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Effect Of Structured Learning Ward Rounds On Clinical Reasoning And Learner Engagement Among Postgraduates In Clinical Department. A Quasi-Experimental Study

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ABSTRACT

Background: Ward rounds are an integral component of postgraduate medical education, providing opportunities for bedside teaching, clinical reasoning, and professional skill development. However, conventional ward rounds often lack structure, limiting learner participation and educational effectiveness. Structured Learning Ward Rounds (SLWRs) have been proposed to enhance clinical learning through guided discussion, active engagement, and reflective practice.
Aim: To evaluate the effect of Structured Learning Ward Rounds on clinical reasoning and learner engagement among postgraduate residents in clinical departments.
Materials and Methods: A prospective quasi-experimental pre–post interventional study was conducted among 25 postgraduate residents from the Departments of General Medicine and Pediatrics at Government Thoothukudi Medical College, Tamil Nadu. Baseline clinical competency was assessed using the Mini Clinical Evaluation Exercise (Mini-CEX). Structured Learning Ward Rounds based on the SNAPPS model were implemented for 6–8 weeks. The intervention included structured case presentation, problem prioritization, differential diagnosis generation, faculty-guided clinical reasoning discussions, evidence-based management planning, bedside teaching pearls, and reflection. Post-intervention assessment included Mini-CEX evaluation and a perception questionnaire. Data were analyzed using the paired Student's t-test.
Results: A total of 25 postgraduate learners participated in the intervention. Significant improvements were observed across all competency domains following implementation of structured learning ward rounds. Mean scores increased from 4.32 ± 0.85 to 7.20 ± 0.76 for history taking, 4.16 ± 1.11 to 7.32 ± 0.85 for clinical reasoning, 3.68 ± 1.18 to 7.16 ± 0.69 for counselling skills, and 3.20 ± 1.12 to 7.08 ± 0.64 for professionalism (all $p < 0.001$). Overall competence improved significantly from 4.44 ± 0.92 to 7.28 ± 0.74 ($p < 0.001$). Feedback from 13 participants indicated high levels of satisfaction, with 100% strongly agreeing that they were satisfied with the intervention. Most participants strongly agreed that structured ward rounds enhanced clinical reasoning (76.9%), improved learner engagement (76.9%), encouraged active participation (69.2%), and provided a positive learning environment (92.3%).
Conclusion: Structured learning ward rounds significantly improved postgraduate learners' clinical competencies, including history taking, clinical reasoning, counselling skills, and professionalism. The intervention also enhanced learner engagement, participation, and satisfaction while fostering a positive educational environment. These findings support the integration of structured ward rounds into routine postgraduate clinical training as an effective strategy for strengthening workplace-based learning and improving overall clinical competence.

Keywords: Structured Learning Ward Rounds; Clinical Reasoning; Learner Engagement; Postgraduate Medical Education; Bedside Teaching; SNAPPS Model; Mini-CEX; Competency-Based Medical Education.

INTRODUCTION

Ward rounds constitute the cornerstone of workplace-based learning in postgraduate medical training. They provide opportunities for bedside teaching, clinical reasoning development, decision-making, and professional socialization. However, in many clinical settings, ward rounds are predominantly service-oriented, with limited structured teaching and variable learner participation.

Clinical reasoning — the ability to synthesize clinical data, generate differential diagnoses, and make evidence-based management decisions — is a critical competency for postgraduate residents. Traditional ward rounds often fail to make reasoning processes explicit, thereby limiting deliberate learning.

Structured learning ward rounds, incorporating guided case presentation, diagnostic reasoning discussion, probing questions, and reflective feedback, may enhance both clinical reasoning and learner engagement. Evidence from workplace-based learning literature suggests that structured teaching interventions improve knowledge retention, participation, and higher-order thinking.

However, there is limited evidence evaluating the educational impact of structured ward rounds in postgraduate training in the Indian context. This study aims to analyze the effect of structured learning ward rounds on clinical reasoning and learner engagement among postgraduate residents.

