



## Original Article

## Importance of Mentors in Polishing the Professional Development and Decreasing the Burnout among Medical Students

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## ABSTRACT

Burnout among medical students is a significant concern, affecting not only their academic performance but also their overall well-being and professional development. **Objective:** To determine the relationship between mentor behaviors and burnout among students of medicine and development of professional behavior in medical schools. **Methods:** This Cross-sectional study was held among 3<sup>rd</sup>, 4<sup>th</sup> and final year medical students (N=300) and convenient sampling technique was used. The questionnaire was completed voluntarily by the students via online surveys evaluating the Professional Self-Identity Survey and the Mentor Behavior Scale. Multivariate regression analyzes were conducted to examine the associations between mentor behaviors with student burnout and their influence on the development of professional attitude. **Results:** In this analysis, 23.3% of students of medicine experienced burnout. Several factors were found to be strongly related with medical students' burnout according to the multivariate analysis. Burnout was shown to be linked with participants who reported using medications (OR = 2.2, 95%CI: 1.2-3.95, p = 0.027). Burnout was also substantially correlated with medical students' poor GPAs (GPA < 3.00) (OR = 3.1, 95%CI: 1.4-6.7, p = 0.001). Furthermore, burnout in medical students was substantially correlated with low to moderate levels of competency support from mentors (OR = 1.98, 95%CI: 1.01-3.2, p = 0.014). **Conclusions:** The influence of mentors' behaviors on students of medicine is vital. Improving mentoring by denoting specific mentor behaviors can improve behavior of mentors.

## INTRODUCTION

A qualified mentor helps a mentee achieve personal objectives, improve competence, and develop their professional identity through the crucial process of mentoring [1, 2]. Mentoring is essential to medical education because it helps students reach professional standards by providing helpful criticism and acting as an encouraging role model. Both the mentors and the mentees benefit from this practice, which enhances their leadership and teaching talents as well as their personal and professional growth [3, 4]. Effective mentorship has

also been demonstrated to increase student recruitment and retention, which helps medical schools in selection process. Medical students are negatively impacted by the many pressures prevalent in the medical learning environment. According to earlier research, between 27 and 75 percent of medical students have experienced burnout [5]. The learning and work environments were found to be the main factors associated with burnout. There are many advantages of implementing a mentorship program, including reduced depression, stress and anxiety.

In particular, medical students who took part in the mentorship program in the earlier burnout study reported significantly higher personal success scores on the burnout questionnaire [6]. Mentorship programs are essential for helping medical students advance professionally. Mentors can assist mentees in developing their professional identities by providing them with constructive criticism and role modeling. It is the first stage in assisting students for their professional careers. A mentorship program's effectiveness is contingent on various variables, the most significant of which is the quality relationship among mentor and mentee. A number of factors influence this relationship, one of which is the mentor's encouraging behavior. Nevertheless, limited studies have been done on the precise effects that mentors' encouraging actions have on medical students [7]. A key component of medical education is mentoring, where experienced mentors help mentees "in attaining their personal achievements, cultivating a robust professional identity and honing competence"[8, 9]. Therefore, successful mentoring programs have the potential to strengthen institutional retention and recruitment efforts as well as mold the future generation of healthcare professionals [10]. 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 [11]. These stressors are compounded by the rigorous demands of their learning and clinical environments, underscoring the critical need for supportive mechanisms such as mentorship [12]. Indeed, mentorship programs have demonstrated substantial benefits in reducing stress, anxiety, and depression among participants. 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[13].

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 aimed to address this gap by examining the perceived impact of volunteer mentors' behaviors on medical students. By exploring these dynamics, it was aimed 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.

