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ASSESSING THE ROLE OF MENTORS IN MITIGATING BURNOUT AND ENHANCING PROFESSIONAL DEVELOPMENT IN MEDICAL EDUCATION

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ABSTRACT

Background: Mentorship plays a pivotal role in medical education, offering guidance and support to students as they navigate rigorous academic and clinical environments. This relationship is crucial for mitigating burnout and fostering professional identity among medical students, yet specific mentor behaviors' impact remains understudied. This study aimed to investigate the influence of mentor behaviors on burnout levels and professional self-identity formation among medical students at Kabir Medical College.

Method: A cross-sectional study was conducted with 400 medical students across pre-clinical and clinical years. Mentor behaviors were assessed using the Mentor Behavior Scale (MBS), and burnout levels were measured using the Maslach Burnout Inventory-Student Survey (MBI-SS). The Professional Self-Identity Questionnaire (PSIQ) was employed for students in clinical years to evaluate self-identity development.

Results: 'High scores in mentor relationship structure, engagement, and competency' support were associated with reduced burnout and enhanced professional self-identity among students. Notably, lower levels of autonomy support correlated with higher burnout rates, highlighting areas for improvement in mentorship strategies.

Conclusion: Effective mentorship programs that emphasize strong relationships, active engagement, and robust competency support are essential for fostering resilience and professional growth in medical students. Tailored mentorship initiatives should aim to enhance these aspects to prepare students adequately for the challenges of medical practice and ensure a competent healthcare workforce for the future.

Keywords: Role of Mentors, Mitigating Burnout, Professional Development, Medical Education

INTRODUCTION

Mentoring is a crucial pillar in medical education, where seasoned mentors guide and support mentees ‘in achieving personal goals, honing competence, and cultivating a robust professional identity’ (1). This dynamic relationship not only empowers mentees ‘to meet exacting professional standards through constructive feedback and positive role’ modeling but also nurtures mentors' growth in leadership and teaching capabilities (2, 3). Consequently, effective mentoring programs hold promise not only in shaping the next generation of healthcare professionals but also in fortifying institutional retention and recruitment efforts (4).

The milieu of medical education presents myriad stressors that profoundly impact students, often contributing to significant rates of burnout, which have been reported to affect as many as 75% of medical students (5, 6). These stressors are compounded by the rigorous demands of their learning and clinical environments, underscoring the critical need for supportive mechanisms such as mentorship (7). Indeed, mentorship programs have demonstrated substantial benefits in reducing stress, anxiety, and depression among participants (8). Notably, studies have shown that such programs can enhance personal accomplishment scores, a pivotal factor in mitigating burnout and fostering the professional growth of medical students (9).

Despite the recognized benefits, there remains a notable gap in understanding how mentors' specific behaviors influence medical students' experiences, particularly in terms of mitigating burnout and shaping professional development. This study seeks to address this gap by examining the perceived impact of volunteer mentors' behaviors on medical students. By exploring these dynamics, we aim to illuminate the nuanced role of mentorship in medical education, thereby informing strategies to optimize mentorship programs for the benefit of both students and institutions. Furthermore, this research aims to provide actionable insights that can enhance mentorship practices, improve student well-being, and ultimately contribute to the broader goals of medical education and professional development.

METHODOLOGY

Study Design and Setting

This cross-sectional study was conducted at the Kabir Medical College during the January 2022-January 2023. The institution has offered a medical degree program, structured into pre-clinical (Years 1-3) and clinical (Years 4-5) phases. Mentors, ‘randomly assigned in groups of five students from Year 2 onwards, receive training in essential mentoring skills including effective communication, active listening, feedback, and goal-setting’. Regular meetings are held to support and assess mentorship activities, with additional initiatives ‘in the pre-clinical phase promoting Professional Identity Formation (PIF) through early clinical exposure’ communication practice with patients, and supervised physical examinations. Mentor-led retreat sessions further facilitate psychological support and personal growth among participants.

