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## INTRODUCTION

Stress is the body's response to emotional, mental, or physical pressure, representing a multifaceted construct that makes it challenging to define precisely. It triggers various chemical and hormonal changes that may lead to both psychological and physiological alterations (1). While some studies suggest that mild stress can positively impact psychological health and motivation, high levels of stress are associated with increased risk for chronic diseases, including heart attacks, ulcers, and

# The relationship between psychological well-being and stress in medical school students

## Abstract

**Aim:** Stress is a prevalent factor affecting medical students' academic performance and overall well-being. University demands lead to increased stress and anxiety, impacting students' mental health. This study aims to examine the relationship between stress and psychological well-being across all years of medical education, from first-year to sixth-year students.

**Materials and Methods:** A total of 145 medical students from first to sixth year participated in this cross-sectional study. Two standardized scales were used: the Perceived Stress Scale (PSS) to assess stress levels and the Questionnaire for Eudaimonic Well-Being (QEWB) to measure psychological well-being. The online questionnaire consisted of 27 items divided into two parts: (1) Stress assessment and (2) Psychological well-being assessment. Questions were structured in three formats: (a) short-answer questions, (b) binary "Yes" or "No" questions, and (c) Likert scale items graded from 0 ("never") to 4 ("very often").

**Results:** In terms of gender distribution, female participants were more prevalent, with a total of 88, compared to 51 male participants. Additionally, 6 participants preferred not to disclose their gender. The participants had a mean age of 21.20 years ( $\pm 2.120$ ). Participants exhibited high stress levels; however, no significant differences were found in stress or well-being scores (QEWB and PSS) across the six student year groups ( $p$ -values  $> 0.05$ ).

**Conclusion:** This study offers valuable insights for researchers, educators, and healthcare practitioners on the relationship between stress and psychological well-being among medical students. Understanding this relationship can inform targeted strategies to support students from entry through graduation.

**Keywords:** Stress, psychological well-being, medical students, perceived stress scale

strokes, as well as mental health disorders like depression and anxiety (2). These outcomes are partly due to stress-induced elevations in blood pressure, heart rate, and blood sugar levels (3). Research consistently identifies stress as a critical factor influencing students' academic performance and overall well-being (4).

Psychological well-being is a fundamental pillar of personal health and is defined within a eudaimonic framework as the development of one's true self (5). This concept is especially

critical for university students, as it supports both academic success and personal growth. Psychological well-being generally encompasses several dimensions, including positive relationships, self-acceptance, autonomy, personal growth, environmental mastery, and a sense of purpose (6). Medical students face considerable pressure as they adapt to rigorous learning environments, which can lead to elevated stress levels (7,8). Research suggests that this period is often marked by heightened anxiety and diminished psychological well-being relative to other populations (9).

Another study reports a decline in psychological well-being among university students because of increased pressure (10). Various psychological models contribute to understanding psychological well-being. The psycho-educational approach provides a framework for assessing and cultivating psychological and educational competencies, including empathy, social skills, anxiety management, self-concept, and emotional intelligence (11). Stress can have both positive and negative effects, potentially enhancing emotional intelligence and psychological growth by shaping emotional responses through cognitive processes (12). Emotional intelligence is a cognitive skill, measurable through tasks that assess emotional information processing (13). Emotional intelligence is crucial for adapting to educational environments and is associated with psychological well-being, fostering emotional and social skills (14). Emotional skills are also foundational for higher educational performance (15).

Conversely, stress can have harmful effects, leading to anxiety, distress, and fear. Anxiety is an emotional response marked by tension, apprehension, worry, and nervousness (16). It engages cognitive, physiological, and behavioral systems that together activate the fight-or-flight response, ultimately impacting psychological health (17). Around 50% of university students experience significant levels of anxiety during their studies (18). Research indicates that anxiety is associated with factors like course abandonment, academic performance, and psychological well-being (19). Furthermore, stress can cause psychological changes, including heightened depression, anxiety, burnout, and a reduced quality of life (20). Medical students encounter numerous stressors, such as tight schedules, high workloads, exposure to critically ill patients, cadaver dissection, and financial challenges (20,21). Further stressors include language barriers, cultural differences, and communication difficulties, which are especially evident among international students (20,22).

