Anxiety as a Determining Factor in Medical Specialty Choice: A Literature Review

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Vanesa Cristina Baciu[1], Dora Mihaela Cîmpian[2], Andreea Sălcudean[2]

[1]Faculty of Medicine "George Emil Palade" University of Medicine, Pharmacy, Science and Technology of Targu Mures
[2]Department of Ethics and Social Sciences "George Emil Palade" University of Medicine, Pharmacy, Science and Technology of Targu Mures, andreea.salcudean@umfst.ro

Correspondence to:
Name: Dora Mihaela Cimpian
E-mail address: dora_cimpian@yahoo.com

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Abstract

1.Background: The choice of medical specialty is a pivotal decision in the professional development of medical students, with long-term implications for personal satisfaction, performance, and mental health. This decision-making process is influenced by a wide array of factors, including individual personality traits, socio-economic conditions, academic environment, and psychological states such as anxiety. This narrative review explores the relationship between anxiety and the process of selecting a medical or surgical specialty. 2.Material and Methods. A literature review was conducted using PubMed and Google Scholar databases. Articles were selected based on relevance, methodological rigor, and inclusion in peer-reviewed journals. Keywords included "anxiety," "medical specialty choice," "medical students," and "psychological determinants of career decision-making." 3. Results. Findings reveal that anxiety can significantly alter the perception of professional compatibility and impact decision-making capacity. Students with higher anxiety levels are more likely to avoid high-responsibility fields such as surgery or emergency medicine, despite having the competencies required. Additionally, stress levels vary significantly among specialties, with emergency medicine, surgery, and intensive care being among the most demanding, while dermatology, radiology, and pathology are perceived as lower-stress fields. Personal traits such as extroversion, neuroticism, and emotional resilience, as well as socio-cultural pressures and academic mentorship, also shape career preferences. 4.Conclusions. Given the complexity of factors involved in specialty choice, especially the influence of anxiety and perceived stress, it is essential to provide medical students with structured psychological support and vocational counseling. Further studies are needed to deepen the understanding of the psychological mechanisms influencing specialty choice and to inform educational policies aimed at reducing professional dissatisfaction.

Keywords: anxiety, stress level, medical specialty, future doctors

INTRODUCTION

Choosing a medical specialty is a crucial moment for future doctors, with a significant impact on their careers. The decision-making process is influenced by numerous internal factors, such as individual skills and competencies, as well as external factors, including socio-economic conditions and the pressure of the academic environment. Anxiety is a common emotion in the lives of medical students, affecting both academic performance and the perception of different medical specialties. The level of stress and degree of responsibility vary depending on the chosen field, which can exacerbate this state. Another important aspect is the long-term impact of this decision. A student who chooses to avoid medical specialties perceived as too demanding may later experience professional dissatisfaction or a lack of fulfillment.

Anxiety is an emotional state characterized by restlessness, agitation, and excessive concern about future events perceived as life-threatening. It is a natural psychological mechanism that prepares the body for risky situations. However, when its intensity and duration are disproportionate to the actual situation, anxiety can become pathological, negatively affecting emotional balance, decision-making, and performance in various areas of life. [1,2]. Anxiety can be classified based on several factors, such as duration, intensity, and causes, with each type manifesting differently from person to person. [1,3] It can also be situational, occurring as a reaction to a specific stressful or threatening event (such as an exam or an important decision), and it typically disappears once the triggering factor is eliminated

Anxiety manifests through a range of symptoms that can be classified into physiological, cognitive, emotional, and behavioral categories. Physiological (somatic) manifestations triggered by the activation of the sympathetic nervous system, preparing the body for a fight-or-flight response. Symptoms include tachycardia (rapid heartbeat), hyperventilation (rapid and shallow breathing), excessive sweating, muscle tension, gastrointestinal disturbances (nausea, abdominal pain), dizziness, fainting sensations, and sleep disorders. [1,2,4]. Also, anxiety affects information processing, impacting concentration and decision-making. These symptoms include catastrophic thinking (tendency to anticipate the worst-case scenarios), rumination (repetitive and obsessive thoughts about problems), difficulty concentrating, hypervigilance (a continuous state of alertness to potential dangers, even in the absence of real threats), and excessive self-criticism. [1] Anxiety influences mood and emotional balance, often resulting in depressive states, restlessness, irritability, and lack of self-confidence. [2,4] Behavioral manifestations influence how a person reacts to their environment. Symptoms include avoidance of anxiety-inducing situations, excessive agitation, changes in appetite, sleep disturbances, and substance use. [2,4]

At the same time, anxiety can also arise without an actual danger, as a stable predisposition. Individuals with this type of anxiety are more susceptible to stress and tend to overestimate risks. [2] To be diagnosed as a disorder, anxiety must be persistent (lasting more than six months), significantly impact daily functioning, and be disproportionate to the situation.

