

Association of social anxiety disorder with depression and quality of life among medical undergraduate students

Imran Jahangirali Ratnani¹, Ashok Ukabhai Vala¹,
Bharat Navinchandra Panchal¹, Deepak Sachchidanand Tiwari²,
Smruti S. Karambelkar¹, Milankumar G. Sojitra¹, Nidhi N. Nagori¹

¹Department of Psychiatry, Government Medical College and Sir Takhtasinhji General Hospital, Bhavnagar, ²Department of Psychiatry, M. P. Shah Government Medical College, Guru Gobind Singh Government Hospital, Jamnagar, Gujarat, India

ABSTRACT

Objective: Social anxiety disorder (SAD), (also known as social phobia), is characterized by intense fear of social interaction and often associated with social avoidance and impairments. There is high risk for depression, substance use disorder, and suicide among them. **Subjects and Methods:** It is an observational, cross-sectional, single centered, questionnaire-based study assessing the frequency of SAD and depression and their possible association with quality of life among 290 consenting medical undergraduate students. Social Phobia Inventory (SPIN), Beck's Depression Inventory (BDI II), and the World Health Organization Quality of Life assessment scale (WHOQOL-BREF) were used to screen and assess severity of SAD, depression, and quality of life, respectively. The statistical analysis of proportions was done by Chi-square test, while the scores of SPIN, BDI II, and WHOQOL-BREF was compared using Mann-Whitney test or Kruskal-Wallis test followed by Dunn posttest multiple comparison, using GraphPad InStat version 3.06. **Results:** Frequency of SAD is 11.37%, and depression is 8.96%. Females are more likely to experience SAD. Participants with SAD are more likely to experience depression ($P < 0.0001$) and have poor quality of life ($P = 0.01$). Participants with depression have higher SPIN score ($P < 0.0001$) and poor quality of life ($P < 0.0001$). Females are more likely to experience social fear ($P = 0.02$). Participants staying away from their family are more likely to experience social anxiety in comparison to their peers ($P = 0.01$). Severity of depression is correlated with severity of social anxiety (Spearman $r = 0.4423$ [0.3416-0.5329], $P < 0.0001$). **Conclusion:** Participants with SAD are more likely to experience depressive symptoms and have poor quality of life and vice versa.

Keywords: Depression, quality of life, social phobia

Introduction

Anxiety disorders are the associated with excessive fear, nervousness, apprehension, and related behavioral disturbances.^[1] Social anxiety disorder (SAD), (also known as social phobia), involves fear and anxiety about the social interaction and often associated with avoidant behavior.^[1]

Address for correspondence: Dr. Imran Jahangirali Ratnani, Room No. 133, Department of Psychiatry, Government Medical College and Sir Takhtasinhji General Hospital, Bhavnagar, Gujarat, India.

E-mail: drijratnani@gmail.com

SAD is a chronic disorder significantly affecting the lifestyle of the individuals, often prevents the individual from available opportunities and makes the person disable at work and social life.^[2-4] Children and adolescent with SAD experience significant distress and impairment in study and social relationships, while adults with SAD are more likely to experience lower education attainment, lower wages or unemployment, and poor quality of relationships with family and partner.^[5-8] Persons with SAD have frequent comorbid psychiatric disorders such as depression, substance use disorders and are at increased risk of suicide.^[9-11]

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As SAD have onset at early age and long duration of illness, untreated individuals are likely to suffer for a long time.^[12]

In primary care setting, anxiety disorders and depression are highly prevalent and are associated with reduced level of functioning.^[13] Although family physician is a first medical contact point for patients suffering from psychiatric illness,^[14] mental health problems are poorly recognized and treated at primary care setting because of time constraints and limited training in identification and management of mental health issues.^[15] There are studies showing evidence that timely identification and treatment of mental health problem by trained family physician at primary care setting can significantly improve mental health outcome.^[16,17] As SAD have chronic course of illness, presenting with various psychiatric comorbidities such as depression, substance use disorder, and increased risk of suicide and may have various lifelong consequences in individual's social and personal life.^[3,4,9-11] The presence of atypical depression with SAD associated with severe symptoms, suicide attempts, bipolarity, and impaired functioning in comparison to patients with nonatypical depression.^[18] It is important for a primary care physician to screen the patients of SAD, associated comorbidities for better treatment and prognosis.