Ward rounds remain the cornerstone of clinical education in postgraduate medical training, providing a unique environment where patient care, clinical decision-making, communication, professionalism, and bedside teaching converge. Traditionally, ward rounds have served as an important platform for experiential learning, allowing postgraduate trainees to observe senior clinicians, formulate differential diagnoses, interpret investigations, and participate in management planning. However, increasing patient loads, time constraints, administrative responsibilities, and service-oriented demands have gradually reduced the educational effectiveness of conventional ward rounds, often limiting active learner participation and reflective discussion. [1,2]

Clinical reasoning, defined as the cognitive process through which physicians collect and interpret clinical information to arrive at diagnostic and therapeutic decisions, is a fundamental competency expected of postgraduate learners. Deficiencies in clinical reasoning contribute significantly to diagnostic errors and suboptimal patient outcomes. Consequently, medical educators have emphasized the need for teaching strategies that explicitly promote analytical thinking, hypothesis generation, and evidence-based decision-making during clinical encounters. [3,4] Ward rounds offer an ideal setting for the development of these skills, provided that teaching activities are intentionally structured and learner-centered.

Structured Learning Ward Rounds (SLWRs) have emerged as an educational innovation aimed at enhancing the pedagogical value of bedside teaching. Unlike traditional rounds, SLWRs incorporate predefined learning objectives, guided questioning, case-based discussions, reflective feedback, and active learner engagement. Such structured approaches encourage trainees to articulate clinical reasoning processes, justify management decisions, and participate meaningfully in patient care discussions. Educational theories, including adult learning principles and situated learning, suggest that active participation and contextual learning significantly improve knowledge retention and professional competence.[5,6]

Learner engagement is another critical determinant of educational success in postgraduate training. Engagement encompasses cognitive involvement, emotional investment, and active participation in learning activities. Studies have demonstrated that higher levels of engagement are associated with improved academic performance, greater satisfaction, enhanced critical thinking abilities, and stronger professional identity formation.[7,8] Structured ward rounds may foster engagement by creating an interactive learning environment where trainees are encouraged to ask questions, discuss uncertainties, and receive constructive feedback from faculty.

Despite growing recognition of structured clinical teaching methods, evidence regarding their impact on postgraduate clinical reasoning and learner engagement remains limited, particularly in resource-constrained teaching hospitals. Evaluating innovative educational interventions within authentic clinical settings is essential for optimizing postgraduate medical education and ensuring competency-based training outcomes.[9,10] Therefore, the present quasi-experimental study was undertaken to assess the effect of Structured Learning Ward Rounds on clinical reasoning skills and learner engagement among postgraduate students in clinical departments.

The present study aimed to evaluate the impact of Structured Learning Ward Rounds on postgraduate medical education in the Department of General Medicine. The objectives were to determine their effect on clinical reasoning skills, assess learner engagement before and after the intervention, and evaluate postgraduate students' perceptions regarding the effectiveness and educational value of structured ward rounds.

MATERIALS AND METHODS

Study Design: Prospective, quasi-experimental, pre–post interventional study.

Study Population: Postgraduate (PG) residents from the Departments of General Medicine and Pediatrics who were posted in the medical wards of Government Thoothukudi Medical College during the study period from January 2026 to

March 2026. Other departments were not included due to time constraints and difficulty in mobilising interested faculties.
Sample Size
•All eligible postgraduate residents from the Departments of General Medicine and Pediatrics were included in the study for feasibility

•Expected sample size: approximately 25 participants.
Study Duration:Three months, including baseline assessment, intervention period, and post-intervention evaluation.
Inclusion Criteria
•All consenting postgraduate residents of the Departments of General Medicine and Pediatrics.
•Residents actively posted in the respective wards during the study period.
Exclusion Criteria
•Non-consenting participants.
•Residents posted in specialty departments or District Residency Program (DRP) postings during the study period.
•Residents on long-term leave.
Study Phases
Phase 1 — Pre-Intervention (Baseline)
Faculty Preparation
Orientation session for faculties 3 from each department
Structured rounds checklist distribution
Standardization of questioning pattern
Administer:
Clinical reasoning pre-test (Mini Cex)
Phase 2 — Intervention
Implementation of Structured Learning Ward Rounds for 6–8 weeks.
Structured Ward Round Framework
Each case discussion will follow a structured format as per SNAPPS model
1. Brief case summary by resident
2. Enumeration of Problems in order
3. Generation of Differential diagnosis
4. Probing and discussion of Clinical reasoning by faculty
5. Discussion on Investigation based on priorities
6. Discussion on management plan based on evidences
7. Bedside teaching pearl
8. Reflection / key takeaway
Faculty will use prompting questions such as:
"What else could explain this finding?"
"Why did you rule out…?"
"What is the unifying diagnosis?"
Phase 3 — Post-Intervention
After completion of structured rounds:
Clinical reasoning post-test(Mini Cex)
Feedback on Perception / satisfaction
Assessment Tools after intervention
1. Clinical Reasoning Assessment
Mini Cex blueprinted to core medicine competencies
Assesses:
Data interpretation
Differential diagnosis
Management reasoning
Communication and empathy
Scoring:
Rubrics 1-9 with Mini Cex