This study aims to examine the relationship between stress and psychological well-being among medical students across all academic years, from first to sixth. Additionally, it seeks to provide valuable insights for researchers, educators, and healthcare practitioners on necessary changes to enhance

student education and well-being. Findings from this study may guide intervention programs and inform educational policies that deepen the understanding of how stress impacts psychological well-being. Ultimately, studies like this reinforce research-driven strategies aimed at improving both student well-being and academic performance.

## MATERIALS AND METHODS

This research employs a quantitative approach, emphasizing structured data collection and analysis to assess population characteristics. A non-experimental, descriptive study design was selected to examine the relationship between psychological well-being and stress among medical students across all academic years.

This study utilized two assessment tools: one to measure stress levels and another to evaluate psychological well-being among medical students. The Perceived Stress Scale (PSS) was employed to specifically gauge stress levels in relation to various situations and understand their impact on perceived stress (23). Participants were asked to express their feelings about circumstances pertinent to their studies.

Data was gathered using the Questionnaire for Eudaimonic Well-Being (QEWB) (23) and the PSS (24), both administered online. The survey consisted of 27 questions divided into two sections: (1) evaluating stress levels and (2) assessing psychological well-being. The questions were categorized into three formats: (a) basic short-answer questions, (b) binary "YES" or "NO" questions, and (c) scaled questions from 0 to 4, where 0 indicated "never" and 4 indicated "very often."

### Inclusion Criteria

Participants were required to be enrolled medical students, male or female, aged between 18 and 26.

### Exclusion Criteria

Individuals outside the specified age range, students from faculties other than the medical faculty at Bahçeşehir University (BAU), and non-medical students were excluded from participation.

### Sample Size Calculation

Survey Monkey was utilized as a statistical tool to determine the sample size, considering factors such as population size, margin of error, and confidence level. The final sample included 145 medical students.

### Ethical Considerations

The study received approval from the Ethical Board of the BAU Medical School (Approval Date: 10.11.2022; Issue Number: E-22481095-020-1961). Participants received an information sheet written in clear, accessible language that outlined the

study's purpose, potential benefits, risks, and their rights as participants. They were assured that their dignity and comfort would be prioritized, with steps taken to minimize any potential embarrassment or discomfort. Additionally, participants were informed of their right to withdraw from the study at any time without consequence. Measures were implemented to ensure data confidentiality and the validity of responses provided by participants.

### Data Collection Instruments

The primary tool for data collection was an online survey administered to medical students. The survey included questions adapted from the PSS, which measures how the academic environment influences students' stress levels and emotional well-being. Additional questions were drawn from the QEWB, assessing key aspects of psychological well-being, such as self-discovery, realization of personal potential, sense of life meaning, activity engagement, and experiential effort (25). This questionnaire gathered quantitative data pertinent to the study's aims, yielding numerical data suitable for statistical analysis. A total of 145 surveys were completed by participants online.

### Data Analysis Procedures

Data collected on a ratio scale were analyzed using a paired sample t-test to assess statistical relationships. Data processing and analysis were conducted with GraphPad Prism 9 software to enhance accuracy and reliability. Mean values were calculated to determine the central tendency, and the mean and standard deviation were computed for interval and ordinal variables. For nominal data, frequency and mode were used to summarize results. A 95% confidence interval was applied, with statistical significance set at a p-value of less than 0.05.

### Reliability and Validity

The QEWB demonstrated strong reliability with a Cronbach's alpha of 0.86, alongside evidence of convergent, discriminant, construct, and incremental validity within a diverse sample of American students. In a 2017 study by Freire, internal consistency scores for QEWB subscales were as follows: personal growth ( $\alpha=0.63$ ), self-acceptance ( $\alpha=0.79$ ), purpose in life ( $\alpha=0.76$ ), and environmental mastery ( $\alpha=0.64$ ), indicating adequate reliability across subscales.

