
Bridging Practice and Perception: Quantitative Insights into Teaching and Learning in Year 4 Medical Education at Defence Services Medical Academy

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Abstract

Background: Clinical education plays a pivotal role in preparing medical students for professional practice. The quality of teaching and learning during these years profoundly shapes students' competence, confidence, and preparedness for internship. At the Defence Services Medical Academy (DSMA), there has been limited quantitative evaluation of students' perceptions regarding teaching quality, learning environment, and feedback systems.

Objective: This study aimed to assess Year 4 medical cadets' perceptions of teaching and learning quality at DSMA, focusing on six key domains: Teaching Quality, Active Learning, Learning Environment, Assessment and Feedback, Preparedness, and Overall Satisfaction.

Methods: A cross-sectional descriptive design was employed involving 44 Year 4 cadets enrolled in the 2025 academic year. Data were collected between October and December 2025 using a structured, self-administered questionnaire rated on a five-point Likert scale. Responses were analyzed using SPSS version 22, applying descriptive statistics and multiple regression analysis to explore relationships between variables, with significance set at $p < 0.05$.

Results: Overall student perceptions were highly positive, with mean scores ranging from 3.8 to 4.1 across all domains. The highest mean score was recorded for Overall Satisfaction (4.1 ± 0.7), followed by Active Learning (4.0 ± 0.5). Regression analysis demonstrated a strong correlation ($R = 0.834$, $R^2 = 0.696$, $p < 0.001$), with Preparedness ($\beta = 0.316$) and Teaching Quality ($\beta = 0.278$) emerging as the most influential predictors of satisfaction.

Discussion: Findings highlight the effectiveness of DSMA's clinical education structure, particularly in promoting active and experiential learning through bedside teaching and simulation. However, slightly lower ratings for feedback suggest that enhancing formative feedback practices could further improve satisfaction and learning outcomes.

Conclusion: Year 4 cadets at DSMA expressed strong satisfaction with teaching and learning experiences, reflecting a well-structured, supportive, and engaging clinical education environment. Continued emphasis on feedback quality and preparedness will further strengthen the link between learning experiences and clinical competence.

Keywords: Teaching Quality, Active Learning, Learning Environment, Preparedness, Medical Education

1. Introduction

Medical education during the clinical years is a pivotal stage that bridges foundational knowledge with professional practice. The transition from pre-clinical to clinical training demands not only technical competence but also adaptability, communication, and professionalism. Studies consistently demonstrate that the quality of teaching and learning in these years shapes students' motivation, confidence, and readiness for internship (Harden, 2001; Dornan et al., 2007). Teaching strategies that foster active participation, critical reasoning, and self-directed learning are associated with stronger clinical competence and improved patient care outcomes (Spencer, 2003; Yardley et al., 2012).

Several educational theories underpin effective clinical teaching. Adult learning theory emphasizes autonomy, relevance, and application of knowledge in practice, which aligns with the expectations of medical students in advanced years (Knowles et al., 2014). Experiential learning theory highlights the cycle of experience, reflection, conceptualization, and application, making bedside teaching and simulation particularly powerful tools (Kolb, 2015). In addition, sociocultural perspectives such as Vygotsky's zone of proximal development underscore the importance of supportive environments where students can safely progress from observation to active participation (Cantillon & Sargeant, 2008). These frameworks provide a conceptual lens to evaluate teaching and learning practices in clinical education.

Active learning approaches such as problem-based learning (PBL), bedside tutorials, and simulation-based education have become central to modern curricula. PBL has been shown to enhance integration of basic and clinical sciences, critical thinking, and lifelong learning skills (Dolmans et al., 2005; Schmidt et al., 2011). Bedside teaching, though sometimes constrained by service pressures, remains vital for honing clinical reasoning, professional identity formation, and patient-centered care (Ramani & Leinster, 2008). Simulation, including skills laboratories and high-fidelity mannequins, provides a safe environment for deliberate practice and error management, improving preparedness for real-world clinical encounters (Motola et al., 2013). Despite these benefits, implementation varies widely across institutions, raising questions about consistency, accessibility, and student perceptions.