The main objective of this study is to examine based on published literature how anxiety and related psychological factors influence the decision-making process of medical students when choosing a specialty, with particular attention to the avoidance of high-stress medical fields.

MATERIAL AND METHODS

This study is designed as a narrative literature review. Relevant scientific articles and reviews were identified by searching the PubMed and Google Scholar databases. The search focused on studies addressing the relationship between anxiety and the choice of medical or surgical specialties among medical students, residents, and healthcare professionals. Keywords such as "anxiety," "specialty choice," "medical students," "surgical vs. medical specialties," and "psychological factors in career decision-making" were used in various combinations. Articles were selected based on relevance, methodological rigor, and publication in peer-reviewed journals. No restrictions were imposed regarding publication year, but only articles in English were included.

CAUSES AND PREDISPOSING FACTORS OF ANXIETY

Anxiety can have multiple causes, influenced by both internal factors (biological and psychological) and external factors (social and environmental). These factors can act individually or in combination, contributing to the development and persistence of anxiety states. [4] (Tabel 1)

1. **Biological and Genetic Factors**

Heredity – Studies show that predisposition to anxiety can be inherited genetically, with a higher risk of developing anxiety disorders among children whose parents suffer from similar conditions.

Neurochemical imbalances – Abnormal levels of neurotransmitters such as serotonin, dopamine, and gamma-aminobutyric acid (GABA) can influence the manifestation of anxiety. [1,4]

2. **Psychological Factors**

Traumatic experiences – Events such as abuse, the loss of a loved one, or other emotional traumas from the past can contribute to the development of persistent anxiety. [2,4]

Personality traits – Individuals with perfectionist tendencies, high emotional sensitivity, low self-esteem, intense fear of rejection, and excessive self-criticism are more prone to anxiety. [1,4]

Thinking patterns – Anxious individuals tend to engage in excessive rationalization, overanalyzing insignificant details. They often experience obsessive thoughts, a distorted perception of reality, and persistent, stressful ideas. [2,4]

3. **Social and Environmental Factors:**

Family environment – An unstable family climate, frequent conflicts, or lack of emotional support can contribute to the development of anxiety from childhood. [1,2]

Social pressure and high expectations – In a competitive society, individuals may feel constant pressure to succeed, leading to performance anxiety. [1,2]

Professional or academic stress – In demanding work environments, such as the medical field, high levels of responsibility and pressure can exacerbate anxiety symptoms. [2,4]

4. **Behavioral Factors and Lifestyle:**

Lack of sleep – Frequent sleep deprivation can lead to neurochemical imbalances that favor the onset of anxiety. [1,2]

Excessive caffeine and alcohol consumption – These substances can amplify anxiety symptoms and increase nervous system hyperactivity. [1,2]

Sedentary lifestyle – Lack of physical activity reduces endorphin production, which plays a crucial role in stress reduction and emotional regulation. [4,5]

Anxiety causes are complex, and each person has a unique combination of factors contributing to its development. In medical students, high responsibility levels, academic pressure, and fear of failure can be determining factors, influencing both academic performance and professional decisions. [3]

Table 1. Predisposing Factors of Anxiety

Category	Factor	Description
Biological and Genetic Factors	Heredity	Genetic predisposition; higher risk in children of anxious parents.
	Neurochemical imbalances	Imbalances in serotonin, dopamine, GABA affect anxiety levels.
Psychological Factors	Traumatic experiences	Past abuse, loss, or trauma contributes to chronic anxiety.
	Personality traits	Perfectionism, low self-esteem, emotional sensitivity increase risk.
	Thinking patterns	Over-rationalization, obsessive thoughts, distorted reality perception.
Social and Environmental Factors	Family environment	Conflictual or unsupportive family environments foster anxiety early.
	Social pressure and high expectations	Pressure to succeed fosters performance-related anxiety.
	Professional or academic stress	High demands in school or work amplify anxiety symptoms.
Behavioral and Lifestyle Factors	Lack of sleep	Sleep deprivation disrupts neurochemistry, increasing anxiety risk.
	Excessive caffeine and alcohol consumption	Stimulant use heightens nervous system activity and anxiety.
	Sedentary lifestyle	Lack of exercise lowers endorphins, impacting mood regulation.

