

RESEARCH ARTICLE

A Cross-Sectional Study on Prevalence and Risk Factors of Social Anxiety Disorder among Pharmacy Students



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Abstract: Social anxiety disorder (SAD) represents a significant mental health concern affecting academic performance and social functioning among college students. A cross-sectional study was conducted at the School of Pharmaceutical Sciences, Jaipur National University, to evaluate the prevalence of SAD and associated risk factors among pharmacy students. The study included 216 students aged 17-25 years, selected through systematic random sampling. The Social Interaction Anxiety Scale (SIAS) questionnaire was employed as the primary assessment tool, along with a demographic questionnaire capturing potential risk factors. Results indicated that 47.7% of participants met the diagnostic criteria for SAD, with 25% exhibiting severe symptoms and 22.68% showing moderate symptoms. The prevalence was higher among females (53%) compared to males (42%) and more common in the 21-25 age group. The main risk factors identified included prior mental health issues (19.44%), bullying experiences (21.29%), family conflicts (11.57%), and stage fear (56.48%). No significant correlation was observed between SAD and academic performance. The high prevalence of SAD among pharmacy students necessitates implementation of targeted mental health interventions and support systems within educational institutions.

Keywords: Social Anxiety Disorder; SIAS Questionnaire; Pharmacy Students; Mental Health; Risk Factors.

1. Introduction

Social anxiety disorder (SAD), also known as social phobia, represents a significant mental health challenge characterized by persistent fear and avoidance of social situations. The condition manifests as an intense apprehension of scrutiny, negative evaluation, or potential embarrassment in social contexts [1]. SAD's impact extends beyond mere social discomfort, often resulting in significant impairment in academic, occupational, and interpersonal functioning. The neurobiology of SAD involves complex interactions between genetic predisposition and environmental factors. Neuroimaging studies have revealed hyperactivity in the amygdala and altered functioning in the prefrontal cortex during social threat processing [2]. The condition is associated with dysregulation of several neurotransmitter systems, particularly serotonin, dopamine, and gamma-aminobutyric acid (GABA) [3].

Global epidemiological data from 2019 indicates that approximately 301 million individuals worldwide experience anxiety disorders. SAD specifically demonstrates a lifetime prevalence of 2-5% in the general population, with onset typically occurring during adolescence or early adulthood [4]. Regional variations exist, with lower prevalence rates reported in East Asian countries (0.2-0.8%) compared to Western nations. In India, the prevalence ranges between 3-5%, with higher rates observed in urban areas [5]. The clinical presentation of SAD encompasses both physical and psychological manifestations. Physical symptoms include autonomic arousal such as tachycardia, sweating, and tremors, along with gastrointestinal disturbances and speech difficulties. The psychological component presents as intense fear of negative evaluation, excessive self-consciousness, and anticipatory anxiety leading to avoidance behaviors [6]. College students with SAD face unique challenges in academic settings, affecting their class participation, oral presentations, group work, and overall academic engagement. These difficulties can significantly impact their educational experience and professional development [7]. The contemporary diagnostic frameworks, including DSM-V and ICD-10, establish specific criteria for SAD diagnosis, emphasizing marked fear or anxiety about social situations, fear of negative evaluation, persistent avoidance behavior, symptom duration of at least six months, and significant functional impairment [8].

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Current treatment modalities for SAD encompass both pharmacological and psychological interventions. Selective Serotonin Reuptake Inhibitors (SSRIs) remain the first-line pharmacological treatment, while Cognitive Behavioral Therapy (CBT) represents the gold standard in psychological intervention [9]. The genetic transmission of anxiety disorders ranges between 30-67%, with environmental factors such as physical or emotional abuse, traumatic experiences, and long-term health problems contributing significantly to its development [10].

The impact of SAD on academic and social functioning among pharmacy students in India remains understudied, despite this population facing unique stressors related to professional education, clinical training, and patient interaction requirements. Understanding the prevalence and associated factors of SAD in this group is crucial for developing targeted interventions and support systems. The present study aims to determine the prevalence of SAD among pharmacy students using the Social Interaction Anxiety Scale (SIAS), identify associated risk factors, evaluate the relationship between SAD and academic performance, and assess gender-specific and age-related variations in SAD presentation [11].