Outcome Measures

Primary Outcome
- Change in clinical reasoning scores (Mini-CEX) from pre-intervention to post-intervention.

Secondary Outcomes

- Learner engagement during ward rounds.
- Postgraduate perceptions and satisfaction regarding Structured Learning Ward Rounds.
- Perceived quality of bedside teaching and clinical discussions.

Statistical Analysis: We put the data into Microsoft Excel and then used SPSS software version 27.0 (SPSS Inc., Chicago, IL, USA) and GraphPad Prism version 5 to look at it. Mean ± standard deviation was used to show continuous variables, and frequencies and percentages were used to show categorical variables. The unpaired t-test was utilized to examine continuous variables between independent groups, whereas the paired t-test was employed for comparisons within the same group. The Chi-square test or Fisher's exact test was used to look at categorical variables, depending on which one was better. A p-value of less than 0.05 was seen to be statistically important.

RESULT

Table 1. Comparison of Pre- and Post-Intervention Competency Scores Following Structured Learning Ward Rounds (n = 25)

Domain	Pre-Intervention Mean ± SD	Post-Intervention Mean ± SD	Paired t-test P value
History Taking	4.32 ± 0.85	7.20 ± 0.76	<0.001
Clinical Reasoning	4.16 ± 1.11	7.32 ± 0.85	<0.001
Counselling Skills	3.68 ± 1.18	7.16 ± 0.69	<0.001
Professionalism	3.20 ± 1.12	7.08 ± 0.64	<0.001
Overall Competence	4.44 ± 0.92	7.28 ± 0.74	<0.001

Table 2. Learner Engagement and Competence Scores Before and After Intervention (n = 25)

Variable	Pre-Intervention Mean ± SD	Post-Intervention Mean ± SD	P value
Overall Engagement/Competence Score	4.44 ± 0.92	7.28 ± 0.74	<0.001

Table 3. Perception of Clinical Reasoning and Faculty Teaching During Ward Rounds (n = 13)

Variable	Strongly Agree n (%)	Agree n (%)	P value
Improved Clinical Reasoning	10 (76.9)	3 (23.1)	0.018
Faculty Clearly Explained Clinical Reasoning	9 (69.2)	4 (30.8)	0.046
Differential Diagnosis Adequately Discussed	12 (92.3)	1 (7.7)	0.002

Table 4. Learner Participation and Engagement During Ward Rounds (n = 13)

Variable	Strongly Agree n (%)	Agree n (%)	P value
Learner Engagement Enhanced	10 (76.9)	3 (23.1)	0.018
Active Participation Encouraged	9 (69.2)	4 (30.8)	0.046
Encouragement During Learning Process	9 (69.2)	4 (30.8)	0.046

