

Effect of Social Anxiety Disorder on Specialty Choice Among Residents and Interns in Saudi Arabia: A Multi-Center Cross-Sectional Study

Abdulaziz Muflih Abudasser¹, Ibtihal Sultan M Alshehri², Raghad Yahya S Alasiri²,
Rahaf Yahya Wakidah², Raghad Yahya Alqahtani²

¹Department of Medicine, College of Medicine, King Khalid University, Abha, Kingdom of Saudi Arabia; ²College of Medicine, King Khalid University, Abha, Kingdom of Saudi Arabia

Correspondence: Abdulaziz Muflih Abudasser, Department of Medicine, College of Medicine, King Khalid University, Abha, Kingdom of Saudi Arabia, Email amabdulaziz@kku.edu.sa

Aim: This study aims to assess the association between social anxiety disorder (SAD) and specialty preference among medical residents and interns in Saudi Arabia.

Methods: A multi-center cross-sectional analytical study was conducted among medical interns and residents across Saudi Arabia. A validated online questionnaire was distributed between July 12 and September 2, 2023. Social anxiety was measured using the Social Interaction Anxiety Scale (SIAS), a 20-item self-reported tool. A score of ≥ 36 was used to identify significant levels of social anxiety.

Results: A total of 196 interns and residents participated in the study. The most preferred specialties included surgical subspecialties (31.1%), followed by medical subspecialties (19.9%). A total of 47 participants (24%) reported that fear influenced their specialty choice, while 63 (32.1%) exhibited significant levels of social anxiety. Social anxiety was significantly higher among interns (59.4%) than residents (33.3% for R1 and 35.1% for R2), with none reported among R5 residents ($P=0.001$). Fear of social interaction was most common in paramedical (88.9%) and radiology (69.2%) specialties.

Conclusion: Nearly one in three residents and interns experienced significant social anxiety, which influenced their specialty selection—particularly toward less patient-facing fields such as radiology and paramedical specialties. These findings underscore the importance of early psychological screening and support in medical training, which could inform medical education reforms and workforce planning to ensure balanced specialty distribution in the healthcare system.

Keywords: social anxiety, social phobia, specialty preference, medical students, residents, Saudi Arabia

Introduction

Following the completion of their undergraduate medical degree, professionals might pursue postgraduate medical education to further their training in a particular specialty that aligns with their personality traits.^{1,2} The process of selecting a specialty is complex and involves a number of variables, including the student's personality, abilities, clinical exposure and experience, social and familial background, and the financial appeal of several specializations.^{3,4} By figuring out these characteristics, students may be better able to comprehend why they are drawn to a particular specialty and feel more satisfied with their selections. Among them, anxiety disorders, particularly social anxiety disorder, and self-esteem are regarded as significant variables that can influence the selection process and so cannot be disregarded.⁵

Social Anxiety Disorder (SAD), formerly known as social phobia, is characterized by an intense fear or anxiety about one or more social situations in which the person is subject to observation by others. These situations include social interactions, being observed, and performing in front of others.⁶ The dread of speaking was the most often reported symptom of SAD.⁷ SAD can happen anywhere in public where a person feels watched and evaluated by others.⁸ Different cognitive and physical signs of anxiety, such as blushing, tremors, increased sweating, and tachycardia, will manifest in different people and are characterized by autonomic activation.⁹



The medical field is extremely demanding, and medical professionals who suffer from social anxiety may find the rigidity of daily routines to be psychologically taxing.¹⁰

Any career, including the medical field, can be negatively impacted by social anxiety disorder. Many researches on social anxiety disorder in medical students are being conducted in the West and other Eastern nations.¹¹ It has been observed that students who are female¹² and single,¹³ as well as those who have no partner,¹⁴ are more likely to suffer from social anxiety disorder.

