The Impact of Stress on Academic Performance among Foundation Medical and Health Science Students at the National University of Science and Technology in Oman

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Abstract: *This study investigates the challenges faced by first-year English for Specific Purposes (ESP) medical students at the National University of Science and Technology, focusing on how various stress factors influence their academic performance. The research, conducted during the summer semester of the 2023-2024 academic year, aims to offer insights for Higher Education Institutions (HEIs) to address these challenges. Data were gathered through observation of 65 students' performance and the administration of a four-point scale questionnaire. The results identify key obstacles hindering academic achievement among GFP medical students and provide actionable recommendations for HEIs to mitigate these challenges effectively.*

Key Words: *GFP Medical students in Oman, Academic performance, Stress.*

1.   INTRODUCTION: In a 2019 American College Health Association research survey, most undergraduates identified stress and anxiety as the primary factors negatively impacting their academic performance (1). However, there are many causes and effects of stress. In physics, stress is the amount of force applied to an object, in life it represents the pressure experienced from different sources. This force may be internal, from emotions like worry, anxiety, regret, discouragement, low confidence, or external, caused by challenges such as exams, assignments, peer influence, and parental expectations. Stress can be seen as a force applied to an individual who struggles to cope with the encountered problem, ultimately leading to strain. The impact is minimal for some people, allowing them to withstand the pressure. For others, it is substantial and leads to adverse effects. Pargman defines stress as "an uncertain reaction to external and internal factors," indicating that it responds to environmental stimuli, which can be either positive or negative (2).

Students are prone to stress due to the demands of their academic and personal lives, which can significantly hinder their achievements. Key factors influencing performance include family, the educational environment, motivation, and teacher-student relationships. Stress can directly or indirectly impair focus, ultimately affecting academic performance. Therefore, students must be equipped with effective stress management strategies to overcome its adverse effects.

This study employs both primary and secondary data collection methods. Primary data is gathered through a structured questionnaire administered to students, covering various stress factors and levels. Secondary data is sourced from online databases, books, and journals. The sampling technique used is stratified simple random sampling, with a sample size of 65 participants. The primary objectives of the study are to identify the causes of stress among university medical students, evaluate their stress levels, and analyze the impact of stress on their academic performance.

2.   LITERATURE REVIEW: Numerous theories and studies examine how stress impacts students' academic performance, particularly in universities. Stress can stem from both external and internal factors, which students often struggle to balance due to a lack of awareness and maturity. Researchers have developed various models to explain the impact of stress on students' academic performance and strategies for managing it effectively.

The chosen field of study can contribute to stress levels; for instance, the more demanding fields often lead to considering giving up at an early stage. Studies have shown that medical students experience a high level of stress during their undergraduate course says Rosal (3). Their mental health worsens after students begin medical school and remain deprived throughout the training (3). Exams significantly affect a student's educational journey, often causing anxiety

about grades. Generally, stress peaks mid-semester due to tests and assignments but tends to decrease slightly towards the end as students become more accustomed to exam conditions (4). According to Zeidner, test anxiety is a set of phenomenological, physiological and behavioural responses that accompany concern about possible negative consequences or failure on an exam or similar evaluative situation (5), hence test anxiety is strongly related to failure consequences.

Family support significantly influences a student's academic performance during their formative years. Orpen believes that lack of support from family and friends, familial responsibilities, financial hardships, and issues with college roommates (6) impact their social lives and, subsequently, their academic performance. External factors like teachers can also influence student stress levels. Punitive argues that inadequate explanations from teachers can increase stress, leading to class absences and negatively affecting academic performance (7). Dissatisfaction with social support is associated with higher stress levels and increased absenteeism, (6) which naturally leads to bad performance. Another significant stressor among students at NU is language proficiency, particularly those from Arabic-speaking backgrounds who are monolingual. Through regression analysis, Harb and El-Shaarawi found that competency in English language skills significantly impacts student performance (8). While these students excel in their fields academically, the anxiety associated with learning English can hinder their overall academic performance.

While stress is typically viewed negatively for its adverse effects on students, some research suggests a positive relationship between stress levels and academic achievement (9). Fear can serve as a healthy motivator, driving students to perform well. For instance, a study by the author on final-year medical students revealed moderate to high-stress levels among successful students, with stress positively impacting their academic performance (9). Many high-achieving students attributed their success to the motivating effects of stress. Therefore, students must learn to balance stress by managing their emotions effectively. Moreover, a study by Lazarus and Folkman reveals that emotionally stable individuals are more likely to see stressors as challenges and address them directly, using problem-focused strategies (10). On the other hand, emotionally unstable individuals may see stressors as threats, focus on managing their emotions instead, and experience stress as overwhelming and discouraging.