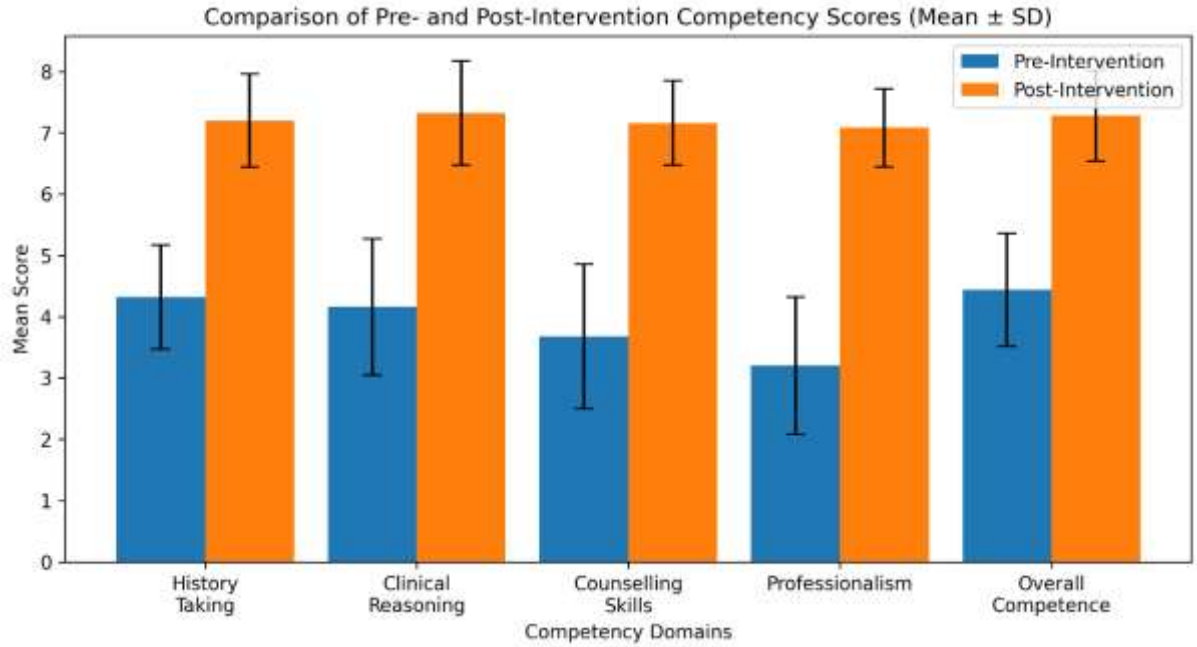
Table 5. Perception of Learning Environment (n = 13)

Response Category	Number of Participants	Percentage (%)	P value
Strongly Agree	12	92.3	0.002
Agree	1	7.7	
Total	13	100	

Table 6. Overall Satisfaction with Structured Learning Ward Rounds (n = 13)

Response Category	Number of Participants	Percentage (%)	P value
Strongly Agree	13	100	<0.001
Agree	0	0	
Total	13	100	

Figure: 1. Comparison of Pre- and Post-Intervention Competency Scores Following Structured Learning Ward Rounds Across Five Clinical Domains



A total of 25 postgraduate learners participated in the structured learning ward round intervention and were assessed for competency before and after implementation. Significant improvements were observed across all evaluated domains (Table 1). The mean history-taking score increased from 4.32 ± 0.85 before the intervention to 7.20 ± 0.76 after the intervention ($p < 0.001$). Similarly, clinical reasoning scores improved markedly from 4.16 ± 1.11 to 7.32 ± 0.85 ($p < 0.001$). Counselling skills demonstrated a substantial rise from 3.68 ± 1.18 to 7.16 ± 0.69 ($p < 0.001$), while professionalism scores increased from 3.20 ± 1.12 to 7.08 ± 0.64 ($p < 0.001$). Overall competence improved significantly from a mean score of 4.44 ± 0.92 in the pre-intervention assessment to 7.28 ± 0.74 following the structured ward round program ($p < 0.001$).

Analysis of learner engagement and overall competence also revealed a statistically significant enhancement after the intervention (Table 2). The overall engagement/competence score increased from 4.44 ± 0.92 before implementation to 7.28 ± 0.74 after implementation, demonstrating a highly significant improvement ($p < 0.001$).

Feedback regarding clinical reasoning and faculty teaching was obtained from 13 participants (Table 3). Most respondents reported that the structured ward rounds improved their clinical reasoning abilities, with 10 (76.9%) strongly agreeing and 3 (23.1%) agreeing ($p = 0.018$). Regarding faculty teaching, 9 (69.2%) participants strongly agreed and 4 (30.8%) agreed that faculty members clearly explained the clinical reasoning process during ward rounds ($p = 0.046$). Furthermore, 12 (92.3%) participants strongly agreed that differential diagnoses were adequately discussed, while 1 (7.7%) agreed with the statement ($p = 0.002$).