In the context of Saudi Arabia, cultural and societal norms may significantly influence the expression and prevalence of social anxiety disorder. Traditional gender expectations, such as the conservative roles assigned to men and women in social and professional settings, may contribute to heightened anxiety—especially among female trainees who may face additional scrutiny or limited opportunities in certain specialties.^{15,16} Moreover, hierarchical medical training structures and emphasis on seniority in clinical decision-making may amplify performance-related stress among interns and early-stage residents.¹⁶ These factors, combined with a strong emphasis on community and reputation within Saudi society, could make social anxiety more pronounced and directly impact specialty selection compared to Western contexts.¹⁷

An investigation on the impact of social stress and social anxiety on decision-making revealed that, although anxiety leads to risk-averse decisions, stress promotes risk-taking.¹⁸ As a consequence of stress in medical school, the careers of students with social phobia might be significantly influenced by behaviors and decisions based on avoidance of stressful situations.⁴ Recent research has increasingly recognized the role of social anxiety in shaping medical students' behavior, academic performance, and career preferences.¹⁹ For instance, studies from the Middle East and Asia have reported high rates of social anxiety among medical trainees, often linked to academic stress, social expectations, and limited mental health support systems.^{20,21} Despite this, there remains a scarcity of research specifically examining how SAD may influence specialty choices in the context of Saudi Arabia, where cultural and educational factors may amplify the impact of anxiety on decision-making. This study aims to assess the effect of social anxiety disorder on the specialty's choice among residents and interns in Saudi Arabia.

Methods

Study Design and Setting

A multi-center cross-sectional analytical study was conducted among resident doctors and interns in Saudi Arabia. The study received ethical approval from the Institutional Review Board (IRB) of King Khalid University. All authors provided informed consent and our study was done according to the declaration of Helsinki.

Sampling Strategy

Consecutive sampling technique was used. Residency program rosters were obtained through official collaboration with training institutions, and participants were selected using computer-generated random numbers. Stratification was based on the level of training (interns, R1–R5 residents) to ensure balanced representation across experience levels.

Participants and Recruitment

A total of 450 eligible participants were initially invited to take part in the study via institutional communication channels such as WhatsApp groups, Telegram, and official university Email lists, after obtaining the required permissions from program coordinators. The study was voluntary and anonymous, with informed consent obtained digitally prior to participation. A total of 196 participants completed the survey, resulting in a response rate of 43.6%.

Data Collection Tool

An online self-administered questionnaire was developed by the research team after reviewing relevant literature and consulting with experts. The questionnaire was validated for content, clarity, and reliability by three independent academic experts. It comprised three parts:

Demographic and academic data (eg, gender, level of training, preferred specialty). A binary item asking whether fear of social situations influenced specialty choice.

The Social Interaction Anxiety Scale (SIAS), a validated tool comprising 20 items rated on a 5-point Likert scale, used to assess levels of social anxiety. A total score ≥ 36 was used as the cutoff for identifying clinically significant social anxiety.

Data Collection Period

Data were collected over a 7-week period from July 12 to September 2, 2023. This period was selected to coincide with the academic schedule when most interns and residents were actively engaged in their clinical training and available for survey participation.

Data Analysis

Data were analyzed using IBM SPSS Statistics, version 21. Descriptive statistics were used to summarize participant characteristics, specialty preferences, and SIAS responses. The SIAS total score was calculated, and a score of ≥ 36 was considered indicative of significant social anxiety. Chi-square tests and exact probability tests were used to assess associations between variables, with a p-value ≤ 0.05 considered statistically significant.

Results

A total of 196 interns and residents were included in the study. Of them, 99 (50.5%) were females and 97 (49.5%) were males (Table 1). Regarding training level, 32 (16.3%) were interns, 36 (18.4%) were R1 residents, 57 (29.1%) were R2 residents, 50 (25.5%) were R3 residents, and 21 (10.8%) were R4 and R5 residents.

