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Improving Peer Mentoring Competence Through Peer Mentor Training: A Quasi-Experimental Study

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Abstract

Objective: Peer mentoring programs are increasingly implemented in higher education to support students' academic success and personal development. However, mentors often receive limited formal preparation for their roles. Structured peer mentor training programs may enhance mentors' competencies, including self-awareness, emotional regulation, empathy, and mentoring self-efficacy. This study aimed to evaluate the impact of a peer mentor training program on peer mentors' perceived mentoring competencies.

Materials and Methods: A quasi-experimental study design was used. A total of 25 students volunteered for peer mentoring and participated in a training program designed to develop mentoring competencies. Participants completed a 10-item questionnaire before and after the training. Items assessed five domains: self-awareness, self-management, social awareness, relationship management, and mentoring self-efficacy. Responses were measured on a five-point Likert scale. Descriptive statistics were calculated, and a Wilcoxon signed-rank test was conducted to compare pretest and posttest scores. Internal consistency reliability was evaluated using Cronbach's alpha (α).

Results: A total of 19 peer mentors completed both assessments. The median total mentoring competency score increased from pretest (median=41, IQR=4) to posttest (median=45, IQR=6). The Wilcoxon signed-rank test demonstrated a statistically significant increase in scores following the training (V=97.5, Z=-2.801, p=0.005), with a large effect size (r=0.643). Internal consistency of the scale improved from pretest (α=0.587) to posttest (α=0.859).

Conclusion: The findings suggest that peer mentor training programs can significantly improve mentors' perceived competencies. Providing structured preparation for mentors may strengthen mentoring relationships and enhance the effectiveness of peer mentoring programs.

Keywords: Mentoring, medical students, medical education, peer group, professional competence

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INTRODUCTION

Medical education involves an intense academic workload, emotional stress, and challenges in terms of professional identity development (1,2). In this demanding environment, peer mentoring stands out as a low-cost and sustainable educational intervention that strengthens the learning atmosphere by enabling students to receive support from peers with similar experiences (3). Defined as a reciprocal developmental relationship between students of similar status but differing levels of experience, peer mentoring fosters growth through shared experiences and empathy (4). More specifically, near-peer mentoring refers to an approach where senior students provide guidance to junior students who are relatively close to them in training level, typically by one or two years (5). This proximity facilitates a high degree of social and cognitive congruence, allowing the mentor to act as a realistic role model who understands the immediate challenges of the curriculum (6). Unlike traditional hierarchical mentoring, peer mentoring is characterized by reduced power differentials, promoting psychological safety and authentic exchange (7). However, few studies in our country have systematically evaluated peer mentoring programs.

Mentoring relationships play a significant role in professional and academic development (8,9). Structured mentoring programs can enhance mentors' interpersonal and professional competencies (10). Peer mentoring has become an increasingly important educational strategy in higher education, particularly in fields such as medical education where students often face demanding academic and emotional challenges (5,11). Evidence suggests that these programs facilitate student connectedness, boosting psychological safety and motivation (3,12), which aligns with Tinto's integration theory regarding student persistence and connectedness to the academic community (13). Recent national findings indicate that such interventions yield moderate-to-high effects on emotional regulation and resilience (14), providing an emotional scaffolding that aids adaptation to university life (15,16). Peer mentoring programs aim to support students' academic development, professional growth, and well-being through guidance provided by more experienced students (17,18).

The benefits of these programs extend significantly to the mentors, fostering increased responsibility, autonomy, and professional maturity (17). Furthermore, structured peer support can facilitate informal knowledge-sharing and help bridge success gaps between different student demographics (3). Effective mentoring relationships require a range of interpersonal and intrapersonal competencies. These competencies include self-awareness, emotional regulation, empathy, communication skills, and the ability to build supportive relationships (11,19). Relational factors, such as trust, loyalty, and emotional attunement, are also significant predictors of relationship quality (20). Mentors are expected not only to provide academic guidance but also to foster trust, encourage reflection, and support mentees' personal development (21).

Despite the recognized importance of mentoring competencies, many peer mentors receive limited formal training before beginning their roles. Without adequate preparation, mentors may feel uncertain about how to manage mentoring interactions or provide appropriate support to mentees. This lack of orientation can lead to role ambiguity and mentor overload (5). Previous research suggests that structured mentor training programs can enhance mentors' confidence, communication skills, and mentoring effectiveness (22). Training programs may help mentors better understand their roles and develop strategies for managing emotional and interpersonal aspects of mentoring relationships (23).