Learner participation and engagement during ward rounds were perceived positively by the respondents (Table 4). Enhanced learner engagement was strongly endorsed by 10 (76.9%) participants, while 3 (23.1%) agreed ($p = 0.018$). Active participation during ward rounds was strongly supported by 9 (69.2%) participants and agreed upon by 4 (30.8%) participants ($p = 0.046$). Similarly, 9 (69.2%) respondents strongly agreed and 4 (30.8%) agreed that learners were consistently encouraged throughout the learning process ($p = 0.046$).

Perceptions of the learning environment were overwhelmingly favorable (Table 5). Among the respondents, 12 (92.3%) strongly agreed that the structured ward rounds provided a positive learning environment, while 1 (7.7%) agreed with this statement. The observed distribution was statistically significant ($p = 0.002$).

Overall satisfaction with the structured learning ward rounds was exceptionally high (Table 6). All 13 participants (100%) strongly agreed that they were satisfied with the intervention, and no participant reported merely agreeing or expressing dissatisfaction. This finding demonstrated a highly significant level of satisfaction ($p < 0.001$), indicating universal acceptance of the structured learning ward round model among the participants.

DISCUSSION

The present study demonstrated that implementation of structured learning ward rounds resulted in significant improvement across all assessed competency domains among postgraduate learners. History-taking skills improved substantially from a pre-intervention mean score of 4.32 ± 0.85 to 7.20 ± 0.76 following the intervention ($p < 0.001$).

Structured ward rounds provide learners with repeated opportunities for supervised patient interaction, focused questioning, and immediate faculty feedback, which collectively strengthen clinical interviewing skills. Similar findings were reported by Gonzalo et al., who observed that structured bedside teaching significantly enhanced learner confidence and competence in patient assessment and information gathering through direct observation and feedback mechanisms.[11] Likewise, Peters and Ten Cate emphasized that workplace-based clinical teaching improves history-taking proficiency by facilitating experiential learning in authentic patient-care environments.[12] The marked improvement observed in the current study supports the educational value of structured clinical encounters in developing essential diagnostic interviewing competencies.

Clinical reasoning scores also increased significantly from 4.16 ± 1.11 before intervention to 7.32 ± 0.85 after implementation ($p < 0.001$). Clinical reasoning is a complex cognitive process requiring learners to synthesize patient information, formulate differential diagnoses, and justify management decisions. Structured ward rounds encourage active discussion, guided questioning, and faculty modeling of diagnostic thinking, thereby fostering analytical reasoning skills. Similar observations were reported by Bowen, who highlighted that structured clinical discussions enhance diagnostic reasoning by exposing learners to expert thought processes and reflective practice.[13] Furthermore, Schmidt and Mamede demonstrated that deliberate exposure to clinical problem-solving exercises significantly improves diagnostic accuracy and reasoning abilities among medical trainees.[14] The substantial gains identified in the present study suggest that structured ward rounds effectively facilitate higher-order clinical thinking and diagnostic competence.

Counselling and communication skills showed one of the greatest improvements, increasing from 3.68 ± 1.18 to 7.16 ± 0.69 ($p < 0.001$). Effective patient counselling requires not only medical knowledge but also empathy, communication proficiency, and the ability to convey complex information clearly. Structured ward rounds expose learners to patient-centered communication practices and provide opportunities for direct observation of faculty-patient interactions. Similar findings were reported by Kurtz et al., who demonstrated that communication skills training integrated into clinical teaching significantly enhances learners' ability to engage patients effectively and provide appropriate counselling.[15] In another study, Rider and Keefer found that structured feedback and role modeling during clinical encounters improved communication competencies and patient-centered care behaviors among postgraduate trainees.[16] These findings support the role of structured ward rounds as an effective platform for cultivating essential interpersonal and counselling skills.

