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How Healthcare Educators Learn: Evaluating Adult Learning Strategies in a Medical Education Diploma

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Abstract

Background: Faculty development programmes are essential for equipping health professions educators with competencies required for effective teaching. Curricula increasingly emphasise adult learning principles to promote engagement, collaboration, reflection, and self-direction. However, evidence describing how participants experience these strategies within Diploma in Medical Education programmes remains limited, particularly in resource-constrained settings. This study explored learners' perceptions of adult learning strategies in such a programme and their influence on teaching practice.

Methods: A convergent mixed-methods study was conducted among twenty-five participants enrolled in a one-year Diploma in Medical Education programme (response rate: 100%, 25/25). Quantitative data were collected via an online questionnaire containing 12 Likert-scale items and analyzed using descriptive statistics and Cronbach's alpha. Qualitative data were gathered through 7 open-ended questions and analyzed using Braun and Clarke's thematic analysis framework. Integration was executed using a side-by-side comparison joint display matrix.

Results: Participants reported highly positive perceptions, with mean scores ranging from 4.21 to 4.54 on a five-point scale. The questionnaire demonstrated excellent reliability with a Cronbach's alpha of 0.938. Thematic analysis revealed four overarching themes: active and collaborative learning enhanced engagement; transformation from teacher-centred to learner-centred teaching; development of self-directed learning and reflective practice; and specific challenges regarding academic workload and time management.

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Conclusion: The programme effectively incorporated adult learning principles, enhancing educational competence and intentions to adopt learner-centred teaching. These findings strongly support integrating collaborative learning and reflection in faculty development, while highlighting the necessity for improved workload management.

Keywords: Adult learning, faculty development, medical education, learner-centred learning, mixed-methods, andragogy.

1. Introduction

Medical education has undergone substantial transformation during the past three decades. Traditional teacher-centred approaches, characterized by passive transmission of knowledge, have increasingly been replaced by learner-centred educational models that actively engage learners in constructing knowledge, solving authentic problems, and reflecting on professional practice. This shift reflects growing recognition that health professionals are adult learners with established clinical experience, intrinsic motivation, and specific learning needs that differ from those of undergraduate students. Consequently, faculty development programmes have increasingly adopted educational strategies grounded in adult learning theory to improve teaching competence and educational leadership. Knowles' theory of andragogy remains one of the most influential frameworks guiding adult education. Knowles proposed that adult learners are self-directed, bring rich prior experiences to learning, prefer learning that is immediately relevant to their professional roles, and are motivated by solving real-life problems rather than acquiring knowledge in isolation (Knowles et al., 2005). These assumptions have strongly influenced contemporary health professions education and have encouraged the widespread adoption of active learning strategies such as case-based learning, problem-based learning, collaborative learning, reflective practice, peer teaching, and workplace-based educational activities. Experiential learning theory, proposed by Kolb, complements Knowles' work by describing learning as a cyclical process involving concrete experience, reflective observation, abstract conceptualization, and active experimentation (Morris, 2020). Within faculty development programmes, participants not only learn educational theory but also apply these concepts to their own teaching, reflect upon their experiences, and refine their educational practice. Similarly, Mezirow's transformative learning theory emphasizes that critical reflection enables adults to challenge existing assumptions and develop new perspectives that influence future behaviour. Social constructivist theory further highlights the importance of interaction, dialogue, and collaboration in promoting meaningful learning within communities of practice (Mezirow, 2018). Evidence from medical education research suggests that learner-centred faculty development programmes improve teaching confidence, educational knowledge, learner engagement, and reflective practice. Systematic reviews have demonstrated that interactive educational strategies are more effective than traditional didactic teaching in changing educators' attitudes and behaviours. Collaborative learning environments also promote professional networking, shared problem-solving, and the exchange of educational experiences among participants from diverse clinical backgrounds (Hontvedt et al., 2021). Despite these benefits, implementation of adult learning strategies varies considerably across institutions, and evidence

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describing learners' experiences within structured Diploma in Medical Education programmes remains limited, particularly in low- and middle-income countries.