The learning environment encompasses both physical and psychosocial dimensions, influencing not only academic achievement but also student well-being. A supportive environment characterized by respect, psychological safety, and manageable workload fosters engagement

and motivation (Henderson et al., 2019). Conversely, hostile or dismissive climates undermine learning, contribute to stress, and may even perpetuate unprofessional behavior (Monrouxe & Rees, 2012). (Harden, 2001) emphasized that the learning environment is as critical as the formal curriculum, shaping what students actually experience. Tools such as the Dundee Ready Education Environment Measure (DREEM) illustrate how environment quality correlates with satisfaction and performance (Roff et al., 1997).

Assessment drives learning by signaling valued competencies. Effective assessments must be fair, valid, reliable, and aligned with learning objectives. Timely, constructive feedback is equally essential for self-improvement and motivation (Norcini & Burch, 2007). However, medical students frequently report dissatisfaction with assessment fairness and feedback timeliness (Bing-You & Trowbridge, 2009). Incorporating workplace-based assessments and structured feedback sessions has been recommended to bridge this gap (Miller & Archer, 2010).

Ultimately, the effectiveness of teaching and learning is judged by how well graduates transition into clinical practice. Preparedness involves not only knowledge and skills but also confidence, teamwork, and resilience (Cave et al., 2007). Studies suggest that positive learning experiences and active engagement during clinical years predict higher self-rated preparedness for internship (Prince et al., 2000). Conversely, poor teaching and inadequate supervision are linked with anxiety and perceived unpreparedness (Goldacre et al., 2003). This underscores the importance of systematically evaluating students' perceptions.

Medical education in the clinical years is a critical stage that connects foundational knowledge with real medical practice, requiring students to develop not only technical competence but also adaptability, communication, and professionalism. Studies consistently highlight that the quality of teaching during this phase strongly influences students' motivation, confidence, and internship readiness (Harden, 2001; Dornan et al., 2007), and that approaches promoting active participation, critical reasoning, and self-directed learning contribute to stronger clinical competence and improved patient outcomes (Spencer, 2003; Yardley et al., 2012). Effective clinical teaching is grounded in several educational theories: adult learning theory emphasizes autonomy and relevance (Knowles et al., 2014); experiential learning theory stresses learning through cycles of experience, reflection, and application, supporting the value of bedside teaching and simulation (Kolb, 2015); and sociocultural perspectives, including Vygotsky's zone of proximal development, highlight the importance of supportive environments that help students progress from observing to active participation (Cantillon & Sargeant, 2008).

Active learning strategies such as problem-based learning (PBL), bedside tutorials, and simulation have become central in modern medical curricula. PBL strengthens the integration of basic and clinical sciences and enhances critical thinking and lifelong learning (Dolmans et al., 2005; Schmidt et al., 2011). Bedside teaching remains essential for developing clinical reasoning, professional identity, and patient-centered care (Ramani & Leinster, 2008), while simulation-based education provides safe opportunities for deliberate practice and error

management, improving preparedness for real clinical encounters (Motola et al., 2013). Despite these benefits, variations in implementation across institutions raise concerns about accessibility, consistency, and student perceptions.

The learning environment—both physical and psychosocial—also plays a crucial role, influencing academic success and student well-being. Supportive environments characterized by respect, psychological safety, and manageable workloads promote motivation (Henderson et al., 2019), whereas negative climates can hinder learning and contribute to stress or unprofessional behaviors (Monrouxe & Rees, 2012). Harden (2001) emphasized that the learning environment is as influential as the curriculum itself. Tools like DREEM demonstrate how environment quality correlates with satisfaction and performance (Roff et al., 1997).

Assessment further guides learning by signaling key competencies. Effective assessments must be fair, valid, reliable, and aligned with objectives, while timely, constructive feedback is essential for improvement (Norcini & Burch, 2007). Yet students often report dissatisfaction regarding assessment fairness and feedback timeliness (Bing-You & Trowbridge, 2009), prompting recommendations for workplace-based assessments and structured feedback sessions (Miller & Archer, 2010).