Professionalism scores increased significantly from 3.20 ± 1.12 before intervention to 7.08 ± 0.64 after intervention ($p < 0.001$). Professionalism encompasses ethical conduct, accountability, respect for patients, teamwork, and professional communication. Structured learning environments reinforce these attributes through faculty role modeling and explicit discussion of professional behaviors during patient care activities. Similar improvements in professionalism have been documented by Cruess et al., who emphasized that clinical role modeling remains one of the most influential determinants of professional identity formation among medical trainees.[17] Passi et al. further reported that structured clinical teaching environments promote professional attitudes through observation, reflection, and mentorship, leading to measurable improvements in learner professionalism.[18] The present findings therefore reinforce the importance of organized ward-based educational interventions in fostering professional development.

The overall competence score improved significantly from 4.44 ± 0.92 to 7.28 ± 0.74 following implementation of structured learning ward rounds ($p < 0.001$). This overall improvement reflects simultaneous enhancement of multiple competencies including clinical assessment, reasoning, communication, and professionalism. Similar outcomes have been reported by O'Brien et al., who demonstrated that structured workplace-based learning interventions produce comprehensive improvements in learner performance across multiple competency domains.[19] Likewise, Yardley et al. observed that clinically integrated teaching programs enhance overall learner competence by linking theoretical knowledge with real-world patient care experiences.[20] The broad improvement observed in the current study highlights the multidimensional educational impact of structured ward rounds.

Learner engagement and participation also improved significantly following the intervention. The engagement score increased from 4.44 ± 0.92 to 7.28 ± 0.74 ($p < 0.001$), indicating greater involvement in clinical discussions and patient-care activities. Active engagement is widely recognized as a key determinant of effective learning, particularly in clinical settings where experiential participation facilitates deeper understanding and retention. Similar findings have been reported by O'Brien et al., who observed increased learner engagement following structured clinical teaching initiatives that encouraged active participation and reflective discussion.[19] Enhanced engagement likely contributed substantially to the observed improvements in competence across all assessed domains.

Participant feedback further demonstrated strong perceptions regarding the educational value of the intervention. More than three-quarters of respondents strongly agreed that structured ward rounds improved their clinical reasoning abilities, while all respondents either agreed or strongly agreed that faculty effectively explained diagnostic reasoning and discussed differential diagnoses. These findings are consistent with the observations of Bowen, who highlighted that explicit articulation of diagnostic thinking by expert clinicians significantly improves learner understanding of clinical reasoning processes.[13] Similarly, Schmidt and Mamede emphasized the importance of guided reflection and expert feedback in developing diagnostic expertise among trainees.[14] The overwhelmingly positive feedback observed in the

present study suggests that structured ward rounds successfully create an environment conducive to cognitive apprenticeship and clinical reasoning development.

Learner participation and encouragement during ward rounds were also highly rated by participants. Most respondents strongly agreed that structured ward rounds promoted active participation and continuous encouragement from faculty members. Such findings are consistent with educational theories emphasizing learner-centered instruction and active involvement in workplace learning. Studies by Peters and Ten Cate have demonstrated that supportive supervisory relationships and active participation opportunities enhance learner motivation, confidence, and educational outcomes in clinical environments.[12] Increased faculty engagement likely contributed to the positive learning experiences reported by participants.

Perceptions of the learning environment were overwhelmingly favorable, with over 90% of participants strongly agreeing that the structured ward rounds provided a positive educational atmosphere. A supportive learning environment encourages questioning, reflection, and collaborative discussion, all of which are critical for effective postgraduate training. Similar findings were reported by Passi et al., who identified psychological safety, faculty support, and constructive feedback as key characteristics of successful clinical learning environments.[18] The positive perceptions documented in the current study indicate that structured ward rounds foster an atmosphere conducive to both learning and professional growth.

Finally, overall satisfaction with the structured learning ward round intervention was exceptionally high, with all participants strongly agreeing that they were satisfied with the program (100%, $p < 0.001$). Universal satisfaction reflects the perceived relevance, effectiveness, and practicality of the intervention in addressing postgraduate educational needs. Comparable levels of learner satisfaction have been reported in studies evaluating structured bedside teaching and workplace-based learning interventions, where participants consistently valued opportunities for active engagement, personalized feedback, and clinical reasoning discussions.[11,19] The unanimous positive response observed in the present study suggests strong acceptability and feasibility of structured ward rounds as an educational strategy for postgraduate medical training.