Nonetheless, social support from friends and family, rather than peers, can help mitigate the negative effects of test anxiety and improve students' exam results (6). During orientation programs, institutions should inform students of the emotional support services available, such as counselling, to help them effectively manage stress and maintain their academic performance.

3.   RESEARCH METHOD / METHODOLOGY: This section details the methods and procedures used to collect and analyse data for this study. The objective was to comprehensively explore stress factors among Foundation year students in medical and health science fields, along with their coping mechanisms. The study extensively examined the impact of stress on students' academic performance. Initially intending to research foundation students broadly, the research had to narrow its scope to the cohort participating in the Summar ESP program, which was medical and health science students.

4.   RESEARCH DESIGN: The study employed a descriptive and quantitative approach, utilizing a survey technique. This approach focused on students' thoughts and feelings on academic stress by analyzing numerical data. The primary instrument for data collection was a questionnaire, which offered high efficiency in data collection and ensured high generalizability of results compared to more intensive research designs according to Plano Clark and Badiee (11). Close-ended questions were used to get answers from the respondents; however, it lacked flexibility in the design. Once, distributed, it becomes difficult to change the categories of data collected (12). Secondary data was obtained from journals and books.

5.   POPULATION OF THE STUDY: The population for this study comprised medical and health science students from the National University of Science and Technology in Oman. A simple random sampling strategy was used to gather data from approximately 65 students across two sections. The survey link was sent to the respective teachers, who briefly explained the survey's purpose and expectations. The link was then shared with the sections, allowing students to complete the questionnaire in their free time before a given deadline. As the number of respondents was not fixed, the data analysis was based on the number of students who completed the survey within the deadline.

6.   DEVELOPMENT OF RESEARCH INSTRUMENTS: This research utilized a four-point scale questionnaire, the Perceptions of Students Academic Stress (PSAS), to assess students' reasons for stress and its impact

on their academic performance. According to Bryman, four-point scale types of questionnaires are simple which makes this type widely applicable in survey research (13). The questionnaire comprised 22 items divided into three sections: two items collected general information about the students, such as age and gender, while 15 items focused on stress factors and 5 items on coping mechanisms. The scale aimed to determine students' perceptions of their stress and its effect on their academic performance, as well as how they related domestic and social pressures to their stress levels. Options like, **"Strongly Agree, Agree, Disagree, Strongly Disagree,"** captured a range of responses effectively from the students. This format allows for nuanced differentiation between degrees of agreement or disagreement, enhancing the reliability and validity of survey results say Brinkmann and Kvale (14). The scale was also easy for the foundation students to understand and navigate without confusion. It provides clear options for respondents to express their opinions or feelings on a topic, facilitating easier data interpretation and analysis (ibid). The challenges were to keep the scale options balanced not leading the students towards one particular response.

Before conducting the survey, an email was sent to the Head of Department (HoD) for approval of the questionnaire. Once approval was granted, the questionnaire was distributed to random sections. The researcher ensured anonymity and confidentiality in terms of how the findings were revealed. Participation was voluntary, and participants were informed of their right to withdraw if they felt uncomfortable. After completing the questionnaire, participants were asked to submit it. To ensure objectivity, the researcher took measures to prevent personal biases from influencing the study's results.

7.   RESULT / FINDINGS:

Figure 1

In *Figure 1*, the analysis is done based on the information received from the students and interpreted to know the impact of stress on the academic performance of NU foundation year medical and health science students. A total of 65 respondents participated in the survey, with a significant gender disparity observed. Among the respondents, 100% were female students, reflecting the common trend at NU, where medical and health science courses attract more female students than predominantly male engineering courses. The age range of the participants was 17+, all of whom were foundation-year students. The linguistic background of the respondents was homogenous, with all being Arabic-speaking monolinguals. The majority, 92%, were Omani, while the remaining 8% hailed from other parts of the Middle East. Geographically, a minority of 17% came from villages, whereas 50% resided in cities, and the rest were from towns.
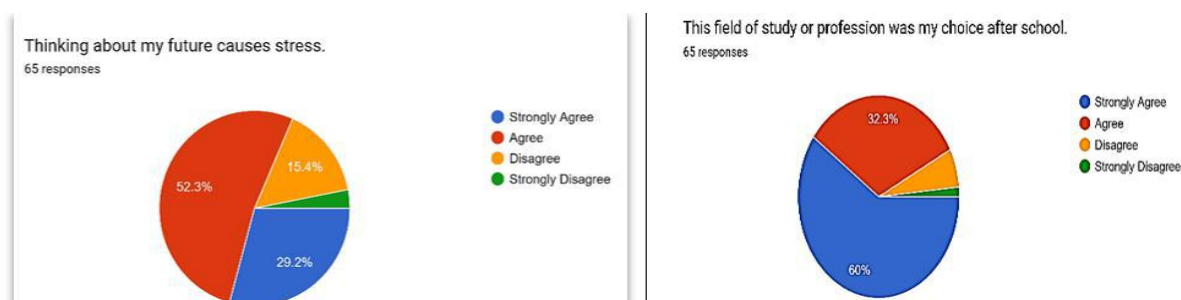

