

Original Research Article

Comprehensive assessment of medical soft skills: linking program and session outcomes

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ABSTRACT

Background: Soft skills form an essential component of competency-based medical education, influencing communication, professionalism, emotional intelligence, and reflective capacity. Systematic evaluation ensures educational accountability and program refinement.

Methods: A cross-sectional evaluative study was conducted among 54 participants using structured 3-point and 5-point Likert-scale questionnaires. Descriptive statistics (mean±SD; percentages), chi-square test, one-way ANOVA, and Pearson correlation analysis were performed. Significance was set at $p < 0.05$.

Results: Overall positive satisfaction ranged from 87%–92%. Faculty helpfulness received the highest agreement (94.4%; $M=1.06$, $SD=0.23$). One-way ANOVA demonstrated significant differences across session domains, $F(6, 378) = 3.94$, $p=0.001$, $\eta^2=0.06$. Strong correlations were observed between Emotional Intelligence and Critical Reflection ($r=0.74$, $p<0.001$), and Ethics and Emotional Intelligence ($r=0.72$, $p<0.001$). No significant ($\chi^2(1, N) = 54 = 1.62$, $p=0.203$) association was found between participation and perceived usefulness.

Conclusions: The program demonstrated high effectiveness, strong internal coherence, and excellent faculty performance. Increased experiential components may further enhance psychological competency domains.

Keywords: Medical education, Soft skills training, Emotional intelligence, Critical reflection, Ethics in medicine, Program evaluation

INTRODUCTION

Modern medical education emphasizes the integration of communication skills, ethical reasoning, emotional intelligence, and reflective practice alongside clinical competence. Deficiencies in these domains contribute to reduced patient satisfaction and professional burnout.^{1,2} Structured soft skills training improves patient outcomes, teamwork, and professional behaviour.³ Adult learning theory supports interactive and experiential strategies for optimal skill development.⁴ Emotional intelligence has

been linked to leadership capacity and resilience.²⁻⁵ Competency-based medical education emphasizes not only clinical expertise but also professional competencies such as communication, ethics, teamwork, and emotional intelligence. Effective physician–patient communication has been consistently associated with improved patient satisfaction, adherence, and clinical outcomes.^{1,2} Emotional intelligence plays a significant role in leadership, resilience, and professional behaviour among healthcare providers.³ Experiential learning approaches, including role-play, simulation, and reflective practice,

have been shown to enhance retention and behavioural change in soft skills training.^{4,5} Reflective capacity and ethical reasoning are increasingly recognized as central to professional identity formation. However, systematic evaluation of structured soft skills workshops using statistical and correlational methods remains limited. The present study addresses this gap by quantitatively assessing participant satisfaction, domain performance, and inter-domain relationships within a structured medical soft skills program. Despite increasing implementation, systematic evaluation of structured soft skills programs remains limited. This study evaluates both overall program effectiveness and session-level performance of the Basic Course in Medical Soft Skills.

METHODS

This cross-sectional evaluation study examined the effectiveness of the Basic Course in Medical Soft Skills among 54 participants who provided structured feedback immediately after completing the program. Individuals who were absent on the day of the workshop, did not receive feedback or were unwilling to complete the questionnaire were excluded. The study was conducted at Tamil Nadu Dr MGR Medical University between February and March 2026. It was based on routine academic assessments carried out as part of curriculum development. As no patient data, clinical interventions, or sensitive personal information were involved, formal institutional ethical clearance was not required. Nevertheless, the study adhered to principles of academic integrity and confidentiality.

Data were collected using two validated self-administered questionnaires. The program-level evaluation tool used a 3-point Likert scale (1= positive/yes, 2=moderate/to some extent, 3=negative/no) to assess domains such as achieving objectives, usefulness, participation, learning resources, faculty support, the balance between theory and practice, and time management. The session-level evaluation tool employed a 5-point Likert scale (1=poor to 5=excellent) to evaluate components, including an overview of soft skills, principles of adult learning, team communication, parent communication, medical ethics and professionalism, emotional intelligence and stress management, and critical reflection.

In addition, open-ended responses were collected to capture qualitative insights on strengths and areas for improvement. Data were coded and entered into Microsoft Excel for analysis. Statistical analyses and graphical representations were performed using Python (version 3.14) with NumPy, Pandas, SciPy, and Matplotlib/Seaborn libraries. Descriptive statistics were presented as mean \pm standard deviation, frequencies, and percentages. The chi-square test was used to examine the association between participation and perceived usefulness; a one-way ANOVA was used to compare session-wise ratings; and Pearson correlation analysis assessed relationships

between domains. A p-value of less than 0.05 was considered statistically significant.

RESULTS

A total of 54 participants completed the workshop evaluation questionnaire. All participants belonged to a single academic cohort of third-year undergraduate medical students and faculties from the para-clinical stream. Gender distribution was nearly equal, with 50.9% males and 49.1% females. As the study focused on immediate feedback regarding workshop effectiveness, detailed demographic variables such as age and designation were not collected (Table 1). Therefore, the analysis was confined to overall responses, and results are presented as aggregate descriptive and inferential statistics of the Likert-scale items.