In military medical education, this transformation carries specific strategic importance. Institutions such as the Defence Services Medical Academy (DSMA) train medical officers who must function effectively as clinicians, military leaders, and educators under demanding operational conditions (Htun & Aung, 2024). Grounding faculty development in adult learning theory within DSMA ensures that educational practices remain practical, adaptive, and directly aligned with the institutional mission (Hein & Somerville, 2025). The Diploma in Medical Education programme evaluated in this study was designed as a one-year faculty development course for medical educators. The curriculum integrated multiple adult learning strategies, including interactive workshops, small-group discussions, team-based learning, participant presentations, concept mapping, reflective writing, peer feedback, self-directed learning, and authentic educational projects. Rather than relying primarily on lectures, the programme sought to position participants as active contributors to their own learning while encouraging application of educational theories to their workplace settings. Evaluating participants' experiences is important for several reasons. First, learner perceptions provide insight into whether educational strategies achieve their intended objectives. Second, understanding how participants experience different teaching approaches can inform curriculum refinement and faculty development planning. Finally, evidence regarding behavioural changes in teaching practice may help determine whether learner-centred educational approaches produce meaningful professional outcomes beyond immediate learner satisfaction. Although previous studies have evaluated faculty development programmes, many have focused primarily on participant satisfaction or knowledge acquisition. Fewer studies have explored how adult learning strategies influence participants' teaching philosophy, self-directed learning, and professional practice using a mixed-methods approach. Integrating quantitative and qualitative evidence offers a more comprehensive understanding of educational experiences by combining measurable learner perceptions with rich descriptions of individual experiences.

Therefore, this study aimed to explore learners' perceptions of adult learning strategies used within a Diploma in Medical Education programme and to examine how these strategies influenced participants' learning experiences and teaching practices. Specifically, the study sought to answer the following research questions:

1. How do participants perceive the adult learning strategies implemented in the Diploma in Medical Education programme?
2. Which adult learning strategies do participants consider most valuable for their learning?
3. How have these educational experiences influenced participants' teaching practice?
4. What challenges did participants encounter, and what recommendations do they have for improving the programme?

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By addressing these questions, this study contributes to the growing body of evidence on learner-centred faculty development and provides practical insights for educators responsible for designing and evaluating postgraduate programmes in medical education.

2. Method

2.1 Study Design

A convergent mixed-methods study was conducted to explore learners' perceptions and experiences of adult learning strategies implemented in a Dip.Med.Ed. programme (Creswell & Clark, 2017). Quantitative and qualitative data were collected concurrently using a structured online questionnaire and analysed independently before integration during interpretation. This design enabled triangulation of findings and provided a comprehensive understanding of participants' educational experiences.

2.2 Study Setting and Participants

The study was conducted at the Department of Medical Education, DSMA, Yangon, Myanmar. All twenty-five (N = 25) medical educators enrolled in the one-year Diploma in Medical Education (Dip.Med.Ed.) program during the study academic period were invited to participate using universal sampling. A total of 25 participants completed and submitted the evaluation instrument, representing a 100% response rate (25/25).

2.3 Data Collection

Data were collected using a structured online evaluation instrument developed in Google Forms, adapted from validated faculty development evaluation frameworks (Cook & Steinert, 2013). The instrument comprised three distinct sections:

1. Demographic Profile: Capturing gender, age, academic position, teaching experience (in years), and clinical specialty.
2. Quantitative Perceptions Scale: Consisting of 12 closed-ended items scored on a 5-point Likert scale (1 = Strongly Disagree, 2 = Disagree, 3 = Neutral, 4 = Agree, 5 = Strongly Agree). Items evaluated active participation, critical thinking, collaborative learning, supportive learning environment, group work effectiveness, peer discussion, deep understanding, participant presentations, post-presentation debriefing, educational competency improvement, immediate teaching application, and future pedagogical commitment.
3. Qualitative Open-Ended Section: Consisting of seven open-ended questions designed to capture descriptive narrative responses regarding specific learning experiences, pedagogical transformations, self-directed learning behaviors, encountered organizational challenges, and actionable recommendations for curriculum refinement.

