%)	Disagree n (%)	Neutral n (%)	Agree n (%)	Strongly agree n (%)
ECE sessions feel rushed	3 (4.1)	23 (31.5)	29 (39.7)	15 (20.5)	3 (4.1)
Difficulty communicating with patients	9 (12.3)	27 (37.0)	16 (21.9)	20 (27.4)	1 (1.4)
Clinical environment can be overcrowded	4 (5.5)	26 (35.6)	25 (34.2)	15 (20.5)	3 (4.1)

3.6. Overall Perception of ECE

Overall perception of ECE was highly favourable. A total of 90.4% agreed or strongly agreed that ECE was a valuable

part of their education, while 93.1% believed that it should remain in the curriculum. However, 89.0% also agreed or strongly agreed that improvements were needed in the ECE programme.

Table 6. Overall perception of Early Clinical Exposure.

Statement	Strongly disagree n (%)	Disagree n (%)	Neutral n (%)	Agree n (%)	Strongly agree n (%)
ECE is a valuable part of my education	0	1 (1.4)	6 (8.2)	42 (57.5)	24 (32.9)
ECE should remain in the curriculum	0	0	5 (6.8)	35 (47.9)	33 (45.2)
Improvements are needed in the ECE programme	0	1 (1.4)	7 (9.6)	36 (49.3)	29 (39.7)

4. Discussion

The present study demonstrated predominantly favourable perceptions of ECE among medical students after Phase I of the MBBS programme at DSMA. Students perceived ECE as beneficial across several educational domains, including integration of basic sciences with clinical practice, early clinical reasoning, motivation, communication, confidence, clinical observation, empathy, and professional identity development.

One of the principal findings was the strong perception that ECE enhanced the relevance of basic sciences to clinical practice. More than nine out of ten students agreed or strongly agreed that ECE helped them understand this relationship. This finding is consistent with the central rationale for ECE and with previous studies showing that early patient contact can make foundational learning more clinically meaningful [1, 2, 4, 9, 12, 17, 18].

A similarly important finding was the favourable perception of ECE in relation to early clinical reasoning. More than 93% of respondents believed that ECE improved their early clinical reasoning skills. Previous ECE studies have also reported perceived gains in clinical reasoning, application of knowledge, and early clinical skills [9-12, 15]. Clinical exposure during the preclinical phase may provide opportunities for students to begin linking symptoms, clinical observations,

and patient problems with underlying scientific principles. However, because this study assessed perceived rather than objectively measured clinical reasoning, the finding should be interpreted as evidence of perceived educational benefit rather than demonstrated improvement in competence.

ECE also appeared to have an important motivational role. Most students reported increased interest in studying medicine, greater motivation to learn basic sciences, and support for early professional identity development. Similar benefits related to motivation, attitude, and professional development have been described in previous studies [10, 13, 16, 19]. Early encounters with patients may enable students to understand the purpose of their foundational learning and appreciate its future relevance to clinical responsibilities.

Students also perceived substantial benefits in communication skills and confidence. More than 90% reported improvement in communication skills, and almost 90% believed that ECE increased their confidence in talking with patients. Most students also believed that ECE improved their ability to observe clinical signs. Comparable improvements in communication, confidence, and clinical skills have been reported in ECE programmes in different educational settings [9-12, 17, 18, 20]. These findings suggest that early exposure may provide opportunities to begin developing interpersonal and observational skills before students enter the more intensive clinical phases of their programme.

Another notable finding was the favourable perception of

ECE in promoting empathy and patient-centred attitudes. More than nine out of ten students believed that ECE contributed to these attributes. Previous research has similarly suggested that early clinical experience can support professional attitudes, empathy, and patient-centred perspectives [10, 13, 15, 18]. Early interaction with patients may help students appreciate the personal and social dimensions of illness and begin developing professional attitudes alongside biomedical knowledge.

Despite the overall favourable perception, the study identified several areas that may warrant programme improvement. Group size received the lowest positive rating among the satisfaction items, with approximately 30% of respondents either disagreeing or remaining neutral regarding its appropriateness. Large student groups may reduce opportunities for direct participation and individualised feedback. Reviewing group allocation may therefore improve students' engagement during clinical activities.

Patient interaction also represents an area for attention. Although most respondents felt comfortable interacting with patients, 28.8% reported difficulty communicating with them, and 27.4% experienced anxiety or stress during ECE. Similar challenges during early patient contact have been reported in other settings [5, 11, 12, 14, 18]. Structured orientation, preparatory communication training, simulation, and supportive supervision may help students adapt more confidently to early patient encounters.

Other challenges included perceived workload pressure, rushed sessions, and overcrowding of the clinical environment. Although these concerns were reported by a minority of students, they may influence the quality of learning experiences. Appropriate scheduling, sufficient time for patient encounters, and careful selection of clinical learning environments may help address these issues.

The overall findings strongly support the educational acceptability of ECE at DSMA. More than 90% considered ECE a valuable part of their education, and 93.1% believed that it should remain in the curriculum. Similar favourable student perceptions and support for continued ECE have been reported in other institutions [11, 12, 14, 15, 20]. Interestingly, 89.0% of participants simultaneously believed that programme improvements were required. These findings indicate that students support the concept and continuation of ECE while recognising opportunities to optimise its implementation.

This study has several limitations.

First, it was conducted at a single medical institution; therefore, the findings may not be generalisable to students at other medical schools or educational settings.