Ultimately, teaching effectiveness is judged by graduates' transition into clinical practice. Preparedness encompasses knowledge, confidence, teamwork, and resilience (Cave et al., 2007). Positive clinical experiences predict higher self-rated preparedness (Prince et al., 2000), while poor supervision is linked to anxiety and unpreparedness (Goldacre et al., 2003), underscoring the importance of evaluating students' perceptions.

Despite growing attention to medical education reform, there remains limited quantitative evidence from many contexts, particularly in low- and middle-income countries, on how clinical-year students perceive teaching quality, learning environment, and preparedness. Most existing studies rely on qualitative methods, which, while rich in detail, limit generalizability and benchmarking.

Year 4 medical students are an ideal group for this research because they are deeply engaged in diverse clinical modules and actively participate in bedside teaching, simulation, and multidisciplinary rotations at DSMA. Their perceptions provide valuable insights into how well the current teaching and learning strategies support clinical competence and preparedness.

By adopting a structured quantitative approach, this study aims to provide measurable insights into Year 4 students' perceptions, allowing for comparison across rotations and identification of factors associated with satisfaction and preparedness. Such findings will inform curriculum development, faculty development, and quality assurance in medical education.

Teaching–learning quality in the clinical years’ shapes motivation, competence, and preparedness for internship. While qualitative work can reveal nuanced experiences, a quantitative approach enables measurement at scale, benchmarking across cohorts, and hypothesis testing. This study seeks to quantitatively evaluate Year 4 medical students’ perceptions of teaching quality, learning environment, assessment processes, and preparedness to support evidence-based curriculum enhancement.

This study will quantify Year 4 medical students’ perceptions of teaching methods, learning environment, assessment practices, and overall satisfaction to inform curriculum improvement.

2. Materials and Methods

2.1 Methods

This study employed a cross-sectional descriptive design to assess the perceptions of Year 4 medical cadets regarding the quality of teaching and learning at the Defence Services Medical Academy (DSMA). A structured, self-administered questionnaire was used as the primary instrument, consisting of six domains: Teaching Quality, Active Learning, Learning Environment, Assessment and Feedback, Preparedness, and Overall Satisfaction. Each item was rated on a five-point Likert scale ranging from 1 (Strongly Disagree) to 5 (Strongly Agree). Questionnaires were developed by the principal author, and it was validated with CVI of 8.0 from three faculty of DSMA. The study population included 44 Year 4 cadets enrolled in the 2025 academic year. Conducted at DSMA, Yangon, Myanmar, from September to October 2025, this design enabled the collection of direct quantitative data reflecting cadets’ educational experiences and satisfaction levels.

2.2 Data Collection

Prior to data collection, approval was obtained from the Ethical committee of DSMA. Participants were briefed about the study’s purpose, and informed consent was obtained. Data was gathered using an anonymous, self-administered questionnaire distributed to all 44 cadets who enrolled in the Year 4 Programme at DSMA. Instructions were provided to ensure consistency and clarity. Completed questionnaires were reviewed for completeness, coded, and securely stored. Confidentiality and voluntary participation were maintained throughout the process.

2.3 Data Analysis

Data were entered into Microsoft Excel 2019 and analyzed using SPSS version 22. Descriptive statistics (frequencies, percentages, means, and standard deviations) summarized participants’ responses. Multiple regression analysis was performed to examine relationships between the five teaching-learning domains and Overall Satisfaction. A significance level of $p < 0.05$ was used to determine statistical relevance.