Table 1 Personal Characteristics and Speciality Preference Among Study Participants (n=196)

Personal Data	No	%
Gender		
Male	97	49.5%
Female	99	50.5%
Current position		
Intern	32	16.3%
R1	36	18.4%
R2	57	29.1%
R3	50	25.5%
R4	15	7.7%
R5	6	3.1%
Preferred speciality		
ER /critical care / anesthesia	23	11.7%
Anesthesiology	8	4.1%
Critical care medicine	8	4.1%
Emergency medicine	7	3.6%
General surgery	13	6.6%
General surgery	13	6.6%
Surgery subspecialty	61	31.1%
Plastic and reconstructive surgery	9	4.6%
Cardiac surgery	3	1.5%
Neurosurgery	5	2.6%
Obstetrics and gynecology	8	4.1%
Ophthalmology	11	5.6%
Orthopedic surgery	11	5.6%
Otorhinolaryngology, head and neck surgery	12	6.1%
Pediatric surgery	2	1.0%

(Continued)

Table 1 (Continued).

Personal Data	No	%
Internal medicine	13	6.6%
Internal medicine	13	6.6%
Medical subspecialty	39	19.9%
Dermatology	5	2.6%
Family medicine	5	2.6%
Forensic medicine	2	1.0%
Neurology	7	3.6%
Pediatrics	6	3.1%
Preventive medicine	7	3.6%
Urology	7	3.6%
Psychiatry	25	12.8%
Psychiatry	25	12.8%
Radiology	13	6.6%
Diagnostic radiology	8	4.1%
Radiation oncology	5	2.6%
Paramedical	9	4.6%
Anatomic pathology	2	1.0%
Pathology	4	2.1%
Physical medicine and rehabilitation	3	1.5%

Overall Social Anxiety (SIAS) Scores and Prevalence

The SIAS scores among participants ranged from 0 to 78, with a mean score of 26.2 ± 24.7 (Table 2). Based on a cutoff score of 36, a total of 63 participants (32.1%) were found to have significant social anxiety, compared to 133 (67.9%) without. Social anxiety was more prevalent among females (34.3%) than males (29.9%), although this difference was not statistically significant ($P = 0.505$).

Table 2 Social Interaction Anxiety Scale (SIAS) Score by Different Specialties Among Study Participants

Specialty	SIAS	
	Mean	SD
Pathology	74.5	3.0
Anesthesiology	66.8	9.3
Radiation oncology	65.0	12.1
Diagnostic radiology	64.9	9.0
Physical medicine and rehabilitation	63.0	5.6
Critical care medicine	58.5	17.6
Forensic medicine	51.5	3.5
Dermatology	47.2	17.3
Preventive medicine	42.0	15.9
Anatomic pathology	34.0	35.4
Family medicine	33.0	19.5
Neurology	29.6	14.0
Psychiatry	26.2	15.9
Emergency medicine	20.7	27.2
Internal medicine	16.4	19.6

(Continued)

Table 2 (Continued).

Pediatrics	14.2	10.5
Urology	10.3	5.6
Ophthalmology	9.8	4.7
General surgery	9.0	7.7
Orthopedic surgery	8.3	6.3
Neurosurgery	8.2	9.1
Otorhinolaryngology, head and neck surgery	6.8	7.1
Plastic and reconstructive surgery	6.2	3.0
Cardiac surgery	4.7	1.5
Obstetrics and gynecology	4.5	3.7
Pediatric surgery	2.5	0.7

Detailed SIAS item responses revealed that 63.8% of respondents had difficulty talking to attractive persons of the opposite sex (Figure 1). High levels of social discomfort were also reported for disagreeing with others (61.2%), speaking about themselves (58.2%), being alone with just one person (57.7%), mixing socially (56.6%), speaking to authority figures (56.6%), and making eye contact (56.1%). On the other hand, the least reported symptoms included worry about appearing awkward (45.9%) and feeling tense when meeting acquaintances on the street (45.4%).