For the Bengali Perceived Stress Scale (PSS-10), Cronbach's alpha was reported as 0.715 for the full scale, with the perceived helplessness factor at 0.750 and the perceived self-efficacy factor at 0.703 (26). Validity was further supported by correlations with the General Health Questionnaire (GHQ-28); specifically, the PSS-10 full scale score showed a strong positive correlation with the GHQ-28 ( $r=0.579$ ,  $p<0.01$ ). Additionally, the perceived helplessness factor correlated

moderately with the GHQ-28 ( $r=0.493$ ,  $p<0.01$ ), while the perceived self-efficacy factor demonstrated a weaker, yet significant, correlation ( $r=0.360$ ,  $p<0.01$ ) (26).

## RESULTS

The initial section of the survey gathered demographic information on participants, including age, gender, height, weight, and year of study. These characteristics are summarized in Table 1.

A total of 145 participants met the inclusion criteria and were consecutively recruited for analysis using the QEWB and the PSS. Table 1 presents the demographic data of the participants.

As shown in Table 1, the third-year students represented the largest group, with 51 participants, followed by second-year students with 36 participants. The first-year group included 22 students, while the lowest numbers were in the fourth year with 17 participants, fifth year with 11 participants, and sixth year with only 8 participants.

In terms of gender, female participants were in the majority, totaling 88, compared to 51 male participants. A small group of 6 participants preferred not to disclose their gender. The participants' mean age was 21.20 years ( $\pm 2.12$ ), mean height 168.41 cm ( $\pm 13.47$ ), and mean weight 68.63 kg ( $\pm 19.64$ ).

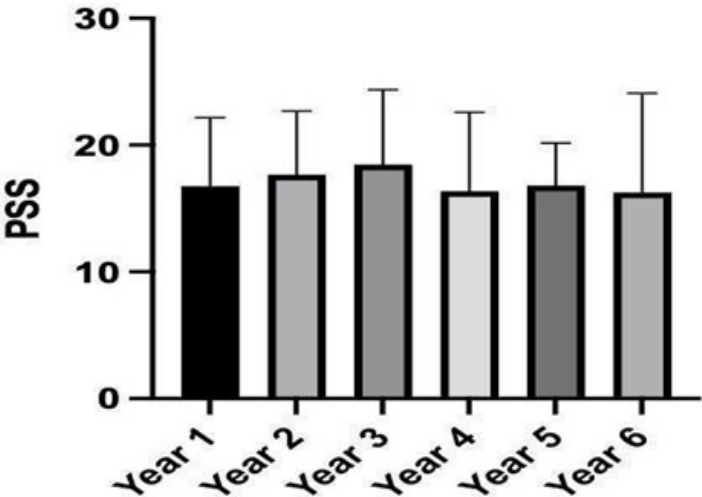
**Table 1. Demographic characteristics of the participants**

| Characteristic       | Frequency (%)     |
|----------------------|-------------------|
| <b>Year of study</b> |                   |
| Year 1               | 22 (15.5)         |
| Year 2               | 36 (25.4)         |
| Year 3               | 51 (35.9)         |
| Year 4               | 17 (12.0)         |
| Year 5               | 11 (7.7)          |
| Year 6               | 8 (5.6)           |
| <b>Gender</b>        |                   |
| Male                 | 51 (35.2)         |
| Female               | 88 (60.7)         |
| Prefer not to say    | 6 (4.1)           |
| Age (Mean $\pm$ SD)  | 21.20 $\pm$ 2.120 |

Table 2 and Graph 1 summarize comparisons of PSS scores across academic years, revealing no statistically significant differences in perceived stress among the different years (all p-values $>0.05$ ). These results suggest a consistent level of perceived stress across the sample.