3. Results

Table 1. Perception of Year 4 medical students on teaching and learning

Statement	SDA n (%)	DA n (%)	N n (%)	A n (%)	SA n (%)	Aggreement (%)
A. Teaching Quality among the Year 4 medical cadets from DSMA(TQ)						
1. Learning objectives were clearly communicated for each session(TQ1).	1 (2.3%)	–	5 (11.4%)	30 (68.2%)	8 (18.2%)	80.0
2. Teaching sessions were well organized and time was used effectively(TQ2).	1 (2.3%)	–	7 (15.9%)	30 (68.2%)	6 (13.6%)	78.2
3. I received useful feedback on my performance(TQ3).	2 (4.5%)	–	11 (25.0%)	28 (63.6%)	3 (6.8%)	73.6
B. Active Learning among the Year 4 medical cadets from DSMA(AL)						
1. I regularly participated in bedside teaching during rotations(AL1).	1 (2.3%)	–	3 (6.8%)	32 (72.7%)	8 (18.2%)	80.9
2. Simulation or skills-lab sessions enhanced my clinical confidence(AL2).	–	1 (2.3%)	6 (13.6%)	27 (61.4%)	10 (22.7%)	80.9
C. Learning Environment among the Year 4 medical cadets from DSMA(LE)						
1. I felt respected and supported by faculty and staff(LE1).	1 (2.3%)	–	7 (15.9%)	27 (61.4%)	9 (20.5%)	79.5
2. The workload was	1	1	5	30	7	78.6

appropriate for my level of training(LE2).	(2.3%)	(2.3%)	(11.4%)	(68.2%)	(15.9%)	
D. Assessment and Feedback among the Year 4 medical cadets from DSMA(AF)						
1. Assessments reflected the content and objectives of the course/rotation(AF1).	1 (2.3%)	–	8 (18.2%)	28 (63.6%)	7 (15.9%)	78.2
2. Feedback on assessments was timely and constructive(AF2).	–	1 (2.3%)	6 (13.6%)	29 (65.9%)	8 (18.2%)	80.0
E. Preparedness among the Year 4 medical cadets from DSMA(PR)						
1. I feel prepared to manage common clinical problems at my level(PR1).	1 (2.3%)	1 (2.3%)	6 (13.6%)	32 (72.7%)	4 (9.1%)	76.8
2. The program strengthened my clinical reasoning skills(PR2).	1 (2.3%)	–	4 (9.1%)	30 (68.2%)	9 (20.5%)	80.9
F. Overall Satisfaction among the Year 4 medical cadets from DSMA(OS)						
1. Overall, I am satisfied with the teaching and learning I received (OS1).	1 (2.3%)	–	5 (11.4%)	24 (54.5%)	14 (31.8%)	82.7

Table 1 presents the perceptions of Year 4 medical cadets from DSMA regarding various aspects of teaching and learning, grouped under six key domains. For Teaching Quality, the majority of students agreed or strongly agreed that learning objectives were clearly communicated (86.4%) and that sessions were well organized (81.8%), resulting in an overall agreement rate of around 78–80%. Feedback on performance received slightly lower agreement (73.6%), indicating room for improvement in formative feedback. In the domain of Active Learning, both items—regular participation in bedside teaching and enhancement of clinical confidence through simulation—showed high agreement levels of 80.9%, highlighting strong engagement with interactive teaching methods. For the Learning Environment, agreement ranged from 78.6% to 79.5%, suggesting a generally positive but balanced perception of support and workload appropriateness.

Under Assessment and Feedback, about 78–80% of students felt that assessments aligned with objectives and feedback was constructive, reflecting satisfaction with evaluation processes. The Preparedness domain demonstrated strong positive responses, with agreement levels around 76.8–80.9%, indicating that students felt adequately prepared for clinical challenges. Finally, Overall Satisfaction achieved the highest agreement rate of 82.7%, confirming that most students were satisfied with their Year 4 learning experiences. These findings collectively suggest a high level of positive perception across all domains, with Teaching Quality and Preparedness being notable strengths

Table 2. Comparison of perception of Year 4 medical students on teaching and learning

Statement	Mean ±SD
A. Teaching Quality among the Year 4 medical cadets from DSMA(TQ1+TQ2+TQ3)	3.8±0.6
B. Active Learning among the Year 4 medical cadets from DSMA(AL1+AL2)	4.0±0.5
C. Learning Environment among the Year 4 medical cadets from DSMA(LE1+LE2)	3.9±0.7
D. Assessment and Feedback among the Year 4 medical cadets from DSMA(AF1+AF2)	3.9±0.6
E. Preparedness among the Year 4 medical cadets from DSMA(PR1+PR2)	3.9±0.6
F. Overall Satisfaction among the Year 4 medical cadets from DSMA(OS1)	4.1±0.7