Table 1: Demographic characteristics.

Variable	Value
Age (years)	Not formally collected (participants were 3rd-year UG medical students, typically aged 20–22 years)
Gender	Male
	50.9%
Academic level	female
	49.1%
Academic level	3rd year undergraduate medical students (100%)

Program-level evaluation demonstrated consistently high participant satisfaction across domains (Table 2). Positive responses ranged from 72.2% to 94.4%, with Faculty Helpfulness receiving the highest agreement (94.4%; M=1.06, SD=0.23), indicating strong consensus regarding instructional effectiveness.

Table 2: Program-level evaluation (n=54).

Domain	Positive response (%)	Mean \pm SD
Achievement of objectives	90.7	1.09 \pm 0.29
Usefulness	92.6	1.07 \pm 0.26
Active participation	77.8	1.26 \pm 0.52
Learning resources	81.	1.22 \pm 0.50
Faculty helpfulness	94.4	1.06 \pm 0.23
Theory–practical balance	72.2	1.35 \pm 0.62
Time management	83.3	1.20 \pm 0.48

Chi-square test: χ^2 (1, n=54)=1.62, p=0.203 (not significant).

Achievement of Objectives (90.7%; M=1.09, SD=0.29) and Usefulness for Professional Activities (92.6%; M=1.07, SD=0.26) also received very high approval ratings. Theory–Practical Balance recorded comparatively lower positive responses (72.2%; M=1.35, SD=0.62) and the greatest variability, suggesting differing perceptions regarding adequacy of practical exposure. Chi-square analysis revealed no statistically significant association

between participation level and perceived usefulness, $\chi^2(1, N=54)=1.62, p=0.203$, indicating that perceived professional value was independent of engagement intensity.

Table 3: Session-level evaluation (5-point scale).

Domain	Mean±SD	Good/excellent (%)
Team communication	4.45±0.69	94
Overview	4.16±0.73	85
Parent communication	4.13±0.85	84
Adult learning	4.05±0.79	82
Ethics	3.95±0.88	76
Emotional intelligence	3.91±0.92	74
Critical reflection	3.95±0.86	78

Composite mean=4.09±0.82, standardized satisfaction index=77%.

Session-level evaluation (Table 3) showed that all domains scored above 3.9 on the 5-point Likert scale, indicating overall ratings of “Good” to “Excellent.” Team Communication achieved the highest mean score (M=4.45, SD=0.69), while Emotional Intelligence and Stress Management received the lowest mean (M=3.91, SD=0.92), indicating comparatively greater variability.

Table 4: Selected Pearson correlation coefficients.

Domain pair	r	P value
Emotional intelligence – critical reflection	0.74	<0.001
Ethics – emotional intelligence	0.72	<0.001
Team communication – parent communication	0.68	<0.001

Correlation range: $r=0.46-0.74$ (moderate to strong positive associations).

The composite mean satisfaction score was 4.09 ± 0.82 , corresponding to a standardised satisfaction index of 77%. A one-way ANOVA revealed a significant effect of group on the outcome variable, $F(6, 378)=3.94, p=0.001, \eta^2=0.06$, indicating that approximately 6% of the variance was explained by group differences and moderate variation in perceived effectiveness among modules.

Correlation analysis (Table 4) revealed moderate to strong positive associations between domains ($r=0.46-0.74, p<0.001$). The strongest correlations were observed between Emotional Intelligence and Critical Reflection ($r=0.74$), Ethics and Emotional Intelligence ($r=0.72$), indicating conceptual clustering within psychological-professional domains. Team Communication and Parent Communication were also strongly correlated ($r=0.68$), suggesting coherence within communication-focused modules. Figure 1 illustrates the comparative mean scores

across the seven domains, highlighting the superior rating for Team Communication and the relatively lower but still favourable ratings for Emotional Intelligence and Ethics.

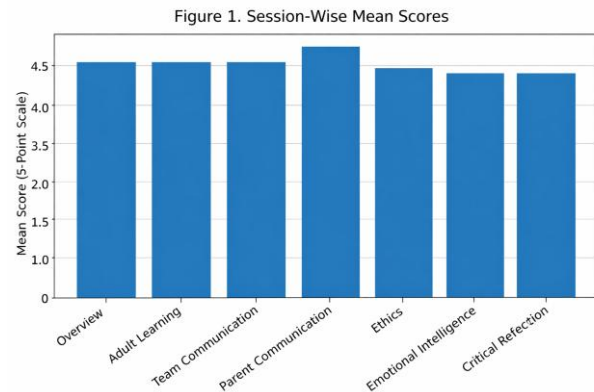


Figure 1: Comparison of mean scores.

Figure 2 (correlation heatmap) demonstrates the strength and pattern of inter-domain relationships, clearly depicting two conceptual clusters: communication modules and psychological-professional domains.