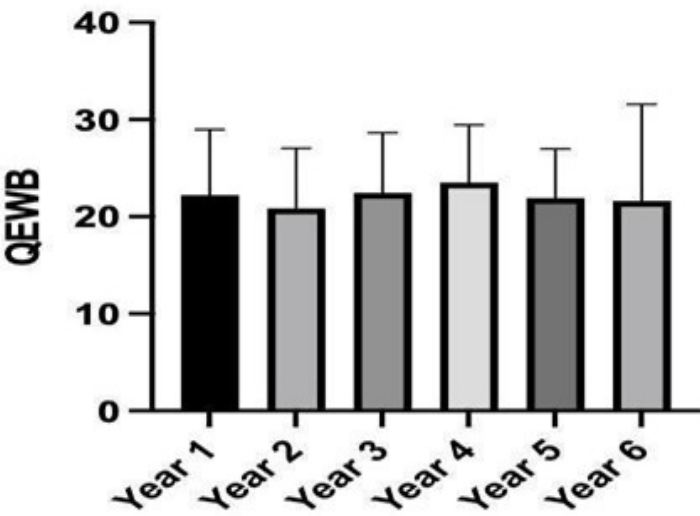
Table 2. Comparison of PSS scores across academic years

| Comparison       | Participants (N) | Mean PSS score (± SD)          | P-value |
|------------------|------------------|--------------------------------|---------|
| Year 1 vs year 2 | 22 vs 36         | 16.77 (±5.38) vs 17.66 (±5.01) | 0.53    |
| Year 1 vs year 3 | 22 vs 51         | 16.77 (±5.38) vs 16.67 (±5.90) | 0.24    |
| Year 1 vs year 4 | 22 vs 17         | 16.77 (±5.38) vs 16.35 (±6.24) | 0.82    |
| Year 1 vs year 5 | 22 vs 11         | 16.77 (±5.38) vs 16.81 (±3.34) | 0.97    |
| Year 1 vs year 6 | 22 vs 8          | 16.77 (±5.38) vs 16.25 (±7.83) | 0.86    |
| Year 2 vs year 3 | 36 vs 51         | 17.66 (±5.01) vs 16.67 (±5.90) | 0.50    |
| Year 2 vs year 4 | 36 vs 17         | 17.66 (±5.01) vs 16.35 (±6.24) | 0.45    |
| Year 2 vs year 5 | 36 vs 11         | 17.66 (±5.01) vs 16.81 (±3.34) | 0.52    |
| Year 2 vs year 6 | 36 vs 8          | 17.66 (±5.01) vs 16.25 (±7.83) | 0.63    |
| Year 3 vs year 4 | 51 vs 17         | 16.67 (±5.90) vs 16.35 (±6.24) | 0.23    |
| Year 3 vs year 5 | 51 vs 11         | 16.67 (±5.90) vs 16.81 (±3.34) | 0.22    |
| Year 3 vs year 6 | 51 vs 8          | 16.67 (±5.90) vs 16.25 (±7.83) | 0.46    |
| Year 4 vs year 5 | 17 vs 11         | 16.35 (±6.24) vs 16.81 (±3.34) | 0.80    |
| Year 4 vs year 6 | 17 vs 8          | 16.35 (±6.24) vs 16.25 (±7.83) | 0.97    |
| Year 5 vs year 6 | 11 vs 8          | 16.81 (±3.34) vs 16.25 (±7.83) | 0.85    |



Graph 1. Perceived Stress Scale (PSS) scores by academic year

Table 3 and Graph 2 present the comparisons of QEWB scores across different academic years. Like the PSS scores, the analysis revealed no statistically significant differences in psychological well-being across year (all p-values>0.05), suggesting a relatively stable level of eudaimonic well-being among students throughout their medical education.



Graph 2. Relationship between QEWB scores and academic year (years 1 to 6), QEWB: Questionnaire for Eudaimonic Well-Being