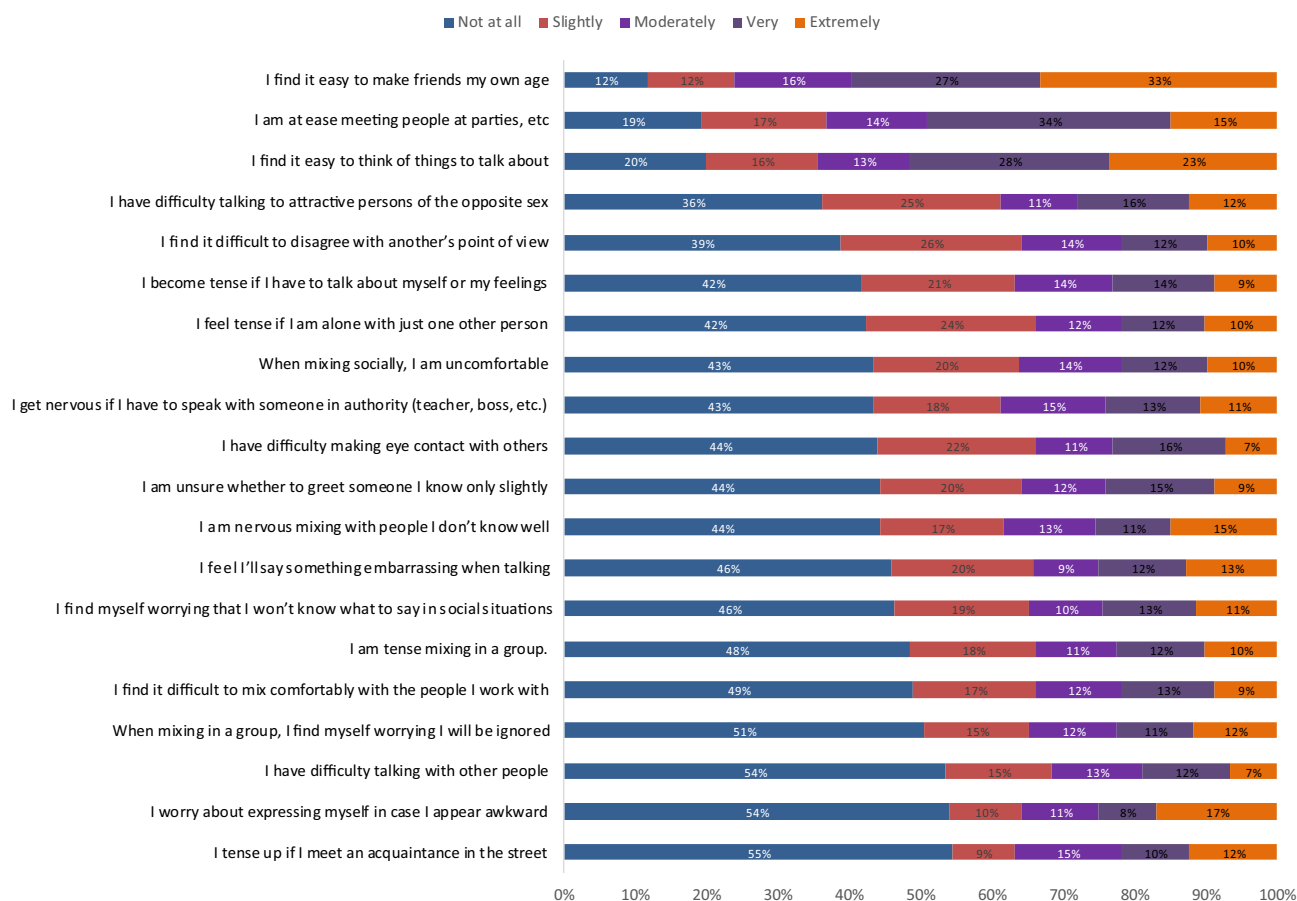


Figure 1 Distribution of responses to the Social Interaction Anxiety Scale (SIAS) among medical interns and residents in Saudi Arabia (n = 196). Each item reflects a specific aspect of social anxiety, with responses distributed across five levels: Not at all, Slightly, Moderately, Very, and Extremely characteristic or true of the respondent. The items are listed in descending order based on the percentage of participants selecting "Very" or "Extremely" characteristic, highlighting the most prominent social anxiety traits. Adapted from Behaviour Research and Therapy, volume 36 (4), Mattick RP, Clarke JC. Development and validation of measures of social phobia scrutiny fear and social interaction anxiety. Editor's note: This article was written before the development of some contemporary measures of social phobia, such as the Social Phobia and Anxiety Inventory (Turner et al., 1989). We have invited this article for publication because of the growing interest in the scales described therein. S.T., Pages 455-470, copyright 1998, with permission from Elsevier.²²