However, empirical evidence evaluating the effectiveness of mentor training programs remains limited. Understanding how mentor training influences mentors' perceived competencies may provide valuable insights for designing more effective mentoring programs. Therefore, the aim of this study was to evaluate the impact of a peer mentor training program on mentors' perceived mentoring competencies using a quasi-experimental study design.

MATERIALS AND METHODS

This study used a quasi-experimental quantitative pretest-posttest design to evaluate the impact of a peer mentor training program on mentors' perceived competencies. The study was conducted at the medical school at the beginning of the 2025–2026 academic year. This study was approved by the Non-Drug and Non-Medical Device Research Ethics Committee of Marmara University Faculty of Medicine on February 20, 2026, with decision no. 09.2026.26-0247.

A structured near-peer mentoring program was implemented to support students' academic adaptation, professional development, and well-being. Near-peer mentoring refers to a mentoring approach in which senior students provide guidance and support to junior students who are relatively close to them in training level and share similar educational experiences (5).

The program included 25 volunteer mentors from the fourth- and fifth-year medical classes and 32 mentees from

the preclinical years. Mentors were recruited through an open invitation sent to senior students, and participation was voluntary. Mentees enrolled in the program based on their interest in receiving peer guidance during the early years of their medical education. Nineteen mentors completed both the pretraining and posttraining assessments and were included in the final analysis.

Prior to the initiation of mentoring activities, mentors participated in a structured training session delivered by the faculty member from the Department of Medical Education. During the training, the principles of mentoring were introduced using Boyatzis' intentional change framework (19) emphasizing self-awareness, empathy, and relationship-centered mentoring. The training also included practical guidance on communication skills, active listening, goal setting, and maintaining appropriate professional boundaries in mentoring relationships.

In addition, mentors were informed about the institutional well-being support system and were encouraged to refer mentees to the student well-being center when psychological or personal concerns exceeded the scope of peer mentoring. Mentors were strictly advised to refrain from addressing complex psychological or personal issues autonomously, mandating the escalation of such matters to faculty for expert support.

To evaluate the effectiveness of the mentor training, participating mentors completed pretest and posttest assessments measuring their knowledge and perceived competencies related to mentoring. Following the training, mentors were paired with mentees and encouraged to meet regularly throughout the academic year to discuss academic challenges, adaptation to medical school, career planning, and well-being.

The peer mentoring program was developed as part of an institutional initiative to foster a supportive learning environment and strengthen peer support within the medical school (Table 1).

Mentoring competencies were assessed using a 10-item self-report questionnaire developed to evaluate key aspects of mentoring skills. The questionnaire covered five domains: self-awareness, self-management, social awareness/empathy, relationship management, and mentoring self-efficacy. Responses were rated on a five-point Likert scale ranging from 1 (strongly disagree) to 5 (strongly agree). Total scores were calculated by summing all item responses, with higher scores indicating greater perceived mentoring competence.

Statistical Analysis

Data were analyzed using IBM SPSS Statistics (IBM Corp., Armonk, NY, USA). Descriptive statistics were used to summarize participant characteristics and mentoring competency scores. Categorical variables were reported as number (n) and percentage (%), while continuous variables were presented as mean ± standard deviation (SD) and median with interquartile range (IQR) and range, as appropriate. The internal consistency of the mentoring competency scale was evaluated using Cronbach's alpha (α) for the pretest and posttest scores.

Because the study included a small sample and repeated measurements from the same participants, non-parametric methods were selected as the primary analytic approach. Differences between pretest and posttest total mentoring competency scores were assessed using the Wilcoxon signed-rank test. A continuity correction was applied due to ties in the paired scores. Effect size was calculated as $r=Z/\sqrt{N}$, with values of 0.1, 0.3, and 0.5 representing small, medium, and large effects, respectively. The relationship between pretest and posttest scores was examined using Spearman's rank correlation coefficient (ρ), and 95% confidence intervals (CIs) were reported. All statistical tests were two-sided, and statistical significance was set at $p < 0.05$.

Table 1. Comparison of empathy scores by sex.

Topic	Content
Mentoring principles	Roles and responsibilities of mentors
Boyatzis framework	Self-awareness, empathy, intentional development
Communication skills	Active listening, feedback
Boundaries	Professional limits in mentoring
Referral pathways	Well-being center and faculty support

RESULTS

A total of 19 peer mentors completed both the pretest and posttest assessments. The sample consisted of 10 (52.6%) female participants and 9 (47.4%) male participants, with a mean age of 22.89 years (SD=0.81; range, 22–25). The majority were fifth-year medical students (n=16, 84.2%), and most had no prior mentoring experience (n=16, 84.2%). Demographic characteristics of participants are presented in Table 2.