| Table 3. Presents the comparisons of QEWB scores across different academic years |                  |                                |         |
|----------------------------------------------------------------------------------|------------------|--------------------------------|---------|
| Comparison                                                                       | Participants (N) | Mean QEWB score (± SD)         | P-value |
| Year 1 vs year 2                                                                 | 22 vs 36         | 22.22 (±6.73) vs 20.86 (±6.17) | 0.44    |
| Year 1 vs year 3                                                                 | 22 vs 51         | 22.22 (±6.73) vs 22.45 (±6.20) | 0.89    |
| Year 1 vs year 4                                                                 | 22 vs 17         | 22.22 (±6.73) vs 23.47 (±5.95) | 0.54    |
| Year 1 vs year 5                                                                 | 22 vs 11         | 22.22 (±6.73) vs 21.90 (±5.08) | 0.88    |
| Year 1 vs year 6                                                                 | 22 vs 8          | 22.22 (±6.73) vs 21.62 (±9.94) | 0.87    |
| Year 2 vs year 3                                                                 | 36 vs 51         | 20.86 (±6.17) vs 22.45 (±6.20) | 0.24    |
| Year 2 vs year 4                                                                 | 36 vs 17         | 20.86 (±6.17) vs 23.47 (±5.95) | 0.15    |
| Year 2 vs year 5                                                                 | 36 vs 11         | 20.86 (±6.17) vs 21.90 (±5.08) | 0.57    |
| Year 2 vs year 6                                                                 | 36 vs 8          | 20.86 (±6.17) vs 21.62 (±9.94) | 0.84    |
| Year 3 vs year 4                                                                 | 51 vs 17         | 22.45 (±6.20) vs 23.47 (±5.95) | 0.55    |
| Year 3 vs year 5                                                                 | 51 vs 11         | 22.45 (±6.20) vs 21.90 (±5.08) | 0.76    |
| Year 3 vs year 6                                                                 | 51 vs 8          | 22.45 (±6.20) vs 21.62 (±9.94) | 0.82    |
| Year 4 vs year 5                                                                 | 17 vs 11         | 23.47 (±5.95) vs 21.90 (±5.08) | 0.46    |
| Year 4 vs year 6                                                                 | 17 vs 8          | 23.47 (±5.95) vs 21.62 (±9.94) | 0.63    |
| Year 5 vs year 6                                                                 | 11 vs 8          | 21.90 (±5.08) vs 21.62 (±9.94) | 0.94    |

Table 4 summarizes responses related to students’ perceptions of stress. The data shows that a significant majority of participants experience academic stress, with many noting that stress positively aids in completing work on time. However, a

considerable number also report experiencing stress without clear or identifiable causes. When asked, “Do you feel academic stress?” 133 participants (91.7%) responded “yes,” indicating that a substantial majority of



students experience academic stress, while only 12 participants (8.3%) responded “no,” showing a small proportion who do not experience academic stress.

In response to “Do you feel stressed when you have to complete a lot of work?” 132 participants (91%) answered “yes” and 13 participants (9%) answered “no.” These results suggest that high workloads are a primary source of stress for most students, although a few participants manage to work under high demands without experiencing stress.

For the question, “Do you feel stress for no reason?” 88 participants (60.7%) responded “yes,” while 57 participants (39.3%) responded “no.” This suggests that a moderate number

of students experience stress without a specific cause, while others do not feel such stress.

Finally, when asked, “Do you think stress helps you complete your work on time?” 88 participants (60.7%) answered “yes,” indicating that many students view stress as a motivator to meet deadlines, while 57 participants (39.3%) answered “no,” showing that some find working under stress less productive.

The overall mean for responses answered “yes” was 110.25 ( $\pm 25.69$ ), indicating a generally high level of stress among participants. For responses answered “no,” the mean was 34.75 ( $\pm 25.69$ ), suggesting that stress levels vary across participants, with some experiencing minimal stress.

**Table 4. Summarizes responses related to students’ perceptions of stress**

| Questions                                                    | Total responses (N) | Yes                    | No                    |
|--------------------------------------------------------------|---------------------|------------------------|-----------------------|
| Do you feel academic stress?                                 | 145                 | 133 (91.7%)            | 12 (8.3%)             |
| Do you feel stressed when you must complete a lot of work?   | 145                 | 132 (91%)              | 13 (9%)               |
| Do you feel stressed for no reason?                          | 145                 | 88 (60.7%)             | 57 (39.3%)            |
| Do you think stress helps you to complete your work on time? | 145                 | 88 (60.7%)             | 57 (39.3%)            |
| Mean ( $\pm$ SD)                                             |                     | 110.25 ( $\pm 25.69$ ) | 34.75 ( $\pm 25.69$ ) |

SD: standard deviation

## DISCUSSION

This study assessed the relationship between psychological well-being and stress among medical students, using the PSS to measure stress levels and the QEWB to evaluate well-being. Participants included students from all six years of medical school.