Figure 2

There were external and internal factors causing stress among the student and the analysis of which outweighs what we are researching. Internal factors, particularly the fear of the future, were identified as significant stressors. *Figure 2* shows a substantial portion of the students, 52%, agreed and 29% strongly agreed that this fear induced unnecessary anxiety. Only a small fraction, 14%, were indifferent, and an even smaller percentage, 3%, disagreed or

strongly disagreed. This highlights the pervasive concern among students about their prospects and its impact on their stress levels. The majority of the students appeared to be mentally prepared for the rigours of their chosen field of study. An overwhelming 60% strongly agreed that they had chosen this field willingly, while only 4% and 1% felt forced into it, contributing to their stress. This indicates that while most students were content with their choice, the minority who felt pressured experienced additional stress.

Despite their preparedness, the inherent challenges of the medical field caused stress that affected academic performance for 49% of the students who agreed and 12% who strongly agreed. The duration of their academic journey seemed to have little impact on their stress levels, with 29% and 14% experiencing stress upon entering college, and similar percentages, 27% and 12%, continuing to feel stressed over time. Exam anxiety was another notable internal stress factor. Half of the students, 41%, agreed and 9% strongly agreed that they experienced anxiety before exams, while the other half, 41%, disagreed, and 7% strongly disagreed. This split indicates that exam anxiety is a significant issue for a substantial portion of the student body. Marks played a minor role in causing stress, disrupting performance for 29% of the students who agreed and 17% who strongly agreed. This suggests that while academic performance and grades are a concern, they are not the predominant source of stress for most students.
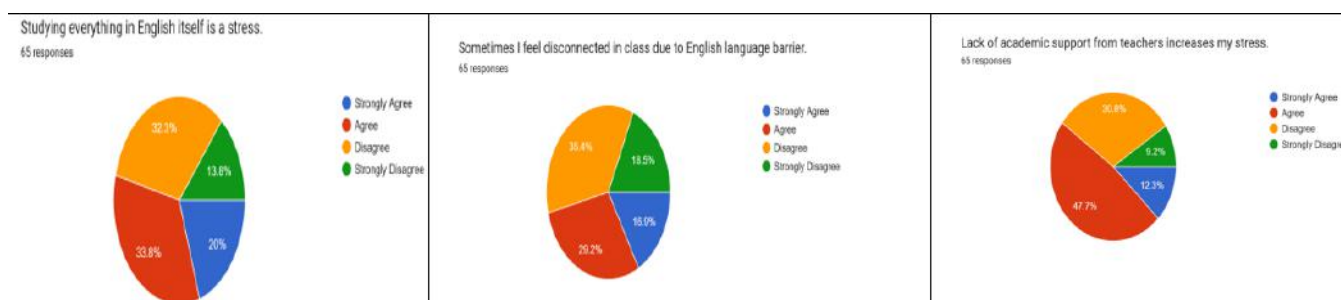

Figure 3

The most significant external stress factor was the requirement to learn everything in English. This was a considerable source of stress for 34% of students who agreed and 20% who strongly agreed. *Figure 3* shows that the language barrier not only affected their academic performance but also led to feelings of disruption or alienation in class, as 25% agreed and 17% strongly agreed. Family interference was perceived as a stressor by a minority of students. While 45% and 23% did not consider it a stressor, 31% and 1% felt pressured by their families' monitoring of their academic performance. Additionally, external family situations did not significantly impact stress for the majority, with 45% disagreeing and 29% strongly disagreeing. Peers and friends were not major stress factors for most students, as 63% and 14% respectively indicated. However, the influence of teachers was notable, with 48% agreeing and 12% strongly agreeing that teachers played a major role in causing stress. Students agreed that internal factors like fear, anxiety, and concern about the future impact more than external factors like peers, and family 42% and 31%.

Figure 4

Despite the various stressors, more than half of the students according to *Figure 4*, 55%, and 29% felt that stress was necessary to motivate them to study. They viewed it as a challenge that could enhance their performance. A significant majority, 52%, strongly agreed that they could manage stress effectively through proper time management, and 42% agreed. Additionally, more than 60% agreed and 19% strongly agreed that they were mentally prepared and emotionally strong to handle stress. Emotional support was deemed essential by 45% of the students who agreed and strongly agreed. Different students identified various support systems as helpful, with 29% citing families, 6% mentioning God, and 3% indicating teachers.