Pretest total scores ranged from 36 to 50 (median=41, IQR=4), and posttest scores ranged from 35 to 50 (median=45, IQR=6), indicating an overall improvement in mentoring competency scores following the training

Table 2. Demographic characteristics of participants (N=19).

Variable	n (%)
Sex	
Female	10 (52.6)
Male	9 (47.4)
School Year	
Fifth year	16 (84.2)
Fourth year	3 (15.8)
Prior mentoring experience	
No	16 (84.2)
Yes	3 (15.8)
Age, year	
Mean ± SD	22.89 ± 0.81
Median (IQR)	23 (1)
Range	22–25

IQR: Interquartile range, **SD:** Standard deviation.
Note: Prior mentoring experience coded as 0=No, 1=Yes.

Table 3. Descriptive statistics, reliability, and inferential test results for mentoring competency scores (N=19).

Measure	Pretest	Posttest
Descriptive Statistics		
Median (IQR)	41 (4)	45 (6)
Mean (SD)	41.42 (3.24)	44.63 (4.19)
Range	36–50	35–50
Reliability		
Cronbach's α	0.587	0.854
Wilcoxon signed-rank test		
V	97.5	
Z	-2.801	
p	0.005	
r	0.643 (large)	

IQR: Interquartile range, **SD:** Standard deviation.
Note: Nonparametric methods were used because of the small sample size (N=19). A continuity correction was applied because of tied ranks. Effect sizes were interpreted as small (≥0.10), medium (≥0.30), and large (≥0.50).

program. Descriptive statistics, reliability coefficients, and inferential test results are presented in Table 3.

Reliability Analysis

The internal consistency of the mentoring competency scale was assessed using Cronbach's α. As shown in Table 3, the reliability coefficient for the pretest was α=0.587, while the posttest demonstrated higher internal consistency (α=0.854).

A continuity correction was applied to the Wilcoxon signed-rank test due to ties. Effect size *r* interpreted as: small (≥0.10), medium (≥0.30), and large (≥0.50). The wide CI for Spearman's ρ reflects the small sample size.

Pre-Postcomparison

A Wilcoxon signed-rank test was conducted as the primary analysis to examine differences between pretest and posttest scores, given the small sample size. A continuity correction was applied due to ties in the data. The results indicated a statistically significant increase in mentoring competency scores following the training program, V=97.5, Z=-2.801, p=0.005. The effect size was large (r=0.643), suggesting a strong association between the training and improvements in mentors' perceived competencies (see Table 3). Individual pretest and posttest scores are illustrated in Figure 1.

Correlation Analysis

Spearman's rank correlation was conducted to examine the relationship between pretest and posttest scores. The analysis revealed a moderate positive correlation between pretest and posttest scores (ρ=0.463, p=0.031; 95% CI, 0.011–0.758), suggesting that participants who initially reported higher mentoring competencies tended to maintain higher scores after the training. The wide CI reflects the small sample size, and the magnitude of the correlation should be interpreted with caution.

Domain-Level Analysis

Domain-level analyses were conducted to examine which competency areas drove the overall improvement. Wilcoxon signed-rank tests were performed separately for each of the five domains; these analyses were exploratory and no correction for multiple comparisons was applied. Results indicated a statistically significant improvement in mentoring self-efficacy (V=120.0, Z=-3.412, p=0.001, r=0.783) and social awareness/empathy (V=55.0, Z=-1.971, p=0.049, r=0.452). No statistically significant changes were observed in self-awareness (p=0.302), self-management (p=0.666), or relationship management (p=0.115), though small- to-medium effect sizes were observed across these domains. Domain-level score distributions are presented in Figure 2.