The results indicated no statistically significant relationship between stress levels and psychological well-being among the students. While moderate stress was the most reported level on the PSS, a considerable portion of participants also reported high stress, with a smaller number indicating low stress. Similarly, results from the QEWB scale showed that most students maintained moderate levels of well-being, while fewer students scored either high or low on the well-being scale.

Medical students typically undergo 5 to 6 years of education, with stress levels progressively increasing over time. Studies show that first-year medical students’ initial optimism often decreases over time, resulting in heightened depression and a diminished positive mood (20). On the other hand, some students develop coping mechanisms to manage educational stress (20). A comparative study found that final-year Pakistani medical students reported higher anxiety and depression levels than their counterparts in Western countries and the United Kingdom (21).

Psychological well-being is positively correlated with self-acceptance, cooperative learning, state anxiety, emotional clarity, and understanding. Additionally, environmental mastery is associated with state anxiety, global emotional intelligence, and empathy (22). The QEWB, developed by Waterman et al. in 2010, assesses eudaimonic functioning, including self-realization and the pursuit of excellence, alongside personal expressive feelings related to activities. Items focus on life meaning, activity enjoyment, self-discovery, deep engagement, and perceived development of one’s potential, forming the questionnaire’s content and structure.

Stress is regarded as a multifaceted construct influenced by numerous unexplored factors, emphasizing the need for further research into these underlying mechanisms. The present study did not evaluate various types of stressors, leaving related factors unexamined (27). Additionally, research by Rogers et al. has shown that academic stress significantly impacts the well-being of medical students (28). Similarly, a study conducted by Salam et al. in southwestern Saudi Arabia observed high stress levels among 12.7% of university students after taking the PSS (29). This study also found that PSS scores progressively increased with each academic year, indicating that final-year medical students experience the highest levels of stress.

Research by Georgia et al. identified a positive correlation between perceived academic stress and mental well-being among college students in the United States. The study emphasized that academic stressors, such as workload, self-perception, academic expectations, and grading, are closely related to psychological well-being (30). Conversely, findings from other studies suggest that not all college students are equally impacted by academic or pandemic-related stress, with significant variations in well-being across different student groups (31). These contrasting findings underscore differences in stress perception between our study population and those in different contexts.

Another study examining psychological distress and well-being among students in various health disciplines during the COVID-19 pandemic revealed that final-year students reported lower academic satisfaction and higher levels of stress, anxiety, and depression compared to first-year students (32). The pandemic further intensified the stress levels experienced by students, significantly impacting their mental health.

A study by Carpi et al. examined the relationship between well-being, perceived stress, and academic demands among first-year medical students. The findings indicated that first-year students experienced higher levels of perceived stress related to their studies, which in turn adversely affected their psychological well-being. A substantial percentage of students reported using substances such as cannabis (38.1%), alcohol (24.9%), and cigarettes (22.4%) to cope with academic stress (33). These findings support previous discussions highlighting that both first year and final-year medical students frequently encounter persistent stress and anxiety due to the evolving demands of their academic environment.

Bergmann et al. conducted research on medical students' perceptions of academic stress and its impact on their daily lives. The study found that academic-related stress negatively influences students' well-being and personal lives, leading to reduced social connections and decreased participation in leisure activities. While medical studies can enhance self-efficacy and self-esteem, they also introduce additional stressors, such as financial pressures and unmet social expectations (34).

Heinen et al. investigated the relationship between perceived stress, personal resources, and emotional distress among first-year medical students. This study utilized a general population-based stress model tailored to medical students, examining how personal resources and emotional distress correlate with perceived stress. The results showed no significant differences, suggesting that the first-year curriculum does not markedly increase stress levels or lead to notable changes in well-being and emotional distress (20).

In a study on stress and well-being among final-year medical students, findings suggested that although many of these students used positive coping strategies to manage stress, they still reported high stress levels (35). It was concluded that while resilience alone may not prevent stress, it plays a significant role

in managing and coping with it (36). Comparing these findings to our results reveals a notable difference: both first-year and final-year students experience similar stress levels and corresponding changes in well-being.