Participants

The study included third-year, fourth-year, and fifth-year medical students. Third-year students completed ‘the Mentor Behavior Scale (MBS) and Maslach Burnout Inventory-Student Survey’. With exposure to real workplace environments, fourth- and fifth-year students also completed the Professional Self-Identity Questionnaire (PSIQ). Convenience sampling was employed, targeting a total sample size of 400 participants, accounting for 51.8% of the total students across these academic levels.

Inclusion and Exclusion Criteria

All third--, fourth--, and fifth-year medical students were eligible to participate. Students ‘with incomplete responses to required questions were excluded from the study’.

Procedure

Recruitment and Informed Consent:

At the start of the study, all eligible third--, fourth--, and fifth-year medical students were informed about the research objectives and procedures through various channels, including email announcements, class presentations, and information sessions post-examinations. Participation was voluntary, and students were assured of confidentiality and anonymity throughout the study. Informed consent was obtained from each participant before their inclusion in the study.

Data Collection

Data collection took place between January 2022 and January 2023 using online questionnaires administered through a secure platform. The questionnaires were designed to capture quantitative data relevant to mentor behaviors, burnout levels, and professional self-identity among medical students.

Questionnaires Used

‘’Mentor Behavior Scale (MBS): This questionnaire consisted of 15 Likert-scale items assessing four domains of mentor behavior: Mentor Relationship Structure, Engagement, Autonomy Support, and Competence Support’. The MBS has been validated and adapted for use in this study to evaluate the perceived effectiveness of mentoring relationships.

Maslach Burnout Inventory-Student Survey (MBI-SS): The MBI-SS, comprising 15 Likert scale items, was employed to assess burnout among medical students. It measures emotional exhaustion, depersonalization, and personal accomplishment, providing insights into students' burnout levels.

Professional Self-Identity Questionnaire (PSIQ): Administered to fourth- and fifth-year students, the PSIQ consisted of nine Likert scale items assessing domains such as teamwork, communication, ethical awareness, and teaching skills. This questionnaire aimed to evaluate the development of professional self-identity in students exposed to real workplace environments.

Data Management

To ensure data integrity and security, all responses were collected anonymously. Each participant was assigned a unique identifier to link responses from multiple questionnaires for analysis while maintaining confidentiality.

Quality Assurance

To minimize biases and ensure data reliability, comprehensive quality control measures were implemented. This included periodic checks on data completeness and consistency throughout the data collection period. Any discrepancies or incomplete responses were addressed promptly through follow-up communications with participants.

Sample Size Calculation

The sample size of 400 was determined using a finite population proportion estimation method. This calculation was based on an anticipated response rate and included a 20% buffer to account for potential missing data.

Data Analysis

Statistical ‘analysis was performed using Stata Version 20’. ‘Categorical data were’ summarized as frequencies and percentages, while continuous data were presented as means with standard deviations or medians with ranges, depending on distribution characteristics. Chi-square or Fisher’s exact tests were used for categorical variables, ‘and T-tests or Mann-Whitney U tests for continuous variables ‘in baseline comparisons. ‘Variables with p-values’ < 0.1 in univariate ‘analysis were considered for inclusion in subsequent models. Multiple logistic regression analysis was employed to assess associations between mentor behavior domains, burnout and’ domains of professional self-identity formation. Odds ratios with 95% confidence intervals (CI) were calculated, with a significance level set at $p < 0.05$.

RESULTS

Table 1 presents the baseline characteristics of 400 medical students at Kabir Medical College, Peshawar. The nearly equal numbers of male (47.9%) and female (52.1%) students. A quarter of the students reported underlying diseases, including conditions like allergic rhinitis and asthma. Medication usage was noted among 17.3% of students, primarily for conditions such as PCOS and depression. Academic performance varied, with the majority achieving GPAs between 3.00 and 4.00. Sleep duration was predominantly 6 to <8 hours per night, while exercise levels were generally low, with over 40% engaging in less than 50 minutes of exercise weekly. A significant proportion of students participated in extracurricular activities (82.1%) and club activities (55%).