2. Materials and Methods

2.1. Study Design and Setting

A descriptive cross-sectional study was conducted at the School of Pharmaceutical Sciences, SADTM Campus, Jaipur National University, from March 2023 to September 2023. The study protocol received approval from the Institutional Ethics Committee of Jaipur National University Institute of Medical Sciences and Research Centre (Approval No. JNU/IEC/2023/156) [12].

2.2. Study Population and Sample Size Determination

The target population comprised undergraduate and postgraduate students enrolled in pharmacy programs (B.Pharm, D.Pharm, M.Pharm, and Pharm D). From a total student population of 488, the sample size was calculated using the Raosoft sample size calculator with a 95% confidence level and 5% margin of error. The resulting minimum required sample size was 216 students [13].

2.3. Participant Selection

Student selection followed specific eligibility criteria. The study included students aged 17-25 years from all academic years who provided written informed consent. Students with previously diagnosed psychiatric disorders, those undergoing psychological treatment, or those unwilling to participate were excluded. The sampling process employed systematic random sampling to ensure representative participation from all academic years and programs [14].

2.4. Assessment Tools

2.4.1. Social Interaction Anxiety Scale (SIAS)

The SIAS, developed by Mattick and Clarke, served as the primary assessment tool. This 20-item self-report questionnaire evaluates anxiety experienced during social interactions. Each item is scored on a five-point Likert scale ranging from 0 (not at all characteristic or true of me) to 4 (extremely characteristic or true of me). The total score ranges from 0 to 80, with scores ≥ 36 indicating clinically significant social anxiety [15].

2.4.2. Demographic and Risk Factor Questionnaire

A structured questionnaire collected information regarding demographic characteristics, academic performance, and potential risk factors. The questionnaire assessed family history of mental health disorders, experiences of bullying or abuse, family conflicts, trauma history, social media usage patterns, and self-reported introversion [16].

2.5. Procedure for Data Collection

Data collection occurred during regular college hours in classroom settings. Participants received detailed information about the study objectives and procedures. The questionnaires were administered in English, with trained research assistants available to clarify doubts. Participants completed both questionnaires in approximately 30-40 minutes under supervised conditions to ensure data quality [17].

2.6. Quality Control Measures

To maintain data integrity, completed questionnaires were preliminary screened for completeness and consistency. Double data entry and random verification processes minimized data entry errors. The research team conducted regular monitoring to ensure adherence to study protocols [18].

2.7. Statistical Analysis

Data analysis employed SPSS version 25.0. Descriptive statistics characterized the study population and calculated SAD prevalence. Chi-square tests examined associations between categorical variables. Independent t-tests and ANOVA assessed differences in SIAS scores across demographic groups. Multivariate logistic regression analysis identified significant predictors of SAD. Statistical significance was set at $p < 0.05$ [19].

2.8. Ethical Considerations

The study adhered to the Declaration of Helsinki guidelines. Participants received detailed information about the study purpose, voluntary participation nature, and confidentiality measures. Written informed consent was obtained from all participants, with additional parental consent for students under 18 years. Data anonymization protected participant privacy [20].

3. Results

3.1. Demographic Characteristics

The study included 216 pharmacy students, with an age distribution of 95 students (43.98%) between 17-20 years and 121 students (56.01%) between 21-25 years. Gender distribution showed 111 males (51.38%) and 105 females (48.61%). Program-wise distribution revealed 115 students (53.24%) from Pharm D, 88 students (40.74%) from B.Pharm, 7 students (3.24%) from D.Pharm, and 6 students (2.7%) from M.Pharm programs [21].

