

# NEAR-PEER MENTORING PROGRAM IN MEDICAL SCHOOL: ANOTHER WAY OF STUDENT SUPPORT

Ph.D. thesis  
**Lea Pölczman**

Semmelweis University Doctoral School  
Mental Health Sciences Division



Supervisor: Edmond Girasek, Ph.D.  
Official reviewers: Dr. Hoyer Mária, Ph.D.  
Dr. Molnár Regina, Ph.D.

Head of the Complex Examination Committee:  
László Tringer, MD., CSc.

Members of the Complex Examination Committee:  
Katalin Barabás, Ph.D, habil.  
Zsuzsanna Jáki, Ph.D.

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# 1. Introduction

Medical students frequently lack adequate guidance, psychological support, and resources, despite the increasing demands and stressors. Burnout among medical students is characterised by emotional exhaustion, cynicism, and a reduced sense of efficacy. Among medical students, the prevalence of burnout syndrome can reach 50%. Furthermore, approximately 27.2% of medical students reported some level of depression symptoms, with the prevalence of suicidal ideation reported to be 11.1%.

Resilience is described as emotional and mental flexibility enabling a person to thrive and develop when faced with obstacles and challenges. Recent research found that resilient individuals are less prone to depression, burnout and have lower rates of suicidal ideation. Enhancing resilience might serve as a protective factor, helping to prevent the onset or worsening of psychological symptoms.

Professional socialisation involves students preparing for their professional duties by acquiring values, attitudes, theoretical and practical knowledge, and behavioural patterns. The hidden curriculum refers to an informal or implicit set of learning that operate in the background of the formally taught curriculum. Role models, who transmit professional values, attitudes, and behaviours, are of particular importance in the formation of identity during training.

Near-peer mentoring refers to a mentoring relationship in which a mentor (senior student) provides support to a mentee (fresher student). Mentors provide guidance on a path of professional and personal development and in settling into university life. Mentoring programs offer essential guidance to help newcomers adjust to new academic and social settings and cope with many challenges. Given the decreased level of mental health documented within medical training, innovative interventions, such as mentoring programs, have become increasingly critical.

The Semmelweis Student Mentoring Program provides mentors with training in competencies and goals in mentoring, stress and time management, assertive communication techniques, and mental health support. Mentors must attend required training sessions and supervision sessions, reflecting on their experiences in the Mentor Diary. The program aims to decrease stress, avoid burnout, and improve students' mental health and resilience. The mentoring approach benefits mentees and mentors by providing academic and social support and fostering both personal and professional growth.

## **2. Objectives**

The objectives of this doctoral research are to investigate the role and effects of a structured near-peer mentoring program within medical education. The present study represents the first comprehensive evaluation of the Semmelweis University Student Mentoring Program, an innovative initiative and the first structured near-peer mentoring program of its kind in Hungary. Ultimately, this research aims to provide insights into how structured mentoring programs can effectively enhance medical students' resilience and support their mental health, with potential implications for facilitating their professional identity formation and professional socialisation within the uniquely challenging context of medical training. In this dissertation, the following research questions and objectives are addressed:

### **Qualitative Research Questions:**

- 1) What are mentors' personal and professional perceptions, experiences, and reflections associated with their participation in the near-peer mentoring program?
- 2) What specific benefits do mentors report as outcomes of their involvement in mentoring activities?
- 3) What challenges and difficulties do mentors face during the mentoring process?

4) How satisfied are mentors with the mentoring program, including mentor training, supervision, and program organisation?

### **Quantitative Research Questions:**

5) What is the overall mental health profile of the participating medical students at baseline, with a focus on burnout, depression, anxiety, and perceived stress levels? Are there significant differences in these indicators based on gender and phase of medical training?

6) Does participation in a near-peer mentoring program significantly influence medical students' psychological resilience over time?

7) Are there significant differences in psychological resilience over time between students who took part in the mentoring program and those who did not?

8) Are there significant differences in depression symptoms over time between students who participated in the mentoring program and those who did not?

9) Are there significant differences in burnout levels at the end of the intervention period between students who took part in the mentoring program and those who did not?

## **3. Methods**

### **3.1. The Study Design and Participants**

This dissertation is based on a mixed-methods study conducted within the framework of the Semmelweis Student Mentoring Program. The qualitative component was exploratory in nature, focused on mentors' perspectives and perceived benefits. The quantitative component aimed to assess the longitudinal impact of the program on students' resilience, depressive symptoms, and burnout. The research was carried out with the approval of Semmelweis University's Regional, Institutional Scientific, and Research Ethics Committee (protocol number: 37/2022).