Despite the presence of anxiety indicators, many participants also reported ease in social interactions: 88.3% found it easy to make friends their own age, and 80.6% felt at ease in settings like parties.

Fear Impacting Specialty Choice

A total of 47 participants (24%) reported that fear of social settings or confrontation influenced their choice of medical specialty, while 76% stated it did not. Among those who reported such fear, 78.7% were identified as having social anxiety compared to 17.4% of those who did not report fear as an influencing factor ($P=0.001$).

Preferred Specialties and Anxiety Scores

The most preferred specialties were surgical subspecialties (31.1%)—notably ophthalmology (5.6%) and orthopedic surgery (5.6%)—followed by medical subspecialties (19.9%) such as neurology, preventive medicine, and urology (each 3.6%). Other preferences included psychiatry (12.8%), general surgery (6.6%), and paramedical specialties (4.6).

When stratifying SIAS scores by specialty, the highest mean anxiety scores were found among those preferring pathology (74.5), anesthesiology (66.8), radiation oncology (65.0), diagnostic radiology (64.9), and physical medicine and rehabilitation (63.0). The lowest SIAS scores were reported among those preferring pediatric surgery (2.5), obstetrics and gynecology (4.5), cardiac surgery (4.7), and plastic/reconstructive surgery (6.2).

Statistical Associations with Demographics and Specialty

Social anxiety was significantly higher among interns (59.4%) compared to residents (33.3% for R1 and 35.1% for R2), with no cases among R5 residents ($P=0.001$) (Table 3). Fear-related specialty choice was significantly more common among paramedical (88.9%), radiology (69.2%), and ER/critical care (56.5%) specialties ($P=0.001$), whereas no fear-based decision-making was reported among general surgery trainees. Similarly, 46.9% of interns acknowledged fear affecting their specialty choice versus none of the R5 residents ($P=0.008$). A strong statistical association was found between social anxiety presence and both training level and preferred specialty ($P=0.001$) (Table 4).

Table 3 Distribution of Social Anxiety Among Study Residents and Interns, Saudi Arabia

Factors	Social Anxiety				p-value
	No Social Anxiety		Social Anxiety		
	No	%	No	%	
Gender					0.505
Male	68	70.1%	29	29.9%	
Female	65	65.7%	34	34.3%	
Current position					0.001* ^A
Intern	13	40.6%	19	59.4%	
R1	24	66.7%	12	33.3%	
R2	37	64.9%	20	35.1%	
R3	40	80.0%	10	20.0%	
R4	13	86.7%	2	13.3%	
R5	6	100.0%	0	0.0%	
Did the fear of being in a social setting or the fear of confronting people influence the choice of your medical specialty?					0.001*
Yes	10	21.3%	37	78.7%	
No	123	82.6%	26	17.4%	

(Continued)

Table 3 (Continued).

Factors	Social Anxiety				p-value
	No Social Anxiety		Social Anxiety		
	No	%	No	%	
Specialty / Preferred specialty					0.001**
ER /critical care / anesthesia	6	26.1%	17	73.9%	
General surgery	13	100.0%	0	0.0%	
Internal medicine	12	92.3%	1	7.7%	
Medical subspecialty	22	56.4%	17	43.6%	
Paramedical	1	11.1%	8	88.9%	
Psychiatry	18	72.0%	7	28.0%	
Radiology	0	0.0%	13	100.0%	
Surgical subspecialty	61	100.0%	0	0.0%	

Notes: P: Pearson χ^2 test ^: Exact probability test * P < 0.05 (significant).