A separate study by Morales-Rodríguez et al. examined the relationship between psychological well-being and psychological factors among undergraduate students (22). The study assessed various well-being components, such as self-reports and related psychological factors, including methodology, social responsibility, learning style, and social skills, as well as psychological skills like empathy and emotional intelligence. Findings indicated that fostering a positive psychological environment requires improvements in learning styles and self-acceptance, as these are critical stressors for college students (37).

The overarching goal is to encourage the development and integration of interventions aimed at reducing psychological distress among medical students, potentially as part of the educational curriculum. Additionally, a focused approach to stress management techniques and practices that promote psychological health is essential, alongside preventive measures for risk behaviors such as substance abuse.

Several studies suggest that specific activities, like meditation, are effective in alleviating stress by reducing symptoms of emotional distress and enhancing overall well-being. These findings underscore the value of mindfulness and related practices in strengthening students' coping mechanisms, which may contribute to improved academic performance and mental health.

### Limitations

This study's findings should be interpreted cautiously due to several limitations. First, the sample size, particularly for sixth-year students ( $n=8$ ), is relatively small. This limits the generalizability of the findings concerning this cohort, and reduces the statistical power of analyses comparing this group to others. Therefore, conclusions pertaining to the experiences of sixth-year medical students should be considered tentative and exploratory, and further research with larger samples is needed to confirm these findings. The unequal distribution of participants across academic years may also impact the generalizability of the overall results. The cross-sectional design prevents us from making causal inferences regarding the relationship between stress and well-being. Self-reported measures (PSS and QEWB) are susceptible to response bias, recall bias, and social desirability bias, which might have influenced participant responses and skewed the results. The study's focus on a single medical school also limits the generalizability of the findings to other institutional contexts. Furthermore, the survey's design, while utilizing established instruments, may not have fully captured the complexity of the stress and well-being experience among medical students. Future research should address these issues through larger samples, longitudinal studies, mixed-methods approaches, and broader sampling strategies."

## Recommendations for Future Studies

Recruit a substantially larger sample, ensuring adequate representation across all years of medical school. Perform a power analysis to determine the necessary sample size to detect meaningful effects. Conduct a longitudinal study to examine how stress and well-being change over time, allowing for the assessment of causal relationships and the examination of trajectories of stress and well-being across the six years. Combine quantitative data from established measures with qualitative data (e.g., interviews, focus groups) to provide a richer, more nuanced understanding of the student experience. Expand the study to include multiple medical schools to improve generalizability and assess the influence of institutional context.

Conduct further validation of the measures used in specific contexts, potentially through exploratory factor analyses or other psychometric methods, to ensure these tools are appropriate for the study's population and effectively capture the targeted constructs.

Explore potential mediating and moderating variables, such as socioeconomic status, ethnicity, prior mental health history, and coping mechanisms. Incorporate measures of these factors into future research.

## CONCLUSION

This research adds to the growing body of literature on university students' psychological well-being and stress. While the hypothesis regarding the relationship between stress and well-being was not statistically significant, the findings align with other studies, providing further insight into the complex relationship between stress and well-being in medical students.

The study also underscores variations in stress perception across different academic years. Unlike most studies that focus on a single group or compare only two populations, this research compared six distinct academic groups, offering a broader view of how stress and well-being may vary across different stages in medical education.

Future research should explore the effects of educational programs aimed at improving college students' psychological well-being, addressing factors such as anxiety, self-concept, learning styles, empathy, emotional awareness, social skills, and emotional intelligence. Given that this study was conducted at a single university, future studies should expand to multiple institutions to capture insights from diverse student populations.

Additionally, further studies should consider specific socio-demographic characteristics and regional contexts to provide a more nuanced understanding of how these factors affect stress and well-being. Finally, longitudinal studies could provide valuable information on how these variables evolve over time, helping to identify key moderators beyond academic discipline that influence stress and psychological well-being.

## Conflict of Interests

*The authors declare that there is no conflict of interest in the study.*

## Financial Disclosure

*The authors declare that they have received no financial support for the study.*

## Ethical Approval

*The study was approved by the Ethical Board of BAU medical school (10.11.2022 with the issue number E-22481095-020-1961).*

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