### **3.1.1. *The Qualitative Study***

Focus group discussions (FGDs) were held in Hungarian on campus between March and April 2022. Participation was voluntary, and informed consent was obtained. Discussions lasted 60–90 minutes and were audio-recorded. Purposive sampling was used to recruit mentors via social media and email. All participants were actively mentoring and had at least 8 months of experience. Five focus groups included 26 mentors ( $M_{\text{age}} = 22.04$ ,  $SD = 2.163$ ), with 38.5% male and 61.5% female. Most of them were in their third year of study.

### **3.1.2. *The Quantitative Study***

The non-randomized trial examined the impact of mentoring on mental health outcomes. The sample was composed of a case and control group. The case group consisted students who were enrolled in a mentoring program as mentees or mentors at the time. The students in the control group were not enrolled in the program. Data collection occurred at two time points (T1: August 2022, T2: February 2023), using an online survey distributed via university systems, so convenience sampling was applied. Participation was voluntary, anonymous, and based on informed consent. From 243 initial responses at T1 and 158 at T2, only matched responses ( $N=133$ ) were analyzed. Codes created by participants allowed for pairing while maintaining anonymity. The final sample had 77% women and 23% men ( $M_{\text{age}} = 20.55$ ,  $SD = 1.948$ ). Participants were from both preclinical (53.4%) and clinical (46.6%) phases. The case group included 94 students (50 mentees, 44 mentors); the control group had 39 students.

## **3.2. Measurements**

### **3.2.1. *Measuring Instrument for the Focus Group Study***

A semi-structured interview guide was utilized, developed from student feedback, supervision topics and prior content. Thematic

blocks included key tasks, challenges, mentor-mentee relationships, perceived impact, skill development, and program evaluation.

### **3.2.2. *Measuring Instrument for the Quantitative Study***

The survey included:

- Maslach Burnout Inventory–Student Survey (MBI-SS): measures emotional exhaustion, cynicism, and reduced academic efficacy.
- Connor-Davidson Resilience Scale (CD-RISC, 10-item): assesses resilience.
- WHO Well-Being Index (WBI-5): evaluates general well-being.
- Depression Anxiety and Stress Scale (DASS-21): assesses symptoms of depression, anxiety, and stress.

## **3.3. Statistical Analysis**

### **3.3.1. *Focus Group Analysis***

FGD transcripts were transcribed verbatim and anonymized. Braun and Clarke’s six-phase thematic analysis was applied. Two researchers coded data independently, discussed discrepancies, and reached consensus. A thematic map was developed, and final themes were refined and illustrated with selected quotes. A third researcher reviewed interpretations for validation. The study adhered to COREQ guidelines.

### **3.3.2. *Quantitative Analysis***

To assess medical students' overall mental health at baseline (T1), independent samples t-tests were performed to explore differences based on gender and phase of study. A mixed-effects linear model approach to repeated measures ANOVA was performed to investigate the difference in resilience and depression between the case and control groups across all time points. It was also used to assess potential interaction effects of

time and intervention. The models were adjusted for two covariates due to their possible influence on mental health and resilience outcomes: age and gender. Post-hoc Bonferroni tests were used if significant interactions were found. Burnout differences between the case and control groups post-intervention (T2) were also analyzed with independent samples t-test.

## **4. Results**

### **4.1. Results of the Focus Group Study**

Three broad themes emerged from the thematic analysis. Two of these relate to the outcomes and perceived benefits of participating in the program, while the third is related to the mentors' reflections on the experience and on the program:

**1. Professional Growth as a Benefit of Participating in the Program** (e.g.: „*It was good practice for the future, like getting ready for when I become a physician.*”, „*It was a truly rewarding experience.*”)

**2. Personal Growth as a Benefit of Participating in the Program** (e.g.: „*My mentee also served as a reflection for self-awareness*”, „*It was really valuable to work on my perfectionism and see my own growth.*”)

**3. Reflections on the Mentoring Experience** (e.g.: „*I felt a profound sense of being able to offer significant support*”, „*Similar challenges may arise in the future.*”)