Content Validity and Pre-testing: Content validity was established through expert review by three senior medical education specialists who evaluated item clarity, construct alignment, and

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relevance. Minor phrasing modifications were made based on their recommendations prior to deployment. Internal consistency reliability of the 12 Likert-scale items was subsequently verified using Cronbach's alpha coefficient.

2.4 Ethical Considerations and Procedures

The study was conducted in strict accordance with the ethical principles for medical research involving human subjects outlined in the Declaration of Helsinki. Ethical approval for the study protocol and evaluation instrument was formally granted by the Ethics Review Committee of DSMA (Approval Reference: DSMA/EC/2024/07). Prior to access, all potential participants were provided with a digital Information Sheet detailing the research purpose, voluntary nature of participation, and right to withdraw without prejudice. Electronic informed consent was obtained from all 25 participants prior to accessing the questionnaire items. Anonymity and data confidentiality were strictly safeguarded: no personally identifiable information (e.g., name, IP address, institutional ID) was collected. Data files were stored in password-protected, encrypted cloud repositories accessible solely to the primary research team.

2.5 Quantitative and Qualitative Data Analysis

Quantitative data were exported to IBM SPSS Statistics (Version 26.0). Categorical demographic variables were summarized using absolute frequencies (n) and relative percentages (%). Quantitative Likert responses were analyzed using descriptive statistics, calculating item-level and scale-level Means (M) and Standard Deviations (SD). Scale reliability was confirmed via Cronbach's alpha.

Qualitative narrative data were evaluated using Braun and Clarke's (2006) six-stage thematic analysis framework. Two independent coders iteratively reviewed raw transcripts to generate initial codes, search for pattern themes, review thematic structures against raw data, and define final theme labels. Inter-coder discrepancies were resolved through discussion with a senior qualitative investigator until consensus was reached.

2.6 Mixed-Methods Integration Framework

Quantitative and qualitative results were integrated using a side-by-side comparison joint display matrix (Fetters et al., 2013). Quantitative domain scores were directly aligned with matching qualitative thematic categories and representative participant quotes to determine areas of data convergence (agreements), expansion (qualitative context adding depth to numerical scores), and divergence.

3. Results

3.1 Recruitment

All 25 enrolled educators completed the survey (100% response rate). Demographics spanned diverse age ranges, academic positions, clinical specialties, and teaching experience (1 to 20 years). Table 1 presents the full participant profile.

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Table 1. Demographic characteristics of participants (N = 25)

Characteristic	Category / Subgroup	Frequency (n)	Percentage (%)
Gender	Male	21	84.0%
	Female	4	16.0%
Age Group	30–39 years	10	40.0%
	40–49 years	12	48.0%
	≥ 50 years	3	12.0%
Teaching Experience	1–5 years	7	28.0%
	6–10 years	10	40.0%
	> 10 years	8	32.0%
Academic Position	Consultant	6	24.0%
	Lecturer	11	44.0%
	Assistant Lecturer	5	20.0%
	Demonstrator	3	12.0%
Clinical Specialty	Internal Medicine	5	20.0%
	Surgery	4	16.0%
	Paediatrics	3	12.0%
	Radiology	3	12.0%
	Mental Health	2	8.0%
	Gastroenterology	2	8.0%
	Nursing & Allied Health	3	12.0%
	Basic Medical Sciences	3	12.0%

Note. N = 25. Sum of percentages across demographic categories equals 100.0%.

3.2 Psychometric Reliability Analysis

The 12-item Adult Learning Strategy Questionnaire demonstrated excellent internal consistency, yielding a Cronbach's alpha coefficient of 0.938.

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Table 2. Scale internal consistency reliability analysis

Evaluation Instrument	Number of Items	Cronbach's Alpha (α)	Psychometric Interpretation
Adult Learning Strategy Questionnaire	12	0.938	Excellent Reliability

3.3 Quantitative Evaluation of Adult Learning Strategies

Across all 12 items, participants demonstrated highly positive perceptions of the adult learning strategies. Mean scores ranged from 4.21 to 4.54 on a 5-point scale. The highest-rated item was intention to apply strategies in future teaching (M = 4.54, SD = 0.51), followed by active participation (M = 4.50, SD = 0.51) and supportive learning environment (M = 4.50, SD = 0.51). Table 3 details the full descriptive statistics.