FACTORS INFLUENCING THE CHOICE OF MEDICAL SPECIALTY

1. Personal and Emotional Factors

These play a very important role in choosing a medical specialty, influencing the compatibility of the doctor with professional requirements. Individual interests and aptitudes determine attraction to surgical, clinical, or laboratory specialties. Personality also influences the decision, as extroverted individuals tend to choose specialties that involve frequent interaction with patients, such as family medicine or pediatrics, while analytical and detail-oriented individuals prefer fields like medical imaging or pathology, where analysis and data interpretation predominate. Another important aspect is stress tolerance, as specialties like intensive care or surgery require a high ability to manage pressure and critical situations. [6,7,8,9]

Recent studies suggest that emotional resilience, conscientiousness, and openness to experience are strongly associated with the selection of complex, high-stakes specialties. Additionally, higher levels of neuroticism are inversely related to choices like emergency medicine or surgery, where uncertainty and risk are frequent. Medical students also report higher anxiety levels when there is a misalignment between their personality traits and specialty demands, which can lead to long-term dissatisfaction or burnout. [6,7,8,9]

2. Socio-economic and Cultural Factors

The financial status of the student or their family can influence their orientation toward more profitable and prestigious specialties, which offer financial stability, such as surgery or dermatology, as opposed to those with more modest incomes. Additionally, cultural factors and social norms influence students' decisions, with some communities promoting certain specialties as being more important or more suitable depending on gender. The availability of jobs and the healthcare needs of a specific region also play an important

role, as many graduates choose specialties with shortages to have more employment opportunities. [10,11]

Studies have shown that in lower- and middle-income countries, students often gravitate toward job-secure and high-paying fields, while in high-income countries, lifestyle flexibility may take precedence. Furthermore, gender stereotypes continue to shape specialty distribution, with male students overrepresented in surgical fields and female students in pediatrics, OB/GYN, or psychiatry. Social mobility goals also play a role, especially for students from disadvantaged backgrounds who may view high-income specialties as a path to economic advancement. [10,11,12]

3. Influence of the Academic Environment and Mentors

The academic environment and mentors have a strong influence on personal and professional development, providing access to knowledge, resources, and development opportunities. During the years of study, students are exposed to various disciplines and clinical experiences, which allows them to form a clear vision of the fields that attract them the most. Mentors have a significant impact, offering both theoretical and practical guidance, as well as personal experiences. The relationship between student and mentor can help clarify career expectations, providing a realistic perspective on working conditions, stress levels, advancement opportunities, and work-life balance. [10]

Mentorship has been shown to be one of the most influential non-curricular factors in specialty choice. Students with early positive mentorship experiences in certain specialties are more likely to pursue them. Conversely, lack of exposure or discouragement by role models can lead to underrepresentation of certain fields. The structure of the medical curriculum and the visibility of different specialties in teaching hospitals further influence students' final career decisions. [13]

4. Social Pressure and Family Expectations

Many students feel the pressure from their family to pursue prestigious specialties, even if their own interests differ. This pressure can cause anxiety, affecting the balance between vocation and external expectations. Students must make a conscious choice based on their own preferences, aptitudes, and values. [10] Family influence is often underestimated but remains a powerful determinant, especially in collectivist cultures. Parental expectations can override intrinsic motivation, leading to cognitive dissonance or emotional distress. Additionally, peer comparisons within competitive academic environments can intensify pressure, pushing students toward specialties with higher perceived status, regardless of their personal compatibility or interest. [14]

THE CORRELATION BETWEEN ANXIETY AND CHOOSING A SPECIALTY

1. The Impact of Anxiety on the Decision-Making Process

The decision-making process is strongly influenced by anxiety, causing students to lose their ability to assess risks, analyze options, and make an informed choice. In the case of medical students, academic pressure and uncertainty about the future intensify this effect. A high level of anxiety leads students to overanalyze each option and induces the fear of making the wrong choice, which can result in delaying decisions or avoiding specialties perceived as too demanding. [15]

Furthermore, anxiety affects the perception of one's abilities, leading students to underestimate their skills and exclude specialties that involve a high degree of responsibility, such as surgery or emergency medicine, even if these could be a good fit for them. Some students choose less stressful specialties, not out of passion, but due to a desire to avoid discomfort. This emotional influence can lead to decisions that do not truly reflect the student's desires and potential, increasing the risk of long-term professional dissatisfaction. [15,16]

In addition, high levels of anxiety are often associated with a phenomenon known as "decision paralysis," where the cognitive load of weighing too many options results in inaction or defaulting to seemingly safer, less demanding choices. For medical students, who are frequently under intense academic scrutiny, this state may be exacerbated by performance-related stress, perfectionism, and fear of failure. These factors may prevent students from engaging in reflective self-assessment or from pursuing meaningful mentorship, both of which are essential to informed specialty choice.