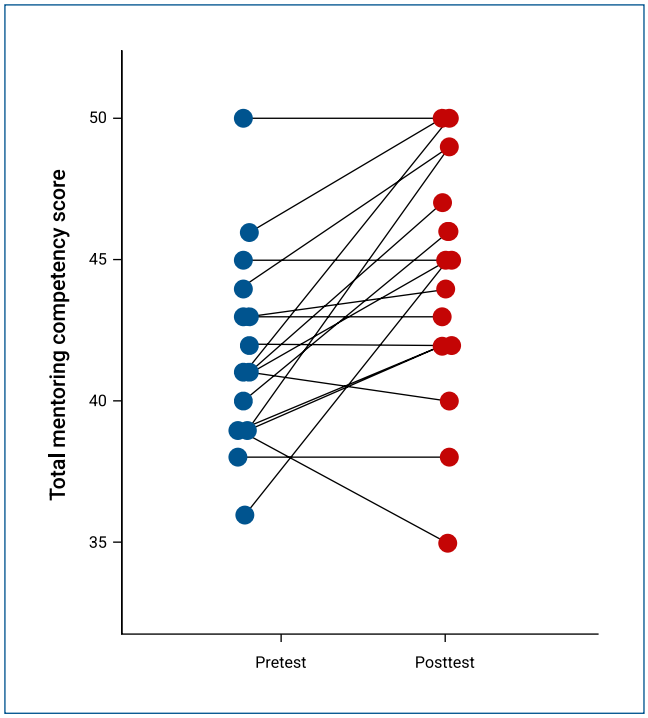

FIGURE 1. Individual pretest and posttest total mentoring competency scores (N=19).
Note: Lines connect scores from the same participant.

DISCUSSION

This study explored the impact of a peer mentor training program on mentors' perceived competencies. The findings showed a significant increase in mentoring competency scores after the training program. This improvement was observed following the training and may reflect changes in several key mentoring skills, including self-awareness, emotional regulation, empathy, relationship management, and mentoring self-efficacy.

These results align with previous research suggesting that structured training interventions are associated with improvements in mentors' self-efficacy, professional competencies, and interpersonal skills (12,24–27). Training programs provide a crucial opportunity for mentors to reflect on their roles and gain a better understanding of mentees' needs. Specifically, earlier studies show that training improves communication strategies, enabling mentors to become more intentional, use open-ended questions to encourage independent thinking, and maintain composure in stressful situations (24–26). Furthermore, interventions have been shown to boost competencies related to establishing helping relationships, utilizing institutional resources, and developing concrete help-seeking skills (28). The consistency across these studies suggests that the perceived competency gains observed in the present study may reflect improvements in communication and relationship-building skills.

Another noteworthy finding was the moderate positive correlation between pretest and posttest scores, alongside relatively lower reliability in the pretest compared to the posttest. The correlation suggests that while the training was beneficial across the entire sample, participants who initially perceived themselves as more competent tended to maintain relatively higher scores, preserving individual differences in baseline experience or confidence. Meanwhile, the lower pretest reliability likely reflects participants' initial uncertainty about their mentoring competencies. Following the training, the higher consistency in posttest responses may reflect a clearer understanding of mentoring concepts and behaviors. This interpretation aligns with the literature suggesting that mentor training helps participants better define their roles, understand appropriate boundaries, and reflect more deeply on their responsibilities (25,26). The large effect size observed in this study further supports a possible association between the training program and improvements in participants' perceived mentoring competencies. This finding highlights the importance of preparing peer mentors through structured training before they begin mentoring relationships.

While the present study demonstrates meaningful short-term gains in mentors' perceived preparedness, the longevity of these effects remains an important consideration. Longitudinal research, such as the study by Uçar et al. (29), indicates that while mentor training improves competence in the short and medium term, its long-term effects may only be partly sustained. As the current study did not include a long-term follow-up, the short-term improvements observed are consistent with these existing patterns.

Several limitations should be considered when interpreting these findings. To begin with, the study included a relatively small sample size (n=19), which may limit the generalizability of the results. Regarding the measurement tool, the instrument was not intended as a standardized scale; rather, it consisted of items developed based on the literature and expert opinion. Therefore, no formal validity analyses (e.g., factor analysis) were conducted. Cronbach's α was reported only to indicate internal consistency, and the lack of comprehensive psychometric evaluation should be considered a limitation. Moreover, the study relied on self-reported measures rather than objective assessments of mentoring behavior. Furthermore, the evaluation was limited to the immediate post-intervention period and did not include any follow-up measurements. As such, the sustainability and long-term transfer of mentoring competencies into