Table 2 summarizes the mean scores and standard deviations for each domain reflecting Year 4 medical cadets’ perceptions of teaching and learning. The mean scores across all categories ranged from **3.8 to 4.1** on a five-point scale, indicating consistently positive evaluations across domains. **Teaching Quality** had a mean of **3.8 (SD = 0.6)**, suggesting that students generally agreed that instruction was clear and effective. **Active Learning** achieved the highest mean score of **4.0 (SD = 0.5)**, showing strong student engagement and appreciation for participatory activities such as bedside teaching and simulation-based learning. The **Learning Environment** scored **3.9 (SD = 0.7)**, reflecting positive perceptions of faculty support and workload management. **Assessment and Feedback** also recorded a mean of **3.9 (SD = 0.6)**, suggesting satisfaction with fairness and relevance of assessments, although some variation existed. **Preparedness** obtained a mean of **3.9 (SD = 0.6)**, indicating that students generally felt confident in their clinical readiness. Finally, **Overall Satisfaction** had the highest mean of **4.1 (SD = 0.7)**, demonstrating broad agreement that the teaching and learning experience in Year 4 was satisfactory. The close clustering of mean values between 3.8 and 4.1 suggests that students had uniformly positive perceptions across all measured domains. The relatively small standard deviations further imply consistency in responses, confirming that most students shared similar favorable views of the teaching and learning environment.

Table3.Regression Analysis perception of Year 4 medical students on teaching and learning

Coefficients ^a						
Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	-.408	.511		-.798	.430
	Teaching Quality among the Year 4 medical cadets from DSMA	.366	.216	.278	1.700	.097
	Active Learning among the Year 4 medical cadets from DSMA	.256	.239	.193	1.071	.291
	Learning Environment among the Year 4 medical cadets from DSMA	.156	.191	.139	.819	.418
	Assessment and Feedback among the Year 4 medical cadets from DSMA	-.019	.239	-.014	-.078	.939
	Preparedness among the Year 4 medical cadets from DSMA	.393	.232	.316	1.689	.099

Adjusted R² = 0.656, F=17.429, p<0.001

Table 3 presents the multiple regression analysis examining the influence of teaching and learning domains on Overall Satisfaction among Year 4 medical cadets. The overall model demonstrated strong explanatory power, with R = 0.834, accounting for 69.6% of the variance in overall satisfaction (R² = 0.696, Adjusted R² = 0.656). The model was statistically significant (F = 17.429, p < 0.001), confirming that the combined predictors meaningfully explained student satisfaction.

Among the predictors, Preparedness (B = 0.393, β = 0.316, p = 0.099) and Teaching Quality (B = 0.366, β = 0.278, p = 0.097) showed the strongest positive contributions to Overall Satisfaction, though both fell just above the conventional significance level. These values suggest that students who felt more prepared and who rated teaching quality highly were more inclined to report greater satisfaction. Active Learning (B = 0.256, β = 0.193, p = 0.291) and Learning Environment (B = 0.156, β = 0.139, p = 0.418) also demonstrated positive but non-significant effects. Assessment and Feedback (B = -0.019, β = -0.014, p = 0.939) displayed a minimal and negative influence, indicating almost no contribution to satisfaction levels.

Assumptions for regression were adequately met. Linearity was supported by moderate-to-strong correlations. The Durbin–Watson value of 1.820 indicated independent residuals. Standardized residuals ranged from -2.172 to 1.690 , supporting normality. Multicollinearity was within acceptable limits, with VIF values between 3.343 and 4.378 . Overall, the results highlight Teaching Quality and Preparedness as the most influential predictors of Overall Satisfaction.