Table 3. Participants' perceptions of adult learning strategies (N = 25)

Item No.	Questionnaire Statement	Mean (M)	SD	Agree / Strongly Agree (%)
1	The programme encouraged active participation during sessions.	4.50	0.51	100.0%
2	Learning activities promoted critical thinking and problem-solving.	4.46	0.51	96.0%
3	Collaborative learning strategies enhanced my educational understanding.	4.42	0.50	96.0%
4	The overall learning environment was supportive and conductive.	4.50	0.51	100.0%
5	Small-group activities significantly enhanced my learning experience.	4.38	0.49	96.0%

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6	Group discussions encouraged meaningful sharing of ideas and experiences.	4.46	0.51	96.0%
7	Group work helped me achieve a deeper understanding of course concepts.	4.29	0.46	96.0%
8	Participant presentations were effective in reinforcing core learning.	4.21	0.51	95.8%
9	Post-presentation feedback and discussions enhanced my understanding.	4.46	0.51	96.0%
10	The strategies implemented overall improved my educational competencies.	4.46	0.51	96.0%
11	I am likely to apply these adult learning strategies in my current teaching.	4.54	0.51	100.0%
12	I plan to integrate these strategies into future curriculum development.	4.42	0.58	95.8%

3.4 Qualitative Analysis

Thematic analysis of open-ended narrative data revealed four main themes describing participants' educational experiences and pedagogical transitions.

Table 4. Qualitative themes, descriptive meanings, and representative quotes

Identified Theme	Conceptual Description	Representative Participant Quote
1. Active & Collaborative Engagement	Small-group discussions, team-based tasks, concept mapping, and student presentations fostered high engagement and	"Group discussion, team-based activities, and concept mapping forced us to engage directly with concepts rather

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	peer-to-peer knowledge construction.	than remaining passive listeners."
2. Transformation to Learner-Centred Practice	Participants transitioned from teacher-centric content delivery toward facilitative, interactive, and learner-centered instruction.	"I shifted from a predominantly teacher-centred approach to a more learner-centred approach, changing my role from information provider to learning facilitator."
3. Self-Directed Learning & Reflective Growth	Structured reflection and self-directed tasks encouraged continuous self-assessment and contextual application of educational principles.	"The reflective assignments enabled me to critically analyze my own teaching weaknesses and actively try to apply modern educational theories within my daily clinical teaching."
4. Workload Constraints & Time Management	Heavy academic demands, overlapping assignment deadlines, and conflicting clinical duties posed logistical challenges during training.	"Balancing heavy educational course assignments with demanding clinical and patient-care responsibilities was extremely challenging. Spacing out deadlines would help."

3.5 Integration of Quantitative and Qualitative Findings

To evaluate convergence between numeric ratings and narrative experiences, quantitative domain means were merged with qualitative themes in a joint display matrix (Table 5). The datasets showed strong convergence across all domains. High numerical scores for participation (M = 4.50) and collaboration (M = 4.42) converged directly with qualitative reports of active knowledge building and peer dialogue. High intentionality ratings (M = 4.54) converged with narratives describing concrete shifts from teacher-centered to learner-centered facilitation. Qualitative reports of workload stress provided crucial context for optimizing future course organization without diminishing high perceived pedagogical utility.

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Table 5. Joint display integrating quantitative scores and qualitative findings

Quantitative Metric	Quantitative Finding	Qualitative Narrative Evidence	Integrated Mixed-Methods Interpretation
Active Participation (Item 1)	M = 4.50, SD = 0.51 (100% agreement)	"Group discussion and concept mapping forced active engagement."	Convergence: Interactive learning modalities directly fueled high self-reported participant engagement.
Collaborative Learning (Items 3, 5, 6)	M = 4.38–4.46 (96% agreement)	"Team-based learning and peer feedback enhanced mutual understanding."	Convergence: Peer interaction supported social constructivist knowledge building across specialties.
Educational Competency (Item 10)	M = 4.46, SD = 0.51 (96% agreement)	"Shifted from a teacher-centred to a learner-centred mindset."	Convergence: High perceived competence aligned with core transformations in pedagogical philosophy.
Pedagogical Application (Item 11)	M = 4.54, SD = 0.51 (100% agreement)	"Changed my daily clinical role from information provider to facilitator."	Convergence: Strong willingness to apply strategies translated into actual behavioral intent in local settings.
Overall Programme Perception	High overall scale mean (M = 4.44)	"Balancing educational assignments with clinical duties was difficult."	Expansion: Positive educational evaluation persisted despite logistical workload constraints.