The prevalence of SAD varied from 2% to 16% in various studies, and SAD is much more prevalent in the general population in comparison to the primary healthcare setting.^[19] The prevalence of SAD is less studied in the Eastern societies and reported very less 0.4%–0.6% in Southeast Asian countries such as Taiwan and Korea,^[20] while it was 12.8% among the Indian high school adolescence.^[21]

A recent Australian study found lifetime prevalence of SAD as 8.4%, and 12-month prevalence is 4.2%.^[22] Although 70% of patients of SAD experienced comorbid mental health problems in their study, 20% of them reported social anxiety as their primary concern for treatment seeking, and most commonly through general practitioner.^[22]

SAD is one of the most common psychiatric illnesses, which contributes significantly for functional status and quality of life. There are fewer studies in the Eastern countries assessing the frequency of SAD and its association with other psychiatric comorbidity and quality of life;^[23] we have evaluated the frequency of SAD and comorbid depression, and their association with quality of life, among the undergraduate students of the medical school.

Subjects and Methods

It is a single center, questionnaire-based, observational, cross-sectional study for assessing association of SAD with comorbid depression and quality of life among medical undergraduate students. The study was started after prior approval from Local Ethics Committee. Totally, 290 participants of both genders, studying undergraduate

medical course, Bachelor of Medicine and Bachelor of Surgery, at Government Medical College, Bhavnagar, Gujarat, India, willing to give written informed consent, were recruited for the study, between April and June 2013. The consenting participants were instructed to fill up their demographic details, self-administered questionnaire of Social Phobia Inventory (SPIN), and World Health Organization Quality of Life assessment scale (WHOQOL-BREF) in the given performs.

SPIN is a 17-item self-rating screening instrument, to be rated in 0 (not at all) to 4 (extremity) Likert scale, assessing fear and avoidance in variety of social situations. The scale has good ability to distinguish adults with or without social phobia, and has three subscale for avoidant behavior (of talking to strangers, of speaking to people for fear of embarrassment, of going to parties, of being the center of attention, of making speeches, of being criticized, of speaking to authority), physical symptoms (blushing, sweating, palpitations, or shaking and trembling in the front of other people), and social fear (of people in authority, of parties and social events, of being criticized, of talking to strangers, of doing things when people are watching, and of being embarrassed).^[24] Cutoff value of SPIN for SAD was recommended as 24, and 19 for subclinical SAD in earlier study.^[25]

Beck's depression inventory (BDI II) is a self-rating questionnaire with 21 items used as screening tool as well as for assessing severity of depression.^[26] The recommended cutoff value for screening of depression is 13 as the best for balance between sensitivity and specificity.^[27]

WHOQOL-BREF is a 26 item self-rating instrument for assessing the quality of life in physical health, psychological, social relationship, and environmental domains.^[28] Each item rated in 0–5 Likert scale. It is a validated instrument designed to assess the impact of disease on quality of life.

Qualitative data were expressed in proportions, while quantitative data were expressed in mean \pm standard deviation (SD). The statistical analysis of proportions was done by Chi-square test, while the scores of SPIN, BDI II, and WHOQOL-BREF was compared using Mann–Whitney test or Kruskal–Wallis test followed by Dunn posttest multiple comparison using GraphPad InStat version 3.06 (San Diego, California, US). Correlation between BDI II score and SPIN score were analyzed by applying Pearson's coefficient. $P \leq 0.05$ was considered statistically significant.

Sample size calculation:^[29]

$$\text{Sample size} = \frac{Z_{1-\alpha/2}^2 p(1-p)}{d^2}$$

Where $Z_{1-\alpha/2}$ is standard normal variant (at 5% type I error, $P < 0.05$ it is 1.96 and at 1% type I error, $P < 0.01$ it is 2.58. In majority of studies, $P < 0.05$ is considered statistically significant, hence, 1.96 is used in formula.^[29]

P = Expected proportion in population based on previous studies or pilot studies

d = absolute error or precision = to be decided by researcher

There are Indian studies found the prevalence of SAD as 12.8%^[21] and considering precision/absolute error of 5% and type I error of 5% in above formula.

$$\text{Sample size} = \frac{1.96^2 \times 0.128 (1 - 0.128)}{0.05^2} = 172$$

Hence, for this cross-sectional study, we have to take 172 or more samples.