2. Stress Levels Associated with Different Medical Specialties

Stress is a factor present in medical practice, but the level varies depending on the specialty. Each medical field has its own particularities and requirements, with different work rhythms. The main factors determining stress levels are: workload, the urgency of cases, the duration of shifts, the pressure of making quick decisions, and interaction with critical patients. [10,17]

Emergency medicine is consistently reported as one of the most demanding specialties. Physicians working in emergency departments often confront unpredictable clinical scenarios requiring rapid decision-making under high-pressure conditions. A systematic review conducted in the context of the COVID-19 pandemic reported a burnout prevalence of 75% among emergency physicians in the United States, underscoring the chronic stress inherent in this specialty. [18]

Surgical specialties are also associated with very high stress levels. Surgeons typically endure long working hours in the operating room, perform complex procedures, and must make critical intraoperative decisions with precision and efficiency. A cross-sectional study among orthopedic surgeons revealed that 31% rated their stress levels as higher than 8 out of 10, with 40% describing these levels as unacceptable. [19]

Intensive Care Units staff operate in highly stressful environments where they manage critically ill patients under constant surveillance. Emotional fatigue, high clinical demands, and ethical decision-making contribute to significant psychological burden. During the COVID-19 pandemic, ICU professionals were among those most affected by burnout and psychological distress. [18]

Cardiology – Although it involves managing patients with serious conditions, the clinical and preventive aspects present a more controlled pace with lower stress levels. Stress levels in cardiology vary according to subspecialization. Interventional cardiology and acute cardiac care are associated with high workloads and emergency responses, whereas preventive cardiology and outpatient management offer more predictable routines. Although not quantified in the cited studies, cardiology is generally perceived as moderately to highly stressful depending on clinical context. [10,15, 20]

Psychiatry is often considered to have a lower baseline level of occupational stress, especially in outpatient settings. However, psychiatric emergencies—such as managing suicidal or aggressive patients—can be highly demanding. [8,12]

In **neurology** department depending on the subfield chosen, the stress level can vary. In outpatient care, where patients are treated in clinics, the stress level is minimal, while emergency neurology is extremely demanding due to the complexity of diagnostics and the unpredictable course of neurological diseases. [10,15]

Radiologists often operate in structured environments with reduced patient interaction, focusing primarily on diagnostic interpretation. While exact stress levels are less frequently reported in the literature, this specialty is generally perceived as less stressful due to consistent hours and limited emergency duties. [10,15]

Dermatology is widely acknowledged as one of the least stressful specialties. It typically involves non-urgent clinical cases, minimal emergency care, and regular working

hours. Despite the lack of large-scale data quantifying stress in this field, dermatology consistently ranks as a preferred specialty in lifestyle-centered career evaluations. [10,15]

Professionals in **laboratory medicine and pathology** engage primarily in analytical and diagnostic tasks with minimal patient contact. These specialties are associated with a relatively stable schedule and lower levels of workplace stress, though comprehensive empirical data on stress prevalence is currently limited. [10,15]