## METHODS

This Cross sectional study was conducted at the Medicine department of Rashid Latif Medical College from January 2023 to December 2023. Convenience sampling was used

to administer online questionnaires to participants. Sample size of 300 students was estimated by using 95% confidence level, 10% absolute precision with expected percentage:

$$n=(Z1-\alpha/2)^2XPXq/d^2$$

$$Z1-\alpha/2 = \text{Confidence level } 95\% =$$

$$P = \text{Prevalence } 67.6\%$$

$$q = 1 - P$$

$$d = \text{Absolute precision } 10\%$$

Inclusion Criteria

- . Students of Third, Fourth and Final years MBBS
- . Students who gave consent to participate

Exclusion Criteria

- . Students with other Psychological disorders
- . Students with previous history of burnout
- . Students already taking any psychological treatment

300 total students were selected in this analysis. The two questionnaires were completed by third, fourth- and final-year medical students. Mentor Behavior Scale (MBS): The four dimensions of mentor behavior Autonomy Support, Competence Support, Engagement and Mentor Relationship Structure were measured by 15 Likert-scale items in this questionnaire.

For this study, the MBS has been modified and validated in order to assess the perceived efficacy of mentoring relationships. It gauges depersonalization, emotional weariness, and personal achievement and offers information on students' burnout levels. Professional Self-Identity Questionnaire (PSIQ): Given to third, fourth- and fifth-year students, the PSIQ comprised nine Likert scale items that evaluated various categories, including teaching skills, ethical awareness, teamwork, and communication. The purpose of this questionnaire was to assess how students who were exposed to actual work contexts developed their professional identities. Stata Version 20.0 was used for the statistical analysis. The percentage and frequencies were used to summarize "categorical data," whereas S.D, medians and means with ranges were applied for "continuous data," depending on the features of the distribution. For baseline comparisons, categorical variables were compared using Fisher's exact/chi-square, while T-tests/Mann-Whitney U tests were applied for continuous variables comparison. In univariate analysis, p-values less than 0.05 were taken into consideration for inclusion in subsequent models. To evaluate relationships between mentor behavior dimensions, burnout, and domains of professional self-identity construction, multiple logistic regression analysis was utilized. With a significance level of  $p < 0.05$ , odds ratios with 95% Confidence Intervals (CI) were computed. IRB letter was taken from Ethical review committee of Rashid Medical College, Lahore with the reference number (IRB)IRB00010673. Every subject gave consent of the study for their participation, and stringent measures were taken

to guarantee the anonymity at all times. As a result, the possibility of selection bias was reduced because the researchers were unable to identify responders.

## RESULTS

In Table 1, gender, medication use, underlying diseases, amount of sleep, Grade Point Average (GPA), extracurricular activities, amount of exercise and club activities were all gathered as baseline data. For convenience of interpretation, GPA was divided into 2 groups: high GPA group (GPA ≥ 3.00) and the low GPA group (GPA < 3.00). Table 1 displays the individuals' complete baseline information (Table 1).

**Table 1:** Baseline Characteristics of Patients (n=300)

Variables	N (%)
<b>Gender</b>	
Male	142 (47.3%)
Female	158 (52.6%)
<b>Co-Morbidities</b>	
(PCOS, Allergic Rhinitis, G6PD, Asthma, ADHD, Migraine, Diabetes Mellitus)	65 (21.7%)
No Comorbidities	235 (78.3%)
<b>Medication Usage</b>	
(Allopurinol, Antihistamine, OCP, Methylphenidate, Fluoxetine, Metformin, ICS)	45 (15%)
No Medicine Taking	255 (85%)
<b>GPA</b>	
2.00 - 2.49	8 (2.7%)
2.50 - 2.99	29 (9.6%)
3.00 - 3.49	141 (47%)
3.50 - 4.00	122 (40.7%)
<b>Sleep Duration Per Hours at Night</b>	
0 - <4	4 (1.3%)
4 - <6	110 (36.7%)
6 - <8	165 (55%)
≥8	21 (7%)
<b>Extracurricular Activities</b>	
No Extracurricular Activities	58 (19.3%)
Extracurricular Activities	242 (80.7%)
<b>Duration of Exercise Per Week (Minutes)</b>	
≥150	51 (17%)
100 - <150	43 (14.3%)
50 - <100	78 (26%)
0 < 50	128 (42.7%)
<b>Club Activities</b>	
No Activities	164 (54.7%)
Daily Activity	136 (45.3%)