4. Discussion

This study provides quantitative evidence that Year 4 medical cadets at DSMA perceive the quality of their clinical-year teaching and learning positively across six domains, with the highest endorsement for overall satisfaction (mean = 4.1; agreement = 82.7%) and robust ratings for active learning, learning environment, assessment/feedback, and preparedness (means 3.8–4.0). Importantly, the regression model ($R = 0.834$; $R^2 \approx 0.696$; $p < 0.001$) indicates that perceived preparedness and teaching quality are the most influential predictors of overall satisfaction, albeit with p -values just above conventional thresholds—likely a function of sample size and shared variance among domains. These findings align closely with theory and prior evidence that emphasize the centrality of well-designed clinical teaching and practice-ready preparation in shaping learner outcomes (Harden, 2001; Dornan et al., 2007; Spencer, 2003; Yardley et al., 2012).

4.1 Interpreting the domain scores through educational theory

The consistently high means resonate with adult learning theory, which posits that autonomy, relevance, and immediate applicability drive engagement (Knowles et al., 2014). Clear objectives and well-organized sessions (teaching quality agreement ≈ 78 –80%) speak to relevance and structure—conditions adult learners require to self-direct and invest effort. Similarly, the strong scores for active learning (mean = 4.0) are compatible with experiential learning frameworks in which concrete experience, reflective observation, abstract conceptualization, and active experimentation form a reinforcing cycle (Kolb, 2015; Yardley et al., 2012). Within clinical education, experience-based learning literature shows that supervised workplace participation fosters the integration of knowledge, professional identity, and confidence (Dornan et al., 2007). The high agreement for bedside participation and simulation-enhanced confidence suggests DSMA's instructional mix is successfully activating these mechanisms (Ramani & Leinster, 2008; Motola et al., 2013).

The results also harmonize with the rationale for problem-based learning (PBL) as a bridge between preclinical knowledge and clinical reasoning. PBL's benefits—integrating basic and clinical sciences and cultivating self-directed learning—are well documented (Dolmans et al., 2005; Schmidt et al., 2011). Although PBL is not measured as a separate domain in the survey, the solid preparedness scores (mean = 3.9; agreement ≈ 77 –81%) imply that approaches emphasizing inquiry, reasoning, and application likely contribute to learners' sense of readiness (Prince et al., 2000; Cave et al., 2007).

4.2 Preparedness and teaching quality as drivers of satisfaction

That preparedness ($B = 0.393$; $\beta = 0.316$) and teaching quality ($B = 0.366$; $\beta = 0.278$) emerge as the strongest predictors of satisfaction is theoretically coherent and practically instructive. Prior work consistently links positive clinical experiences and high-quality supervision to improved confidence and smoother transition to practice (Cave et al., 2007; Prince et al., 2000). Conversely, graduates who perceive weaker teaching during clinical years report feeling underprepared and anxious upon entering the workforce (Goldacre et al., 2003). The present model indicates that even when active learning opportunities and environment are favorable, the perceived caliber of instruction and the resultant readiness for clinical work are the levers that most strongly move satisfaction. Given the small cohort ($n = 44$), the near-significant p -values (≈ 0.10) should be interpreted as directionally important rather than dismissive; with greater power, these coefficients might well achieve conventional significance.

4.3 Learning environment and the “hidden curriculum”

Agreement near 79% for items on respect/support and workload appropriateness suggests a generally healthy **learning environment**, which is crucial because students learn as much from the clinical culture as from formal teaching (Harden, 2001). Tools like DREEM were developed precisely because environment quality tracks with satisfaction and performance (Roff et al., 1997). At the same time, narratives about professionalism dilemmas and emotional labor in clinical settings warn that negative subcultures can undermine learning and well-being (Monrouxe & Rees, 2012). DSMA’s positive ratings are encouraging; maintaining **psychological safety** and **mutual respect** will remain essential as caseloads and service pressures fluctuate.