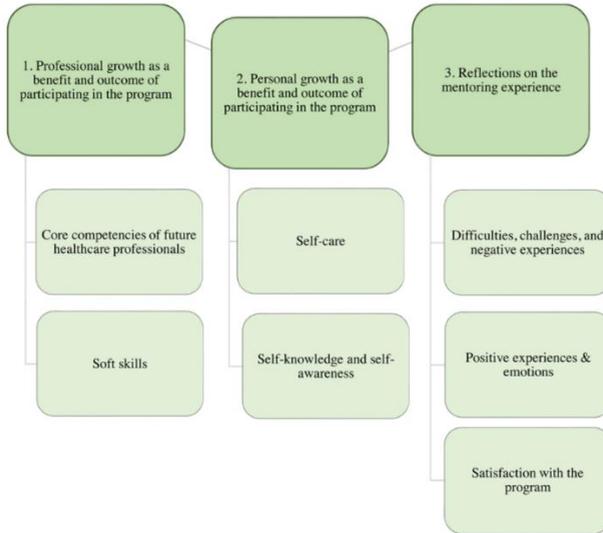


Figure 1. Thematic map.

## 4.2 Results of the Quantitative Study

### 4.2.1. Indicators of Mental Health by Gender and Phase of Study

The sample reached a high level of burnout on the MBI-SS. Clinical students showed a significantly higher overall burnout score compared to pre-clinical students ( $t(131) = -3.768, p = <0.001$ ). The results indicate that, in the cynicism dimension, clinical students also showed significant differences compared to pre-clinical students ( $t(104,984) = -4.265, p = <0.001$ ). In the overall sample, a moderate level of resilience, an average level of well-being were found. The sample fell within the normal range of the DASS-21 subscales. However, women had significantly higher anxiety scores ( $t(131) = -2,053, p = 0.042$ ) and greater stress scores ( $t(62,765) = -2,053, p = 0.005$ ) than men. No difference was shown between the pre-clinical and clinical students on these subscales.

#### 4.2.2. Effects of the Mentoring Intervention on Resilience

No significant difference was found between the groups at Time 1 on the the CD-RISC scores. The analysis of the group main effect found that there was a significant increase in the resilience score in the case group ( $F(1, 129) = 5.578, p = 0.020$ ) as compared to the control group. The main effects of age and gender showed no significant increases in the resilience scores. The main effect of time for the CD-RISC scores was not significant. The interaction effect between the intervention and time was significant for resilience ( $F(1.000, 129.000) = 4.915, p = 0.028$ ). At Time 2 a significant difference in resilience scores were found, with participants in the case group reporting higher levels of resilience than those in the control group ( $p = 0.004$ ), whose scores declined over time. The interaction effect between time and gender; and time and age was not significant.

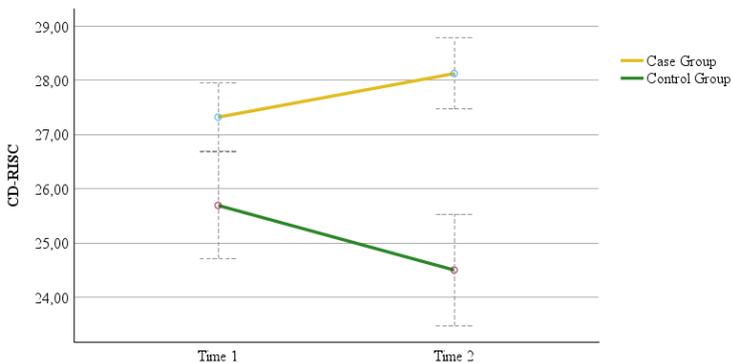


Figure 2. The changes in resilience score over time in both groups.

#### 4.2.3. Effects of the Mentoring Intervention on Depression

No significant difference was found between the groups at Time 1 on the DASS-Depression scores. Analysis of the group main effect found that there were no significant difference in depression scores in the case group as compared to the control group. The main effect of age and gender showed no significant

increases in the depression scores. The main effect of time for the DASS-D scores was significant ( $F(1.000, 129.000) = 4.725, p = 0.032$ ). The interaction effect between intervention and time was significant for depression ( $F(1.000, 129.000) = 4.018, p = 0.047$ ). There was a statistically significant increase in DASS-D scores in the control group, who scored higher than the case group after the intervention, whose depression scores remained steady over time. But no significant difference was found between the groups at Time 2. The interaction effect between time and gender; and time and age was not significant.