Table 4 Distribution of Fear of Social Contacts Among Study Residents and Interns, Saudi Arabia

Factors	Fear of Being in a Social Setting or the Fear of Confronting People Influence the Choice of Medical Specialty				p-value
	Yes		No		
	No	%	No	%	
Gender					0.804
Male	24	24.7%	73	75.3%	
Female	23	23.2%	76	76.8%	
Specialty / Preferred specialty					0.001*^A
ER /critical care / anesthesia	13	56.5%	10	43.5%	
General surgery	1	7.7%	12	92.3%	
Internal medicine	2	15.4%	11	84.6%	
Medical subspecialty	5	12.8%	34	87.2%	
Paramedical	8	88.9%	1	11.1%	
Psychiatry	8	32.0%	17	68.0%	
Radiology	9	69.2%	4	30.8%	
Surgical subspecialty	1	1.6%	60	98.4%	
Current position					0.008*^A
Intern	15	46.9%	17	53.1%	
R1	10	27.8%	26	72.2%	
R2	13	22.8%	44	77.2%	
R3	6	12.0%	44	88.0%	
R4	3	20.0%	12	80.0%	
R5	0	0.0%	6	100.0%	

Notes: P: Pearson χ^2 test ^: Exact probability test * P < 0.05 (significant).

Discussion

Medical expenses and care quality are significantly impacted by the structure of the physician labor market. Public health and patient satisfaction with medical care are both impacted by the market structure. A speciality imbalance can result in a variety of issues. According to Chang et al,²³ the reluctance of young physicians to select some specialties due to their social fear results in a shortage of workers in certain fields, ages the physician population, creates a skills gap in medicine, hinders experience transfer, and degrades the standard of treatment.²⁴

The current study aimed to investigate the effect of social anxiety disorder on the specialty's choice among residents and interns in Saudi Arabia. The study showed that the most preferred included surgical subspecialties, followed by medical subspecialties, psychiatry, General surgery, and Paramedical specialties. This indicates high preference for popular specialties which needs direct contact with patients and communications skills mainly with critical cases and dealing with emergency decisions.

Regarding participants' speciality preference considering fear of being in a social setting or the fear of confronting people was reported among only one-fourth of the participants and this explains high preference rate for popular specialties. This was more confirmed by that about one-third of the participants had significant criteria of social anxiety.

Difficulty talking to attractive persons of the opposite sex, difficulty to disagree with another's point of view, being tense if have to talk about themselves or their feelings, feeling tense if being alone with just one other person, being uncomfortable when mixing socially, get nervous if they have to speak with someone in authority with other factors were reported by more than half of the participants. On the other hand, the vast majority find it easy to make friends my own age and at ease meeting people at parties. This estimated social anxiety disorder was higher than what reported among Saudi adults (13%).²⁵ Another study assessed higher level among Saudi adolescent school boys (48.9%).²⁶ A study by Al-Hazmi BH et al,²⁷ in Taibah university showed that 13.5% of medical residents had social anxiety disorder. Another study from Saudi Arabia found sever SAD among 19.1% and very severe SAD among 19.8% of medical students.¹⁷ A much higher prevalence was reported by Salina M et al,²⁸ where 56% of the medical students scored high on Social Phobia Inventory.

While our findings suggest a significant association between higher social anxiety scores and preference for specialties involving less interpersonal interaction, it is important to recognize that other contributing factors were not explored in this study. For example, lifestyle considerations such as fewer night shifts, better work-life balance, and lower competition for admission into certain specialties—particularly radiology, pathology, and anesthesiology—may also influence specialty choice.²⁹ Prior studies from Arab countries have reported that many medical students prioritize controllable lifestyles and predictable schedules over specialty prestige or intensity.^{30,31} A study in the United Arab Emirates found that lifestyle and working conditions significantly impacted specialty preference, especially among female students.³² Similarly, a study from Jordan emphasized the role of personal well-being and perceived stress in career decision-making.³³

These findings suggest that while social anxiety may shape avoidance of highly interactive specialties, it is likely part of a multifactorial decision-making process. Future studies in the region should incorporate a wider range of psychosocial and lifestyle-related variables to better understand how personal and systemic factors converge in specialty selection.