4.4 Assessment and feedback: good alignment, room to elevate feedback practice

Students rated **assessment alignment** and **feedback quality** positively (means ≈ 3.9 ; agreements ≈ 78 – 80%), and yet **feedback on performance** within teaching quality was the relatively lowest item (73.6% agreement). This nuanced pattern mirrors the literature: assessments can be content-valid and still fall short on **timely, actionable feedback**—the element that most powerfully closes learning loops (Norcini & Burch, 2007; Bing-You & Trowbridge, 2009). Embedding **workplace-based assessments (WBAs)** with structured, bite-sized feedback (e.g., mini-CEX, DOPS, case-based discussions) has shown promise in building performance and reflective capacity when implemented with faculty development and accountability (Miller & Archer, 2010). Additionally, feedback cultures thrive when supervisors are trained in **specific, behavior-focused techniques** and when learners are invited into dialogue (Cantillon & Sargeant, 2008; Henderson et al., 2019). The present data suggest DSMA is on a solid footing with assessment design; the **next gains** likely lie in **elevating feedback practices**—more frequent micro-feedback, explicit goal-setting, and protected time for debriefs.

4.5 Active learning modalities: bedside teaching and simulation as complementary engines

Strong endorsement of participation in bedside teaching and confidence gains from simulation (both 80.9% agreement) reinforces the view that these modalities are **complementary** rather than substitutable. Bedside teaching uniquely cultivates **clinical reasoning in context**, professional identity, and patient-centered behaviors (Spencer, 2003; Ramani & Leinster, 2008), while simulation affords **deliberate practice** and **error-tolerant rehearsal** for infrequent or high-stakes scenarios (Motola et al., 2013). Structuring clerkships so simulation **pre-briefs** anticipated clinical encounters—and post-encounter simulation **debriefs** consolidate learning—would operationalize experiential learning cycles (Kolb, 2015) and **zone of proximal development** scaffolding (Cantillon & Sargeant, 2008, as applied to supervisory feedback).

4.6 Strengths and limitations

A notable strength is the **domain-based, quantitative approach** with clear, interpretable Likert outcomes across core dimensions of clinical education, enabling benchmarking and regression-based insight into satisfaction drivers. Still, several limitations qualify interpretation. First, the **single-site, small sample (n = 44)** limits generalizability and statistical power; borderline p-values for key predictors may chiefly reflect Type II error. Second, data are **self-reported** and subject to recall and social desirability biases. Third, the cross-sectional design precludes causal inference; we cannot confirm that enhancing preparedness or teaching quality would, by itself, raise satisfaction, though theory and prior empirical work suggest it likely would (Dornan et al., 2007; Miller & Archer, 2010). Finally, the study did not include **objective performance** or **patient-related** outcomes; triangulating perceptions with WBAs, OSCEs, or early internship indicators would strengthen claims about readiness and educational effectiveness (Norcini & Burch, 2007; Cave et al., 2007).

5. Conclusion

This study examined Year 4 medical cadets' perceptions of teaching and learning at the Defence Services Medical Academy (DSMA) across six domains: teaching quality, active learning, learning environment, assessment and feedback, preparedness, and overall satisfaction. The results revealed uniformly positive perceptions, with mean scores between 3.8 and 4.1 and agreement levels exceeding 75% in all areas. Overall satisfaction (82.7%) and active learning (80.9%) were rated highest, reflecting strong student engagement and appreciation for experiential learning methods such as bedside teaching and simulation.

Regression analysis demonstrated that preparedness and teaching quality were the most influential predictors of satisfaction, explaining nearly 70% of its variance. These findings align with established educational theories emphasizing the importance of structured instruction, relevance, and experiential practice in clinical education. Students' strong sense of preparedness suggests that DSMA's curriculum effectively bridges theoretical knowledge with clinical competence, supporting a confident transition to professional practice.

However, slightly lower agreement on feedback quality indicates an opportunity for improvement. Enhancing the frequency and specificity of feedback through faculty development and structured assessment tools could further strengthen learning outcomes.

In summary, Year 4 cadets perceive their clinical education at DSMA as effective, engaging, and well-aligned with professional preparation. Continued efforts to refine feedback practices and maintain a supportive learning environment will further enhance educational quality and ensure graduates are well-prepared for medical practice.

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