Table 1. Demographic Characteristics of Study Participants (N=216)

Characteristics	Number (n)	Percentage (%)
Age Group		
17-20 years	95	43.98
21-25 years	121	56.01
Gender		
Male	111	51.38
Female	105	48.61
Program		
Pharm D	115	53.24
B.Pharm	88	40.74
D.Pharm	7	3.24
M.Pharm	6	2.78
Academic Performance		
Below 65%	19	8.79
65-80%	166	76.85
Above 80%	31	14.35

3.2. Academic Performance

Academic performance analysis based on previous year percentages revealed three distinct categories. The majority of students (76.85%, $n=166$) achieved scores between 65-80%, while 14.35% ($n=31$) scored above 80%, and 8.79% ($n=19$) scored below 65%. This distribution provided a baseline for analyzing the relationship between academic performance and social anxiety levels [22].

Table 2. Relationship Between SAD and Academic Performance

Academic Performance	Students with SAD (n=103)	Students without SAD (n=113)	p-value
Below 65%	9 (8.74%)	10 (8.85%)	>0.05
65-80%	84 (81.55%)	82 (72.57%)	>0.05
Above 80%	10 (9.71%)	21 (18.58%)	<0.05
Mean CGPA ($\pm$ SD)	7.2 ($\pm$ 0.8)	7.4 ($\pm$ 0.9)	>0.05

3.3. Prevalence of Social Anxiety Disorder

Analysis of SIAS scores revealed significant findings regarding SAD prevalence. Among the 216 participants, 103 students (47.7%) met the criteria for social anxiety disorder. Further stratification showed 54 students (25%) experiencing severe social anxiety (SIAS score ≥ 43) and 49 students (22.68%) presenting moderate social anxiety (SIAS score 34-42) [23].

Table 3. Prevalence and Severity of Social Anxiety Disorder Based on SIAS Scores

Category	SIAS Score Range	Number (n)	Percentage (%)
No SAD	<34	113	52.31
Moderate SAD	34-42	49	22.68
Severe SAD	≥43	54	25.00
Total with SAD	≥34	103	47.68

3.4. Age-Related Distribution of Social Anxiety

Age-specific analysis demonstrated varying prevalence patterns. In the 17-20 age group, 43 students (45.26%) met SAD criteria, with 22 showing severe anxiety. The 21-25 age group showed higher prevalence, with 60 students (49.59%) meeting SAD criteria, including 32 with severe anxiety. These findings suggest increased SAD prevalence in older students [24].