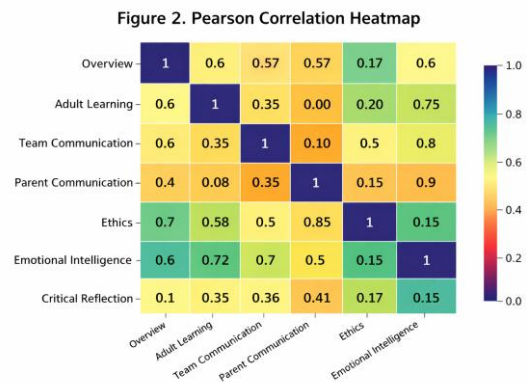


Figure 2: The strength and pattern of inter-domain relationships.

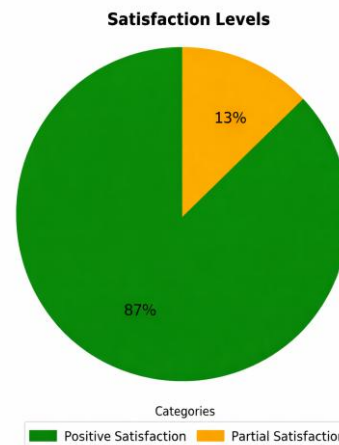


Figure 3: Overall program satisfaction.

Figure 3 (pie chart) confirms high overall program satisfaction, with approximately 87% of participants reporting positive satisfaction and no negative responses, reinforcing the program's overall effectiveness.

DISCUSSION

The present study demonstrates high overall effectiveness of the Basic Course in Medical Soft Skills, with positive satisfaction levels ranging from 87% to 92% across program domains. Faculty helpfulness emerged as the highest-rated domain, reflecting strong instructional quality and effective learner support. The low variability (SD=0.23) further indicates consistent agreement among participants, highlighting the critical role of skilled facilitation in soft skills training.⁷ Achievement of objectives and professional usefulness were also rated highly, suggesting strong alignment between program goals and participant expectations.¹

Notably, no significant association was observed between participation level and perceived usefulness ($\chi^2(1, n=54) = 1.62, p=0.203$), indicating that even passive, observational learning contributed meaningfully to knowledge acquisition. This finding is consistent with adult learning theory and social learning theory, which emphasise that learners can benefit from both active engagement and observational processes.^{8,9}

Session-level evaluation revealed significant differences across domains ($F(6, 378)=3.94, p=0.001, \eta^2=0.06$), with Team Communication receiving the highest mean score ($M=4.45$), reinforcing its immediate clinical relevance and applicability. Effective communication has been consistently shown to improve patient outcomes, learner attitudes, and satisfaction, explaining its high perceived utility.^{3,12,13,15-17}

In contrast, Emotional Intelligence and Ethics, though positively rated, showed relatively lower scores and greater variability. These domains require deeper introspection and behavioural change, which may not be fully achieved through short-term interventions. Experiential learning theory emphasises that such competencies develop through continuous experience, reflection, and application.⁴ Additionally, emotional intelligence frameworks highlight the need for sustained development over time.²⁻¹⁰ while empathy-based learning approaches further underscore the importance of reflective and experiential training.⁵

Correlation analysis demonstrated moderate to strong positive associations ($r=0.46-0.74$), particularly between Emotional Intelligence, Ethics, and Critical Reflection, indicating an integrated psychological-professional competency cluster. This aligns with reflective practice theory and professional identity formation models, which emphasise the interconnectedness of emotional awareness, ethical reasoning, and reflection.¹¹⁻¹⁴ Additionally, the strong correlation between Team and Parent

Communication ($r=0.68$) supports the internal coherence of communication-focused modules. The overall satisfaction score (4.09 ± 0.82 ; 77% standardised) reflects consistently positive perceptions across domains, with moderate variability suggesting scope for targeted improvements, particularly in experiential components. These findings are consistent with prior research emphasising the effectiveness of structured soft skills training supported by interactive pedagogy and strong faculty facilitation.⁷

CONCLUSION

The Basic Course in Medical Soft Skills demonstrated high overall effectiveness, strong participant satisfaction, and statistically significant inter-domain coherence. Faculty performance was consistently rated as excellent, underscoring the importance of skilled facilitation in soft skills training. Communication-focused modules were perceived as the most impactful, likely because of their immediate clinical applicability. The emotional intelligence and ethics domains, while positively rated, showed greater variability, suggesting opportunities to enhance experiential learning strategies. The absence of association between participation level and perceived usefulness suggests that the program's intrinsic content value was robust across engagement levels. Correlation analysis identified coherent conceptual clusters, supporting integrated curriculum design rather than fragmented content delivery. Future iterations may benefit from increased role-play integration, simulation-based learning, and longitudinal reinforcement of emotional and reflective competencies. The findings support continued implementation of structured soft skills programs as an essential component of competency-based medical education.

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