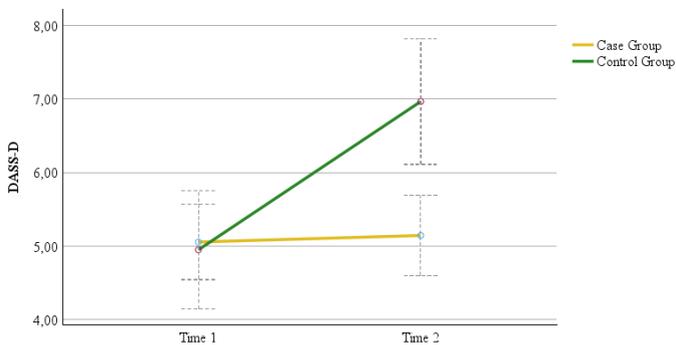


Figure 3. The changes in depression score over time in both groups.

#### 4.2.4. Differences in Burnout Scores (MBI-SS) Between Case and Control Groups

The mean burnout score for the case group at Time 2 was  $M = 46.38$  ( $SD = 10.06$ ), while the control group had a mean score of  $M = 50.84$  ( $SD = 10.33$ ). The results indicated a statistically significant difference between the two groups. The control group's mean scores were significantly higher than those of the case group ( $t(131) = 2.310, p = 0.022$ ).

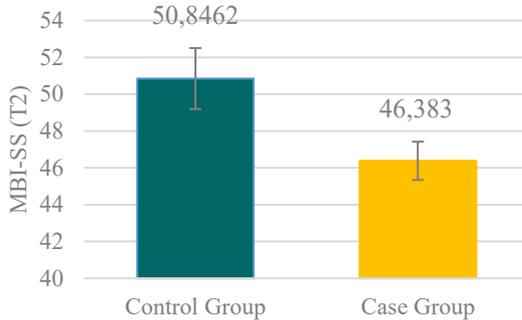


Figure 4. Comparison of case and control group mean scores

## 5. Conclusions

This thesis represents the first longitudinal evaluation of a mentoring intervention within the Hungarian medical education context. The strength of this research is undoubtedly its longitudinal design, offering unique insights on the impacts of structured near-peer mentoring programs, which remain unique in existing literature. Overall, the findings highlight the promising role of mentoring interventions in medical education, highlighting the need for continued longitudinal and comprehensive evaluations.

Results demonstrated significant positive outcomes. Quantitative findings confirmed that structured near-peer mentoring enhanced resilience and effectively maintained stable levels of depressive symptoms among participating students compared to controls, who experienced a notable decline over time. Importantly, the control group showed elevated burnout scores by the end of the term, indicating a potential protective role of the intervention.

Qualitative findings further highlight that mentoring fostered considerable professional and personal growth. Mentors reported acquiring essential skills that extended beyond mentoring, improving their readiness for future doctor-patient

interactions, and reinforcing their professional identities. These experiences are critical milestones in the professional socialization process. Conclusively, this research confirmed that structured near-peer mentoring significantly foster the psychological resilience, mental health, and professional development of medical students. The research advocates adopting a combined framework of structured mentorship with targeted mental health interventions into medical curricula, thus equipping future healthcare professionals with the resilience and competencies needed to navigate complex clinical and academic environments. Ultimately, fostering resilience and self-awareness through mentoring may be pivotal in evolving a more humane healthcare system for both professionals and patients alike.

In summary, the following conclusions can be drawn from the findings:

1. Mentors reported substantial personal and professional growth, including increased empathy, time management, communication, and reinforced professional identity.
2. Participation in mentoring enhanced mentors' self-awareness, boundary-setting, resilience, motivation, and sense of belonging.
3. Mentors faced challenges such as unmet expectations, emotional strain, and balancing duties, but developed key skills, including flexibility and stress management.
4. Mentors appreciated the program's structure, training, supervision, and peer support, with continued engagement indicating program effectiveness.
5. High levels of burnout and stress were observed among medical students, especially in the clinical phase and among female students, highlighting the need for targeted support.

6. Students enrolled in the mentoring program displayed significant improvements in resilience, unlike the control group, suggesting the stabilizing and protective effect of mentoring.

7. Resilience gains among the case group persisted throughout the semester, regardless of gender or age, underscoring the importance of long-term mentoring.

8. Depression symptoms increased in the control group but remained stable in the case group, highlighting a protective effect of mentoring on mental health.

9. Post-intervention, students who participated in mentoring reported lower burnout, indicating mentoring's stress-reducing and protective role in academic settings.

## **6. Bibliography of the candidate's publications**

### **Publications related to the thesis:**

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IF: 1,9

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