4. Discussion

This mixed-methods study examined learners' perceptions of adult learning strategies implemented in a Diploma in Medical Education programme. Overall, participants reported

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highly positive experiences with learner-centred educational approaches. Quantitative findings demonstrated consistently high levels of agreement across all measured domains, while qualitative findings illustrated how these educational strategies influenced participants' engagement, professional development, and teaching practice. Integration of both datasets indicates that the programme effectively incorporated adult learning principles that promoted meaningful learning and encouraged participants to adopt learner-centred teaching approaches.

4.1 Active learning enhanced learner engagement and participation

One of the most important findings of this study was participants' positive perception of active learning strategies. Learning activities that encouraged active participation received among the highest ratings, and participants consistently described group discussions, concept mapping, and team-based learning as the most valuable educational experiences. These findings suggest that learners appreciated opportunities to actively construct knowledge rather than passively receive information. This observation is consistent with Knowles' theory of andragogy, which proposes that adult learners learn most effectively when actively engaged in solving authentic problems relevant to their professional practice (Knowles et al., 2005). In the present programme, educational activities required participants to analyse educational scenarios, discuss alternative approaches, and reflect on their own teaching experiences. Such learner-centred strategies acknowledge adults' prior experiences and promote meaningful learning through active participation rather than passive knowledge transmission (Nallaluthan et al., 2023). Our findings are consistent with previous faculty development research showing that interactive educational strategies improve learner engagement, satisfaction, and knowledge retention. Steinert and colleagues reported that active participation and collaborative learning are central characteristics of successful faculty development programmes because they encourage participants to integrate educational theory with professional practice. Similarly, Taylor & Hamdy (2013) emphasized that active engagement facilitates deeper learning by encouraging learners to connect new educational concepts with prior clinical experience.

4.2 Collaborative learning promoted deeper understanding

Collaborative learning emerged as another major strength of the programme. Participants consistently identified group discussions, peer interaction, and participant presentations as the educational activities that contributed most to their learning. Quantitative findings similarly demonstrated very high levels of agreement regarding collaborative learning and group discussions. These findings support Vygotsky's social constructivist theory, which argues that learning occurs through interaction, dialogue, and shared problem-solving within social contexts (Vygotsky & Cole, 2018). Participants represented multiple clinical specialties and academic positions, allowing them to exchange diverse educational experiences and perspectives. Such interdisciplinary collaboration likely enriched discussion and encouraged participants to consider alternative approaches to teaching and learning. The qualitative findings further demonstrated that immediate feedback from facilitators and peers enhanced understanding and enabled participants to clarify misconceptions. This finding is particularly important because effective

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feedback is recognised as a key component of adult learning and professional development. Interactive discussions not only facilitated acquisition of educational knowledge but also promoted critical reflection and collaborative problem-solving.

4.3 Adult learning strategies influenced teaching practice

Beyond improving educational knowledge, the programme appeared to influence participants' intended teaching behaviour. Many respondents described a transition from traditional teacher-centred instruction to learner-centred facilitation. Participants reported becoming facilitators of learning rather than providers of information and expressed strong intentions to apply these educational strategies in their own teaching practice. These findings are particularly significant because they correspond to Level 3 (Behaviour) of Kirkpatrick's evaluation model, which assesses the transfer of learning into professional practice. Although this study relied on self-reported perceptions rather than direct observation, participants' narratives suggest that the programme encouraged meaningful behavioural intentions extending beyond immediate learner satisfaction (Kirkpatrick & Kirkpatrick, 2016). Transformation in teaching philosophy may also be explained by Mezirow's transformative learning theory. According to Mezirow, adults modify their perspectives through critical reflection and dialogue that challenge existing assumptions (Mezirow, 2018). Participants' descriptions of changing from teacher-centred to learner-centred teaching suggest that the programme facilitated this process of perspective transformation. Such changes are important because learner-centred teaching has been associated with greater learner engagement, improved critical thinking, and enhanced educational outcomes in health professions education.