Second, the study assessed students' self-reported perceptions. Positive perceptions do not necessarily demonstrate objective improvement in knowledge, clinical reasoning, communication ability, or clinical competence. Future studies incorporating objective assessments would provide stronger evidence regarding the educational effectiveness of ECE.

Third, the cross-sectional design evaluated perceptions at a

single stage of medical training and cannot determine the long-term impact of ECE on subsequent clinical performance.

Finally, the study primarily used descriptive data and did not evaluate associations between student characteristics and perceptions. Future studies using longitudinal designs and analytical methods could provide a more comprehensive evaluation of ECE outcomes.

5. Conclusions

Medical students after Phase I of the MBBS programme at DSMA demonstrated favourable perceptions of Early Clinical Exposure. ECE was perceived to enhance integration of basic sciences with clinical practice, early clinical reasoning, communication skills, confidence in patient interaction, observation of clinical signs, empathy, and professional development.

The majority of students considered ECE a valuable component of their medical education and supported its continuation in the curriculum. Nevertheless, the perceived need for programme improvement highlights opportunities to optimise group size, student preparation, patient communication, session organisation, and the clinical learning environment. Continued evaluation and systematic refinement of ECE may further enhance its educational effectiveness within the DSMA curriculum.

Abbreviations

DSMA	Defence Services Medical Academy
ECE	Early Clinical Exposure
MBBS	Bachelor of Medicine and Surgery
SD	Standard Deviation
SPSS	Statistical Package for the Social Sciences

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Author Contributions

Myint Thein Naing: Conceptualization, Data curation, Formal Analysis, Funding acquisition, Methodology, Project administration, Supervision, Validation, Writing – original draft, Writing – review & editing

Pyi Hein Kyaw: Data curation, Formal Analysis, Investigation, Software, Writing – original draft

Tun Tun Naing: Data curation, Formal Analysis, Methodology, Software, Visualization, Writing – review & editing

Kyaw Swar Htoon: Data curation, Methodology, Supervision, Validation

Ye Phyo Aung: Conceptualization, Methodology, Supervision, Validation, Writing – review & editing

Data Availability Statement

The data are available from the corresponding author upon reasonable request.

Conflicts of Interest

The authors declare no conflicts of interest.

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Biography



Myint Thein Naing is a Consultant Physician and Neurologist registered with the Myanmar Medical Council, with extensive experience in internal medicine, neurology, inpatient and outpatient care, undergraduate and postgraduate medical education, clinical research, curriculum development, and academic assessment. He has experience leading multidisciplinary teams, supervising junior doctors and trainees, developing stroke services, and delivering patient-centred neurological care. He is a Lecturer at the Defence Services Medical Academy with more than 15 years of involvement in medical education and clinical training.



Pyi Hein Kyaw is an Assistant Lecturer in the Department of Medical Education at the Defence Services Medical Academy (DSMA), Myanmar, and joined the department in 2025. He received his MBBS degree in 2009 and earned a Master of Medical Science (M.Med.Sc) in Environmental Health in 2014. He is currently pursuing a Diploma in Medical Education. Prior to his academic appointment, he served as a Battalion Medical Officer and later as a Staff Officer at the Directorate of Medical Services. His interests include medical education, curriculum development, assessment, environmental health, educational research, and the application of artificial intelligence in health professions education.



Tun Tun Naing is currently an Assistant Lecturer in the Department of Medical Education at the Defence Services Medical Academy. He received his MBBS in 2006, MMedSc (Public Health) in 2009, and Diploma in Medical Education in 2015. He earned a Master of Public Policy from Meiji University, Tokyo, in 2020 through the JICA Scholarship Program. He also serves on the joint secretariat of the Myanmar Military Medical Conference and works as a reviewer for The Asia Pacific Scholar (TAPS) and Frontiers in Medicine. He participates in local and international medical education and public health research.



Kyaw Swar Htoon is a Professor of Pharmacology at the Defence Services Medical Academy (DSMA) in Yangon, Myanmar. A distinguished alumnus of DSMA, he earned his PhD in Pharmacology in 2018 from the institution, establishing a robust foundation in clinical and experimental drug research. His academic and research portfolio spans clinical pharmacology, ethnopharmacology, and medical education. He also actively researches educational assessment metrics to optimize testing methodologies for future medical professionals.



Ye Phyo Aung is a Senior Lecturer and Head of the Department of Medical Education at the Defence Services Medical Academy, Yangon, Myanmar. He earned his M.H.P.E. in Medical Education from Maastricht University in 2017 and received a fellowship from the International Association of Medical Science Educators in 2023. He has served as a reviewer for Medical Science Educator (MSE), The Asia Pacific Scholar (TAPS), and Medical Education since 2021. He has participated in international research collaborations in medical education and currently serves in leadership and academic roles at national and international conferences, including as Secretary, Chair, Speaker, and Judge.

Research Field

Myint Thein Naing: Medical and Health Sciences, Neurology Science, Clinical Research, Medical Education

Pyi Hein Kyaw: Medical and Health Sciences, Preventive and Social Medicine, Environmental Health, Medical Education

Tun Tun Naing: Medical and Health Sciences, Preventive and Social Medicine, Public Health, Medical Education

Kyaw Swar Htoon: Medical and Health Sciences, Pharmacology, Clinical Research, Medical Education

Ye Phyo Aung: Medical and Health Sciences, Medical Education, Clinical Research