CONCLUSION

The present study demonstrates that structured learning ward rounds significantly enhance postgraduate clinical competence across multiple domains, including history taking, clinical reasoning, counselling skills, and professionalism. Statistically significant improvements in pre- and post-intervention assessment scores indicate that a systematic, learner-centered approach to bedside teaching can effectively strengthen essential clinical competencies. Participants also reported high levels of engagement, active participation, and satisfaction with the intervention, highlighting the positive influence of structured ward rounds on the overall learning experience. Feedback further revealed improved understanding of clinical reasoning processes and greater opportunities for discussion of differential diagnoses under faculty guidance. The favorable perception of the learning environment suggests that structured ward rounds promote collaboration, reflective learning, and professional development. Overall, this educational intervention represents an effective and feasible strategy for postgraduate medical training. Incorporating structured learning ward rounds into routine clinical teaching may improve learner outcomes, enhance workplace-based education, and contribute to the development of competent and confident future clinicians.

REFERENCES

1. Ramani S, Leinster S. AMEE Guide No. 34: Teaching in the clinical environment. Med Teach. 2008;30(4):347–364.
2. Wolpaw DR, Gonzalo JD, Thompson BM, Haidet P. Educating for the 21st-century health care system: an interdependent framework of workplace learning. Acad Med. 2017;92(1):35–39.
3. Croskerry P. Clinical cognition and diagnostic error: applications of a dual process model of reasoning. Adv Health Sci Educ Theory Pract. 2009;14(Suppl 1):27–35.
4. Norman G. Dual processing and diagnostic errors. Adv Health Sci Educ Theory Pract. 2009;14(Suppl 1):37–49.
5. Knowles MS, Holton EF, Swanson RA. The Adult Learner. 8th ed. New York: Routledge; 2015.
6. Lave J, Wenger E. Situated Learning: Legitimate Peripheral Participation. Cambridge: Cambridge University Press; 1991.
7. Fredricks JA, Blumenfeld PC, Paris AH. School engagement: Potential of the concept, state of the evidence. Rev Educ Res. 2004;74(1):59–109.
8. Reeve J. How students create motivationally supportive learning environments for themselves: The concept of agentic engagement. J Educ Psychol. 2013;105(3):579–595.
9. Chuang CH, Huang G, Gonzalo JD, Smith C. The return of bedside rounds: an educational intervention. J Gen Intern Med. 2010;25(8):792–798.
10. McGee SR. Bedside teaching rounds reconsidered. JAMA. 2014;311(19):1971–1972.
11. John D. Gonzalo, Heist BS, Duffy BL, Dyrbye L, Fagan MJ. The value of bedside rounds: a multicenter qualitative study. Acad Med. 2013;88(2):263–268.

12. Marjan Peters, Olle ten Cate. Bedside teaching in medical education: a literature review. Perspect Med Educ. 2014;3(2):76–88.
13. Judith L. Bowen. Educational strategies to promote clinical diagnostic reasoning. N Engl J Med. 2006;355(21):2217–2225.
14. Henk G. Schmidt, Sílvia Mamede. How to improve the teaching of clinical reasoning: a narrative review and proposal. Med Educ. 2015;49(10):961–973.
15. Suzanne Kurtz, Silverman J, Draper J. Teaching and learning communication skills in medicine. 2nd ed. Oxford: Radcliffe Publishing; 2005.
16. Elizabeth A. Rider, Christopher H. Keefer. Communication skills competencies: definitions and a teaching toolbox. Med Educ. 2006;40(7):624–629.
17. Richard L. Cruess, Cruess SR, Steinert Y. Role modelling—making the most of a powerful teaching strategy. BMJ. 2008;336(7646):718–721.
18. Vimmi Passi, Johnson N, Peile E, Wright S, Hafferty F, Johnson S. Doctor role modelling in medical education: BEME Guide No. 27. Med Teach. 2013;35(9):e1422–e1436.
19. Bridget C. O'Brien, Poncelet AN, Hansen L, Hirsh D, Ogur B, Alexander EK. Students' workplace learning in two clerkship models: a multi-institutional study. Med Educ. 2012;46(6):613–624.
20. Sarah Yardley, Teunissen PW, Dornan T. Experiential learning: transforming theory into practice. Med Teach. 2012;34(2):161–164.