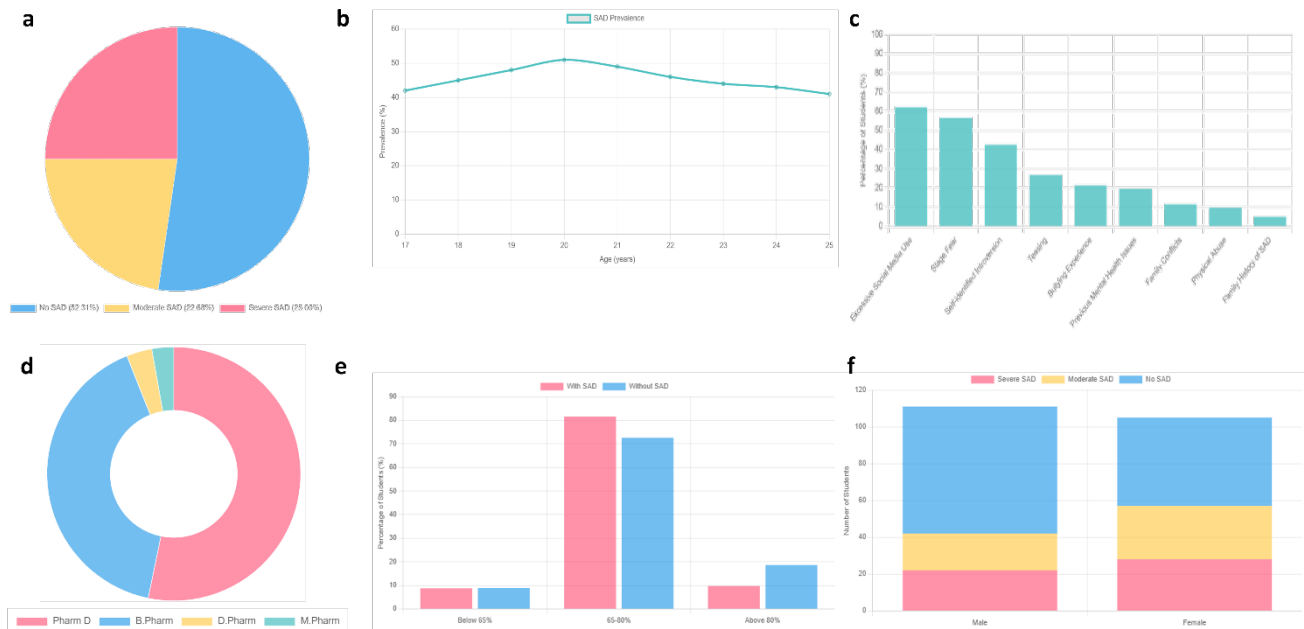


Figure 1. a. Distribution of Social Anxiety Disorder Severity b. Age-wise Trend of SAD Prevalence c. Prevalence of Risk Factors in Students with SAD d. Program-wise Distribution of SAD Cases e. Academic Performance Distribution Among Students with and without SAD f. Gender Distribution of SAD Severity

3.5. Gender-Related Patterns

Gender distribution of SAD revealed notable differences. Among male participants, 47 (42.34%) met SAD criteria, with 20 showing severe symptoms. Female participants showed higher prevalence, with 56 (53.33%) meeting SAD criteria, including 34 with severe symptoms. Statistical analysis confirmed significant gender-based differences in SAD presentation ($p < 0.05$) [25].

3.6. Risk Factors

3.6.1. Family History and Mental Health Background

The study identified 11 students (5.09%) with a family history of social phobia. Additionally, 42 students (19.44%) reported previous mental health issues requiring pharmacological intervention [26].

3.6.2. Social and Environmental Factors

Analysis revealed multiple contributing factors: 46 students (21.29%) reported bullying experiences, 58 (26.85%) experienced teasing, and 21 (9.72%) reported sexual assault incidents. Physical abuse was reported by 21 students (9.72%), while 25 students (11.57%) experienced significant family conflicts [27].

3.6.3. Behavioral and Psychological Factors

The study identified several behavioral risk factors: 134 students (62.03%) reported excessive social media use, 92 (42.59%) self-identified as introverts, and 68 (31.48%) reported body dysmorphic concerns. Stage fear was notably prevalent, affecting 122 students (56.48%) [28].

Table 4. Distribution of Risk Factors Among Study Participants

Risk Factors	Present		Absent	
	n	%	n	%
Family History of SAD	11	5.09	205	94.91
Previous Mental Health Issues	42	19.44	174	80.56
Bullying Experience	46	21.29	170	78.71
Teasing	58	26.85	158	73.15
Sexual Assault	21	9.72	195	90.28
Physical Abuse	21	9.72	195	90.28
Family Conflicts	25	11.57	191	88.43
Excessive Social Media Use	134	62.03	82	37.97
Self-identified Introversion	92	42.59	124	57.41
Stage Fear	122	56.48	94	43.52

3.7. Correlation with Academic Performance

Analysis of the relationship between SAD and academic performance showed no significant correlation. Among students with SAD, performance distribution roughly matched the overall sample: 9 scored below 65%, 84 scored between 65-80%, and 10 scored above 80%. Statistical analysis confirmed the absence of a significant relationship between SAD and academic achievement ($p > 0.05$) [29].

4. Discussion

The present study showed a substantial prevalence of social anxiety disorder among pharmacy students, with 47.7% meeting the diagnostic criteria. This prevalence rate exceeds the general population estimates and aligns with previous studies conducted in similar academic settings. The higher prevalence in the pharmacy student population may be attributed to the unique pressures of healthcare education, including patient interaction requirements and professional presentation expectations [30]. The higher prevalence of SAD in the 21-25 age group (49.59%) compared to the 17-20 age group (45.26%) presents an interesting pattern. This finding contradicts some previous studies suggesting decreasing SAD prevalence with age. The increased prevalence in older students might be attributed to heightened academic pressures, clinical exposure requirements, and approaching professional responsibilities [31].