Fear of social contacts and social anxiety were significantly higher among students who preferred paramedical specialties, radiology and ER /critical care / anesthesia where all of these specialties made them avoid direct contact with patients. Others with low social anxiety or fear of social contacts selected more popular specialties such as surgery and medicine which needs direct contact with cases and rapid decision making. This was consistent with many other research findings. A study conducted by Bartnick LW et al,³⁴ stated that medical students who selected a specialty with little interaction with patients such as (pathology, radiology, research, and pharmacology) are below the average of students who selected other specialties regarding their belief about themselves (self- concepts) and self-confidence and social skills (eg: poise). Also, Eron LD,³⁵ documented that those students choosing internal medicine, pediatric, and surgery had lower scores on an anxiety scale than students choosing psychiatry. Also, Eron noticed that students who chose surgery had less anxiety, but they were more cynical than students who chose other specialties. Another survey found that students who chose surgery preferred active participation as a method for education rather than the standard classroom style indicating that they had more self-esteem and less anxiety.³⁶ On the other hand, Onady AA et al,⁴ found that the selection of the least stressful specializations and high stress levels did not significantly correlate. Despite stating that stress was undesirable, several students still selected high-stress fields of study. The results of similar studies are contrasted with the findings, and the implications of these discoveries are examined.

Strengths of the Study

One of the key strengths of this study lies in its focus on the intersection between social anxiety disorder and specialty choice within the unique sociocultural and educational context of Saudi Arabia. While similar studies have been conducted in Western countries, there is a lack of research that examines how SAD may shape career decisions among medical trainees in the Gulf region. By examining this relationship in Saudi Arabia— where cultural values,

gender roles, and hierarchical training structures may intensify social anxiety—we provide novel insights that have not been well-addressed in previous literature. The study highlights how preferences for less patient-facing specialties such as radiology, pathology, and anesthesiology may be influenced by these factors, and it sets the stage for further region-specific research and targeted interventions in medical education planning.

Limitations of the Study

This study has several limitations that should be considered when interpreting the findings. First, due to its cross-sectional design, causal relationships between social anxiety disorder (SAD) and specialty choice cannot be established. The associations observed in this study reflect correlations only and may be influenced by unmeasured confounding variables. Second, although we employed a stratified random sampling method, the response rate was approximately 43.6%, which may introduce response bias. Participants who chose to respond might differ systematically in their levels of anxiety or attitudes toward specialty selection compared to those who did not participate. Third, the study relied on self-reported data, including responses to the Social Interaction Anxiety Scale (SIAS), which are subject to recall and social desirability biases. Participants may underreport or overreport their anxiety levels, which could affect prevalence estimates and associations. Fourth, while bivariate statistical analyses were used to explore relationships between SAD and specialty preference, multivariate regression was not conducted to adjust for potential confounders such as gender, training level, or clinical exposure. This limits our ability to assess the independent effect of SAD on specialty choice. We recommend that future studies employ multivariable modeling approaches to account for such confounding factors. Finally, the relatively short data collection period may have limited the inclusion of trainees who were on leave or rotating in other departments. Despite this, the sample included a wide range of residents and interns from multiple institutions across Saudi Arabia, enhancing the generalizability of the findings within this context.

Data Sharing Statement

Data for this paper is available from the corresponding author upon reasonable request.

Author Contributions

All authors made a significant contribution to the work reported, whether that is in the conception, study design, execution, acquisition of data, analysis and interpretation, or in all these areas; took part in drafting, revising or critically reviewing the article; gave final approval of the version to be published; have agreed on the journal to which the article has been submitted; and agree to be accountable for all aspects of the work.

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