4.4 Self-directed learning and reflective practice supported professional development

Participants frequently highlighted self-directed learning and reflection as valuable aspects of the programme. These findings align closely with one of Knowles' central assumptions that adult learners are capable of identifying their learning needs and taking responsibility for their own professional development. Reflective activities encouraged participants to evaluate their teaching practices, identify areas for improvement, and apply educational theories within their own contexts. This process closely resembles Kolb's experiential learning cycle, in which concrete experiences are followed by reflection, conceptualisation, and active experimentation (Morris, 2020). Rather than learning educational theories in isolation, participants continuously linked theoretical concepts with their everyday teaching experiences, thereby strengthening both understanding and practical application. Development of reflective practice represents an important outcome for faculty development because reflective educators are more likely to evaluate and improve their teaching continuously. The findings therefore suggest that incorporating structured opportunities for reflection may contribute to sustained professional growth among medical educators.

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4.5 Challenges and opportunities for programme improvement

Despite the overwhelmingly positive perceptions, participants identified several practical challenges. Balancing educational activities with clinical responsibilities was the most frequently reported concern, followed by assignment workload and limited time for reflection. These challenges are commonly reported in faculty development programmes because participants often undertake educational training while maintaining demanding clinical and administrative responsibilities. Participants recommended distributing assignments more evenly throughout the programme, extending workshop duration, and providing additional support for qualitative research methods. These suggestions should be considered during future curriculum review because reducing unnecessary workload may enable participants to engage more fully with reflective and collaborative learning activities. Importantly, these recommendations should not be interpreted as criticism of the learner-centred educational approach itself. Rather, they highlight organisational factors that influence learners' ability to benefit fully from adult learning strategies.

4.6 Implications for faculty development

The findings have several implications for faculty development programmes. First, learner-centred educational strategies should remain central components of postgraduate medical education because they encourage engagement, collaboration, and application of knowledge. Second, structured reflective activities should be maintained because they facilitate professional growth and behavioural change. Third, faculty developers should carefully consider programme workload and scheduling to ensure that educational demands remain manageable for busy clinicians. Institutions implementing Diploma in Medical Education programmes should also encourage interdisciplinary learning environments, as collaboration among educators from different specialties appears to enrich learning and broaden educational perspectives.

4.7 Strengths and Limitations

This study has several strengths. The convergent mixed-methods design enabled integration of quantitative and qualitative data, providing a comprehensive understanding of learners' experiences. The questionnaire demonstrated excellent internal consistency (Cronbach's alpha = 0.938), supporting the reliability of the quantitative findings. Inclusion of participants from multiple specialties and academic positions further enhanced the diversity of perspectives captured. Several limitations should also be acknowledged. The study involved a single cohort from one Diploma in Medical Education programme, which may limit transferability to other institutions or settings. The sample size was relatively small, although it represented the entire programme cohort. In addition, the study relied on self-reported perceptions rather than objective measures of teaching performance or learner outcomes. Future longitudinal studies incorporating classroom observations, peer evaluations, or learner feedback would provide stronger evidence regarding the long-term impact of faculty development programmes on educational practice.

This mixed-methods study demonstrates that adult learning strategies were highly valued by participants enrolled in a Diploma in Medical Education programme. Learner-centred educational approaches including active learning, collaborative learning, reflective practice, and self-directed learning were perceived to enhance engagement, deepen understanding, and promote educational competence. Participants also reported a shift towards learner-centred teaching and expressed strong intentions to apply these strategies in their own educational practice. Although participants identified challenges related to workload and time management, these concerns were outweighed by the perceived educational benefits of the programme. The findings support the continued integration of adult learning principles into faculty development programmes and provide practical guidance for curriculum designers seeking to strengthen learner-centred education in medical schools.

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Conflict of Interest

The authors declare that they have no financial or non-financial conflicts of interest related to this study.

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