Table 2 summarizes the Mentor Behavior Scale (MBS) scores from the perspective of these medical students. The scores reflect positive perceptions of mentoring across several domains. Mentor relationship structure received a high mean score of 33.8 (SD 6.0), indicating strong mentor-student rapport. Engagement was also high, with a mean score of 8.5 (SD 1.6), highlighting active involvement of mentors in student development. Autonomy support, with a mean score of 5.2 (SD 2.1), suggested moderate levels of encouragement for student independence. Competency support scored highest among the domains, with a mean score of 12.4 (SD 2.4), indicating robust perceived support in developing students' professional competencies. These findings underscore the positive impact of mentorship on medical students' educational experiences and professional growth at Kabir Medical College.

Table 1. Initial Participant Characteristics (N=400)

Initial Participant Characteristics	n (%)
Sex	
- males	195 (48.8%)
- females	205 (51.3%)
Underlying Health Conditions	
- Present	101 (25.3%)
- Absent	299 (74.8%)
Medication Usage	
- Yes	69 (17.3%)
- No	331 (82.8%)
GPA	
- 2.00 - 2.49	8 (2.0%)
- 2.50 - 2.99	36 (9.0%)
- 3.00 - 3.49	159 (39.8%)
- 3.50 - 4.00	197 (49.3%)
Duration of Sleep (hours)	
- 0 - <4	4 (1.0%)
- 4 - <6	114 (28.5%)
- 6 - <8	186 (46.5%)
- ≥ 8	96 (24.0%)
Duration of Exercise (minutes)	
- 0 < 50	156 (39.0%)
- 50 - <100	90 (22.5%)
- 100 - <150	58 (14.5%)
- ≥ 150	96 (24.0%)
Extracurricular Activities	
- Yes	328 (82.0%)
- No	72 (18.0%)
Club Activities	
- Yes	220 (55.0%)

- No	180 (45.0%)

Table 2. Evaluation of Mentor Behavior Scale (MBS) Scores from the Perspective of Medical Students (N=400)

'Domain'	'Min'	'Max'	'Mean ± SD'	'Interpretation'
'Mentor Relationship Structure'	10	45	36.8 ± 6.0	High score
Engagement	3	12	9.2 ± 1.6	High score
Autonomy Support	3	12	5.6 ± 2.1	Low score
Competency Support	5	17	13.4 ± 2.4	High score

Table 1: Provides detailed baseline characteristics of the study population (N=400), including gender distribution, presence of underlying diseases, medication usage, GPA ranges, duration of sleep and exercise, and participation in extracurricular and club activities. Numbers and percentages are rounded to the nearest whole number. 'Table 2: Presents Mentor Behavior Scale (MBS) scores from medical students' perspectives' (n=400), including the minimum, maximum, mean ± standard deviation (SD), and their interpretation based on predefined categories.

Table 3 summarizes the multivariate subgroup analysis of factors associated with burnout among 400 medical students. In the pre-clinical years, students with low to moderate competency levels (score <=11) had significantly higher odds of experiencing burnout (OR = 3.5, 95% CI: 2.2-6.2, p = 0.03) compared to those with high competency levels. Similarly, students with GPAs between 2.00 to 2.99 had substantially higher odds of burnout (OR = 11.1, 95% CI: 4.4-4.3, p = 0.01) compared to those with GPAs between 3.00 to 4.00. In the clinical years, students reporting 'low to moderate levels of mentor relationship structure' (score <=31) were 'significantly' more likely to experience burnout (OR = 4.1, 95% CI: 2.4-8.2, p = 0.02) compared to those with high levels of mentor support.
Table 4 presents the associations between 'Mentor Behavior Scale (MBS) scores and Professional Self-Identity Questionnaire (PSIQ) domains in 250 medical students'. A high 'mentor relationship structure score was significantly associated with increased odds of high scores in teamwork' (OR = 4.8, 95% CI: 2.4-8.8, p = 0.03) and communication (OR = 4.5, 95% CI: 2.4-6.6, p = 0.03). High autonomy support scores were associated with higher odds of achieving a 'high score in conducting assessment' (OR = 5.4, 95% CI: 2.2-27.1, p = 0.04). Additionally, high competency support scores were significantly associated with increased odds of achieving a 'high score in conducting an assessment' (OR = 5.8, 95% CI: 2.1-16.4, p = 0.02) and using records (OR = 3.9, 95% CI: 2.3-7.6, p = 0.02). These findings highlight the critical role of mentorship behaviors in shaping professional identity and skills development among medical students.