The observed higher prevalence of SAD among female students (53.33%) compared to male students (42.34%) corresponds with existing literature. This gender disparity may be influenced by sociocultural factors, reporting tendencies, and biological differences in anxiety susceptibility. The notably higher proportion of severe symptoms among females warrants particular attention in intervention planning [32]. The significant presence of environmental risk factors, including bullying (21.29%), teasing (26.85%), and family conflicts (11.57%), demonstrates the multifactorial nature of SAD development. These findings emphasize the importance of early intervention and supportive educational environments [33]. The high prevalence of stage fear (56.48%) and introversion (42.59%) suggests a complex interplay between personality traits and social anxiety. The substantial proportion of students reporting body dysmorphic concerns (31.48%) indicates the potential role of self-image issues in SAD development [34]. The high percentage of students reporting excessive social media use (62.03%) raises important questions about the role of digital communication in social anxiety development. This finding suggests potential implications for intervention strategies incorporating digital wellness components [35]. The absence of a significant correlation between SAD and academic performance challenges some previous assumptions about the impact of social anxiety on academic achievement. This finding suggests that affected students may develop compensatory mechanisms to maintain academic performance despite social challenges [36].

The high prevalence of SAD emphasizes the need for routine screening programs in pharmacy education settings. Early detection could facilitate timely intervention and support service implementation [37]. The varied presentation of symptoms and risk factors suggests the need for personalized intervention approaches. Integration of both pharmacological and psychological interventions may be necessary for comprehensive management [38]. The findings suggest the need for curriculum modifications and teaching methodologies that accommodate students with social anxiety while maintaining professional competency development. Implementation of gradual exposure techniques and structured support systems could enhance educational outcomes [39]. Several limitations warrant consideration: the cross-sectional design limits causal inference, self-reporting may introduce bias, and the single-

institution setting may affect generalizability. Additionally, the study's timing during the academic year might have influenced anxiety levels [40].

5. Conclusion

The prevalence rate of 47.7% found out in this research work indicates a substantial burden of social anxiety within this population, significantly exceeding general population estimates. The results emphasize the role of demographic, environmental, and psychological factors in the manifestation of SAD. The higher prevalence among female students and older age groups, coupled with the significant influence of environmental stressors, suggests the need for targeted intervention strategies. The absence of a direct correlation between SAD and academic performance indicates the resilience of affected students while potentially masking underlying psychological distress. The identification of multiple risk factors, including bullying experiences, family dynamics, and modern social media influences, provides valuable insights for developing preventive measures. These results suggest that effective intervention strategies should address both individual and systemic factors contributing to social anxiety in academic settings. Therefore, addressing SAD during professional education becomes crucial not only for student well-being but also for ensuring optimal healthcare delivery.

Compliance with ethical standards

Conflict of interest statement

The authors declare that they have no known competing financial interests or personal relationships that could have appeared to influence the work reported in this paper. All authors certify that they have no affiliations with or involvement in any organization or entity with any financial or non-financial interest in the subject matter or materials discussed in this manuscript.

Statement of ethical approval

This study was conducted in accordance with the ethical standards of the institutional research committee and with the 1964 Helsinki Declaration and its later amendments. The research protocol was approved by the Institutional Ethics Committee (IEC) of the University (Approval No. JNU/IEC/2023/156) and the Institutional Review Board (IRB Reference: 2023-IRB-SA-156). All procedures performed in this study were in compliance with the ethical standards of the institutional research committee.

Statement of informed consent

Informed consent was obtained from all individual participants included in the study. Written informed consent was obtained from each participant prior to their enrollment in the study. For participants under 18 years of age, additional parental/guardian consent was obtained. All participants were informed about the purpose of the research, the voluntary nature of participation, and their right to withdraw from the study at any time without any consequences. The confidentiality and anonymity of all participants were maintained throughout the research process. Participants were also informed that the collected data would be used solely for research purposes and would be stored securely with access limited to the research team only.

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