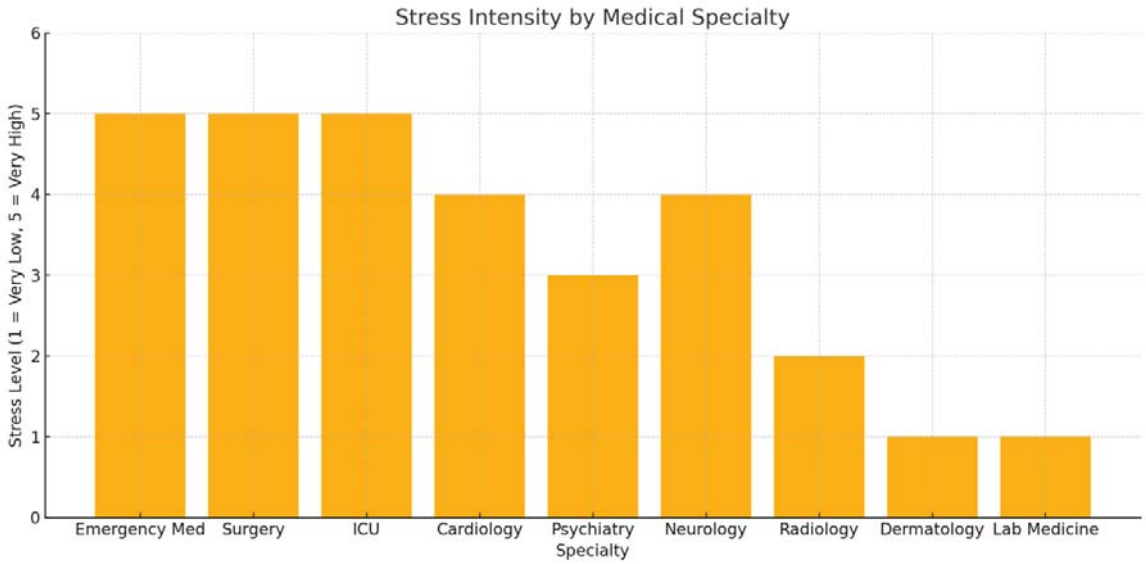

Figure 1. Stress intensity acording to medical and surgical specialties

DISCUSSIONS

Anxiety is a significant determinant in choosing a medical specialty, having a substantial impact on how students select their medical field. Students who experience high levels of uncertainty and stress are more likely to hesitate in choosing a specialty perceived as demanding and fast-paced. Those seeking a balance between personal and professional life will be more inclined to choose a specialty with a more stable schedule and a less hectic pace. [15].

One of the observations emerging from the literature is the avoidance behavior triggered by anxiety, particularly in relation to high-responsibility and high-stress specialties such as emergency medicine, surgery, and intensive care. Students with elevated anxiety levels may perceive themselves as less competent or emotionally unfit for demanding roles, even when objective skills and performance would suggest otherwise. This misalignment between potential and choice can lead to long-term dissatisfaction and burnout—a phenomenon well-documented in healthcare professions.

Moreover, the variation in stress levels among specialties acts as both a filter and a motivator for students. Specialties such as dermatology, pathology, and radiology offer a more predictable work schedule and reduced exposure to acute stress, making them more attractive to those seeking a balanced lifestyle. In contrast, specialties that require rapid decision-making under pressure, like trauma surgery or intensive care, appeal more to students with high emotional resilience and tolerance to uncertainty.

Another relevant factor discussed is the role of personality traits. Extroverted, empathetic individuals often lean toward people-centered specialties like pediatrics or psychiatry, while those who are analytical and detail-oriented may prefer laboratory-based or imaging specialties. When these personality traits are not aligned with the demands of a

chosen specialty, anxiety and dissatisfaction may be exacerbated, highlighting the importance of early personality and aptitude assessment during medical training.

Additionally, socio-economic pressures and family expectations continue to shape specialty selection, particularly in regions where certain specialties are associated with higher income, social status, or gender norms. This extrinsic pressure may conflict with students' intrinsic interests and capabilities, compounding the psychological burden of making such a significant career decision.

The academic environment and mentorship also play a pivotal role in career development. Exposure to positive role models and supportive mentors in clinical rotations can have a lasting influence on students' perceptions and confidence in pursuing a given specialty. Conversely, a lack of guidance or negative experiences can deter students from exploring potentially suitable fields.

To counter these negative effects, it is essential for future doctors to receive psychological support and have diverse clinical experiences that offer a realistic view of each specialty. A correct choice involves a balance between personal interests and professional requirements, enabling them to build a satisfying medical career based on real skills. [1,15,17]

While these findings offer valuable insights, this review is subject to several limitations. Firstly, the data is derived primarily from narrative and cross-sectional studies, which may not capture the longitudinal effects of anxiety on career choice and satisfaction. Secondly, much of the available literature is based on self-reported measures, which can be affected by social desirability bias and recall inaccuracies. Thirdly, there is a limited number of high-quality, large-scale studies exploring cultural variations and gender-specific dynamics in this context. Finally, while anxiety is a key focus of this review, other psychological constructs—such as depression, perfectionism, and resilience—are also relevant and warrant further investigation.

CONCLUSIONS

In conclusion, stress levels differ markedly across medical specialties, and this variability plays a critical role in shaping the career trajectories of future physicians. High-stress specialties—such as emergency medicine, surgery, and intensive care—demand rapid decision-making, long working hours, and the ability to manage life-threatening situations under pressure. In contrast, fields such as dermatology, radiology, and pathology typically provide a more structured and predictable working environment, associated with lower stress levels.

These differences underscore the importance of a thoughtful and individualized approach to specialty selection. To better understand the psychological mechanisms underlying specialty choice further research is necessary. Additionally, it is recommended that medical students have access to structured career and vocational counseling services.

Conflicts of Interest

The author declares no conflict of interest.

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