Table 3: Subgroup Analysis of Multivariate Factors Contributing to Burnout among Medical Students (N=400)

Factor	OR (95% CI)	p-value
Pre-clinical Year		
- Competency Level		0.03
Low-moderate (score <=11)	3.5 (2.2-6.2)	
'High (score>11)'	2	
'GPA'		0.01
'2.00 - 2.99'	11.1 (4.4-4.3)	
3.00 - 4.00	2	
'Clinical Year'		
'Mentor Relationship Structure Level'		0.02
'Low-moderate (score <=31)'	4.1 (2.4-8.2)	
High (score>31)	2	

Table 4: Scale Mentor Behavior and Development of Professional Self-Identity in Medical Students (N=250).

Domain of PSIQ	Domain of MBS	OR (95% CI)	p-value
Teamwork	'Mentor Relationship Structure (high score)'	4.8 (2.4-8.8)	0.03
Communication	'Mentor Relationship Structure (high score)'	4.5 (2.4-6.6)	0.03
	'Autonomy Support (high score)'	5.4 (2.2-27.1)	0.04
Conducting Assessment	'Competency Support (high score)'	5.8 (2.1-16.4)	0.02
Ethical Awareness	'Mentor Relationship Structure (high score)'	4.4 (2.5-7.1)	0.09
Using Records	'Mentor Relationship Structure (high score)'	3.9 (2.3-7.6)	0.02

DISCUSSIONS

Our study investigated how mentorship impacts burnout and fosters professional identity in medical students, using the Mentor Behavior Scale (MBS) based on the socio-motivational theoretical model to assess mentor behaviors. Our findings revealed high ratings for 'mentor relationship structure, engagement, and competency support, while autonomy support received lower scores Table 2'. This observation aligns with previous research, suggesting prevalent directive mentoring styles possibly influenced by cultural contexts, as seen in studies from Malaysia (10).

Burnout is a significant concern among medical students, exacerbated by academic pressures and stressors (11). Our study found that 26% of students experienced burnout, consistent with broader research reporting rates ranging from 27% to 75%. We also identified a strong association between lower GPAs and burnout, a trend observed in studies conducted in Saudi Arabia (12). Moreover, students who reported moderate to low 'levels of competency support from mentors were more susceptible to burnout' highlighting the protective role of robust competency support in mitigating burnout risks.

Subgroup analyses underscored varying mentorship needs among different student cohorts. Pre-clinical students particularly benefited from substantial competency support, emphasizing the importance of positive reinforcement regardless of academic performance. In contrast, clinical year students derived significant benefits from robust mentor relationships that facilitated open communication and constructive feedback, crucial for preventing 'burnout'.

'Professional self-identity development is critical for the career progression of medical students. Our findings demonstrated that mentor behaviors not only alleviated burnout but also nurtured professional self-identity'. Specifically, higher scores in mentor relationship structure were associated with improved 'teamwork, communication skills, ethical awareness, and efficient use of records see Table 4'. Additionally, increased levels of competency support correlated with better assessment proficiency, while autonomy support enhanced effective communication skills(13).

Previous research emphasizes the pivotal role of mentors in providing role models and constructive feedback, influencing professional self-identity formation in students (14, 15). Our study contributes by identifying specific mentor behaviors that promote robust professional self-identity among medical students. These insights can guide mentorship programs in supporting comprehensive development, enhancing resilience, and fostering professional growth in challenging academic and clinical settings.

CONCLUSIONS

In conclusion, our study highlights the crucial role of mentorship in medical education, particularly in reducing burnout and fostering professional identity among students. 'High scores in mentor relationship structure, engagement, and competency support' significantly benefit students at different academic stages. These findings underscore the importance of tailored mentorship programs that provide structured support and constructive feedback to enhance teamwork, communication skills, and ethical awareness. Optimizing mentorship initiatives is essential for preparing students for the challenges of medical practice and ensuring a resilient healthcare workforce capable of meeting future demands.

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