8.   DISCUSSION: The findings from this study underscore the substantial impact of both internal and external factors on the academic performance of foundation-year medical students. Internal factors, particularly fear of the future and exam anxiety, were significant stressors. This aligns with previous research that identifies internal stressors as critical determinants of academic performance among medical students. According to Wilks, academic performance-related stress is the product of a combination of academic-related high demands that exceed the adaptive resources available to an individual (15). In addition, Sohail has shown the relationship between stress and the academic performance of first-year medical students, which found high levels of stress associated with poor academic performance (16). The high percentage of students experiencing fear of the future indicates a pervasive concern about career prospects and academic success. This fear, coupled with the inherent challenges of the medical field, can create a substantial psychological burden, affecting students' academic performance and overall well-being.

Understanding the primary sources of stress is crucial for developing effective support systems for students. The finding that internal factors outweigh external ones suggests that interventions should focus on psychological support and stress management training. The role of English as a medium of instruction as a significant external stressor highlights the need for language support programs. The requirement to learn and perform academically in English emerged as the most significant external stressor. This finding is consistent with earlier studies highlighting the challenges faced by non-native English speakers in academic settings (17). The language barrier not only affects comprehension and communication but also exacerbates feelings of isolation and stress, which can impede academic performance.

Family interference and peer influence were not major stressors for most students, which contrasts with some studies suggesting that family expectations and peer pressure significantly impact student stress levels (6). However, the minority who did feel pressured by family involvement experienced significant stress, indicating that familial expectations can be a stressor for some students. The influence of teachers as a stress factor highlights the importance of the educational environment in student well-being. Teachers' expectations, teaching methods, and interactions with students can significantly impact stress levels, as supported by previous research (7). This finding suggests that teacher training programs should emphasize the development of supportive and understanding educator-student relationships to mitigate stress. According to Nelson and Simmons, the positive view of stress as a motivational factor among more than half of the students is noteworthy. This perspective aligns with the concept of eustress, or beneficial stress, which can enhance performance and motivation (18). The ability of students to manage stress through time management and emotional support further underscores the importance of developing effective coping strategies.

9.   COMPARISON WITH EARLIER FINDINGS: The results of this study are consistent with earlier findings in several areas, including the significant impact of internal factors like fear of the future and exam anxiety. However, the minimal impact of family and peer influence contrasts with some previous studies, suggesting that cultural or contextual differences may play a role in stress perceptions among students.

10.   STRENGTHS AND LIMITATIONS: One of the strengths of this study is the comprehensive analysis of both internal and external factors affecting student stress. The homogenous demographic of the respondents allows for a focused understanding of stressors specific to this group. However, the study's limitations include the relatively small sample size and the lack of diversity in the linguistic and cultural backgrounds of the participants, which may limit the generalizability of the findings.

11.   RECOMMENDATIONS: Based on the findings, several recommendations can be made for future practice:

- Enhanced Support Systems: Educational institutions should provide support systems to help students manage internal stressors, such as career counselling and stress management workshops.
- Improve Language: More functional language with prefabricated chunks or canned responses should be introduced to promote learners' autonomy.
- Teacher Training: Teacher training programs should focus on developing supportive and understanding educator-student relationships to minimize stress caused by teacher interactions.
- Promoting Coping Mechanisms: Encouraging the development of effective coping mechanisms, such as time management and seeking emotional support, can help students handle stress more effectively.
- Further Research: Future research should explore the impact of cultural and contextual differences on student stress perceptions and investigate the effectiveness of various support systems in diverse student populations.

12.   CONCLUSION: This study underscores the challenges faced by first-year General Foundation Program (GFP) medical students in Oman, focusing on how stress significantly impacts their academic performance. Stress, as defined by Pargman (2), is an uncertain reaction to external and internal factors, with key contributors including academic pressure, family expectations, financial issues, and teacher-student relationships. These stressors vary in their effects, with some students showing resilience while others experience significant academic setbacks. The research, based on data collected from 65 students through structured questionnaires and complemented by secondary sources, highlights the critical link between stress and academic outcomes. Effective stress management is essential for students to maintain focus and achieve success in their studies.

Higher Education Institutions (HEIs) play a pivotal role in addressing these challenges. By providing stress management training, counselling services, and workshops on time management, HEIs can help students develop effective coping mechanisms. Building strong teacher-student relationships and fostering a supportive academic environment are equally crucial in mitigating stress. Equipping first-year GFP medical students with tools to handle stress is not only vital for their immediate academic success but also for their long-term personal and professional growth. By adopting a holistic approach to stress management, HEIs can enable students to navigate academic pressures more effectively, ensuring their well-being and success in their chosen fields.

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