Groups of five students were randomly allocated volunteer mentors, who began their mentoring relationship with the mentees in 3<sup>rd</sup> Year and continued it until final year. Essential mentoring skills such as goal-setting, feedback, active listening and effective communication were taught to all mentors. In addition to carrying out their mentorship responsibilities, program members met on a regular basis

to offer guidance and support before each activity, as well as to enable evaluation and contemplation of their former mentoring experiences. Early clinical exposure, such as visiting operating rooms and patient wards, practicing communication skills with real patients, and performing physical examinations under mentor supervision, is part of pre-clinical initiatives that support Professional Identity Formation (PIF). Mentor-led retreat sessions include activities for personal growth and psychological support, which promote meaningful connections between mentors and mentees. These retreats foster an atmosphere where mentors actively listen, provide constructive criticism, and assist with goal-setting in a caring environment. The evaluation of the mentor program was done at the conclusion of each academic year to gauge its effectiveness. The cut-off points for the three categories high, moderate, and low that were taken from the scores were derived from an earlier study. From the perspective of medical students, three of the four domains; engagement, competency support and mentor relationship structure had high overall mean scores (sum of scores) (Table 2).

**Table 2:** Perspectives of Medical Students on Mentor Behavior Scale (MBS) Scores

Domain	Minimum	Maximum	Sum Score (Mean ±SD)	Interpretation
Engagement (MBS Summation Score of 9-10) (Low <6, Moderate 6-7, High >7)	3	11	7 ± 1.4	High Score
Mentor Relationship Structure (MBS Summation Score of 1-8) (Low <24, Moderate 24-31, High >31)	7	39	33.1 ± 5.6	High Score
Competency Support (MBS Summation Score of 13-15) (Low <9, Moderate 9-11, High >11)	4	17	10.5 ± 2.1	High Score
Autonomy Support (MBS Summation Score of 11-12) (Low <6, Moderate 6-7, High >7)	3	9	6 ± 1.9	Moderate Score

The Maslach Burnout Inventory-Student Survey revealed that 70 (23.3%) of the 300 participants had experienced burnout. Several factors were found to be strongly related with medical students' burnout according to the multivariate analysis. Burnout was shown to be linked with participants who reported using medications (OR = 2.2, CI95%: 1.2-3.95, p = 0.027). Burnout was also substantially correlated with medical students' poor GPAs (GPA < 3.00) (OR = 3.1, CI95%: 1.4-6.7, p = 0.001). Additionally, there was a significant correlation found between medical students' burnout and low to moderate levels of competency support from mentors (OR = 1.98, CI95%: 1.01-3.2, p = 0.014). A subgroup analysis was performed, taking into account potential differences in curriculum and experiences among medical students, focusing on subjects from the preclinical year (third-year students) as well as among the clinical years (fourth to final-year students). Pre-clinical year medical students' low GPA (OR = 12.0, CI95%: 3.8-32.1,

$p < 0.001$ ) and mentors' low-moderate degree competency support (OR = 2.1, CI95%: 1.01-4.75,  $p = 0.021$ ) were found to be associated with burnout. In clinical year medical students, burnout was significantly correlated with the low-moderate degree of mentor relationship structure (OR = 2.77, CI95%: 1.20 to 6.89,  $p = 0.013$ ) (Table 3).

**Table 3:** Related Factors with Burnout in Multivariate Subgroup Analysis among Clinical and Pre-Clinical Medicine Students

Factors	OR (95%CI)	p-Value
<b>Pre-Clinical Year</b>		
<b>Competency Level</b>		
High (Score>11)	1.01	0.021
Low-Moderate (Score <=11)	2.1(1.01-4.75)	
<b>Clinical Year</b>		
<b>Level of Mentor Relationship Structure</b>		
High (score>31)	1.01	0.013
Low-Moderate (Score <=31)	2.77(1.20-6.89)	
<b>GPA</b>		
3.00 - 4.00	1.01	<0.001
2.00 - 2.99	12(3.8-32.1)	

High professional scores in the domains of communication, teamwork, record-keeping and ethical awareness were substantially correlated with a high degree of mentor relationship structure, according to the multivariate analysis (Table 4). Furthermore, a high professional score in the communication category was substantially correlated with a high degree of autonomy support (OR = 4.6, 95% CI: 1.4-18.1,  $p = 0.034$ ). Additionally, a high professional score in the conducting assessment domain was significantly correlated with a high level of competency support (OR = 6.0, 95% CI: 1.9-17.6,  $p = 0.002$ ). In contrast, no mentor behavior was discovered to be substantially associated ( $p > 0.05$ ) with the high professional group in the domains of teaching, handling emergencies, cultural awareness, and introspection.