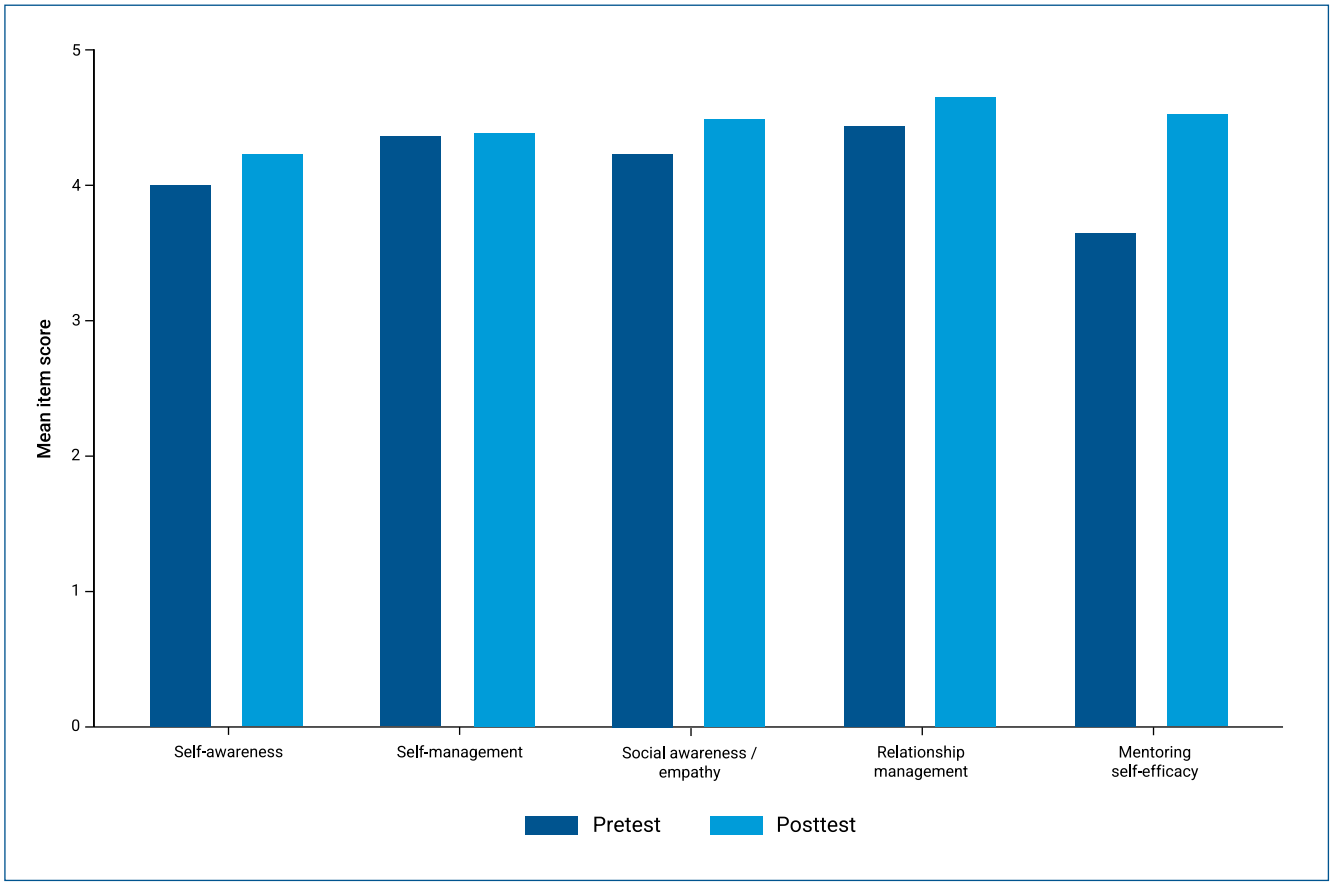

FIGURE 2. Mean pretest and posttest scores across five mentoring competency domains (N=19).
Note: Domain scores represent the mean of two items per domain. Scale range, 1-5.

practice remain unclear. Future research could address these limitations by including larger samples, longitudinal study designs, and evaluations from both mentors and mentees to better understand the long-term impact of mentor training programs.

CONCLUSION

This study highlights the efficacy of formal training in augmenting the professional development of peer mentors, specifically regarding their perceived capabilities. Implementing systematic mentor training prior to role initiation significantly enhances the efficiency of peer mentoring, fostering the development of more robust, evidence-based programs within academic environments.

Ethical Approval: This study was approved by the Non-Drug and Non-Medical Device Research Ethics Committee of Marmara University Faculty of Medicine on February 20, 2026, with decision no. 09.2026.26-0247.

Informed Consent: Written informed consent was obtained from all participants.

Peer-review: Externally peer-reviewed

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