**Table 4:** Professional Self-Identity Formation and Mentor Behavior Scale Among Medicine Students

PSIQ Domain	MBS Domain	OR (95%CI)	p-Value
PSIQ 1. Teamwork	Mentor Relationship Structure (High Score)	4.3(1.4-10.1)	0.005
PSIQ 2. Communication	Mentor Relationship Structure (High Score)	3.2(1.3-7.2)	0.006
	Autonomy Support (High Score)	4.6(1.4-18.1)	0.034
PSIQ 3. Conducting Assessment	Competency Support (High Score)	6.0(1.9-17.6)	0.002
PSIQ 5. Ethical Awareness	Mentor Relationship Structure (High Score)	3.5(1.5-7.8)	0.007
PSIQ 6. Using Records	Mentor Relationship Structure (High Score)	3.0(1.4-6.9)	0.018

## DISCUSSION

Mentorship programs have helped professionals in many disciplines, but little is known about what makes mentors effective in helping medical students establish their professional identities and minimize burnout [13]. This study used the MBS questionnaire to examine mentor behaviors in our mentorship program and identify which ones help medical students achieve their career goals [14]. Mentors showed moderating traits, which may have been influenced by cultural similarities, consistent with a Kupcewicz *et al* study [15]. Our research found that mentor relationship structure, engagement, and competency support were higher than autonomy support as described in the Asghar AA *et al* study in Karachi [16]. These findings emphasize the need for autonomous support for medical students and suggest curriculum improvements. Medical students often burn out due to challenging learning conditions, heavy workloads, and exam stress. This analysis shows 23.3% of medical students have burnout, consistent with other studies that found 28-76% [16]. It was observed that low GPAs caused burnout, supporting Saudi Arabian research. A low-moderate mentor competency support level was also substantially associated with student burnout. High competency support may predict decreased burnout. Subgroup study showed that third-year medical students still valued competency support, assuming they benefit from positive reinforcement regardless of success or failure. However, clinical year (4th and final year) students may need a strong mentor relationship to share their concerns and accept constructive feedback to avoid burnout [17, 18]. Medical students' professional identity is crucial to their success [19, 20]. Mentoring reduces burnout and helps medical students create a professional identity, according to our research. Strong mentor relationships were associated to professional self-identity traits like communication, record-keeping, teamwork, and ethics. High autonomy and competency support from mentors were linked to good exam performance and communication [21, 22]. Prior research have stressed the importance of mentorship, constructive feedback, and role models in building professional self-identity [23-25]. This study shows that mentorship programs help promote professional self-identity. This research also promotes mentorship by identifying mentor behaviors that help medical students establish strong professional self-identities. This study significantly advances our understanding of the connection between mentor behaviors as measured by the MBS questionnaire and how they affect medical students' mental health and development of their professional identities. Finally, because this study used a cross-sectional methodology, the findings may only show correlations between the behaviors of mentors, burnout among medical students, and the development of professional identities. It is not possible to establish causation from this single-point

data collection. To further explore these associations, future research should think about executing a long term prospective cohort analysis that includes uniform assessments of mentor qualities.

## CONCLUSIONS

According to this study, medical students who have mentors who exhibit particular behaviors—like competency support and mentor relationship structure were less likely to experience burnout. Moreover, mentor behaviors that foster professional self-identity construction in medical students include autonomy support, competency support from mentors and mentor relationship structure. These results provide insightful information for improving the efficacy of mentoring programs and helpful advice for mentors looking to improve their mentoring abilities.

## Authors Contribution

Conceptualization: SM

Methodology: MA, BH, SA<sup>1</sup>, SA<sup>2</sup>

Formal analysis: SA<sup>2</sup>

Writing, review and editing: MA, BH, SA<sup>1</sup>, SA<sup>2</sup>, MI

All authors have read and agreed to the published version of the manuscript.

## Conflicts of Interest

The authors declare no conflict of interest.

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