Results

Consenting 290 participants were evaluated for SAD, depression, and quality of life.

A demographic variable of the study population is shown in Table 1. The mean age of the study population is 19 ± 1.1 (mean ± SD). Among 33 participants of social phobia, there were 13 males and twenty females and only one of them had consulted psychiatrist in the past. There were 21.21% participants with SAD had depression.

As mentioned in Table 2, frequency of SAD (SPIN >24) and depression (BDI II >13) is 33 (11.37%) and 26 (8.96%), respectively. Participants with SAD are likely have higher BDI II score (10.48 ± 5.3, 6.24 ± 4.8) (P < 0.0001) and poor quality of life in social relationship domain of WHOQOL-BREF. Participants with depression are likely to have higher SPIN score

in all the domains (social fear 7.73 ± 3.7, 4.34 ± 3.1; avoidant behavior 9.42 ± 3.9, 6.50 ± 4.0; physical symptoms 4.19 ± 2.3, 2.31 ± 2.1) (P < 0.0001) and poor quality of life in all the domains of WHOQOL-BREF (physical health 48.07 ± 13.9, 60.07 ± 8.6; psychological 54.00 ± 15.5, 66.77 ± 9.2; social relationship 59.29 ± 20.5, 76.76 ± 13.8; environmental 59.25 ± 11.9, 72.76 ± 12.2) (P < 0.0001). The odd ratio for depression in patients with SAD is 3.37 (95% confidence interval = 1.29–8.77, $\chi^2 = 5.25$, df = 1).

Table 3 shows that girls have more social fear in comparison to boys (4.20 ± 3.1, 5.00 ± 3.4) (P = 0.02). Participants staying at hostels and away from their family are likely to experience more social anxiety in comparison to their peers (15.52 ± 8.2, 12.14 ± 8.2) (P = 0.01). Participants who received their primary education in English medium schools are likely to experience more social anxiety in comparison to participants who received their primary education in their mother tongue (Gujarati or Hindi) (16.08 ± 7.7, 13.05 ± 8.3) (P = 0.0010).

The correlation between SPIN and BDI II was calculated using Spearman. $r = 0.4423$ (0.3416–0.5329), P < 0.0001 [Figure 1].

Discussion

The main finding of our study is the frequency of SAD as 11.37%, and that of depression is 8.96%, similar finding was reported in Indian adolescence and Iranian population.^[21,23] In consistent with earlier study, SAD is more frequent among women.^[23] Females are more likely to experience social fears in comparison to male, while avoidant and physical symptoms were equal in both genders. This finding is in consistent with prior study that females have higher frequency of social fear than social phobia.^[30]

Table 1: Demographic variables of the study population, arranged as per their current academic year

Variable	First MBBS (n=141)	Second MBBS (n=73)	Third MBBS (n=76)	Test value	P
Age	18.19±0.7	19.26±0.9	20.23±0.6	180.02	<0.0001
Gender (n)					
Male (136)	66	37	33	0.25	0.88
Female (154)	75	46	43		
Residence (n)					
Home (76)	32	16	28	6.03	0.04
Hostel (214)	109	57	48		
Language of primary education (n)				0.41	0.81
English (81)	37	22	22		
Gujarati/Hindi (209)	104	51	54		
History of psychiatric consultation (n)					
Yes (7)	4	0	3	2.67	0.26
No (283)	137	73	73		
Family history of psychiatric consultation (n)					
Yes (10)	2	4	4	3.40	0.18
No (280)	139	69	72		
Family history of suicide (n)					
Yes (6)	2	2	2	0.57	0.75
No (284)	139	71	74		

Values are represented in proportion and mean±SD. P value was calculated by Chi-square test or Kruskal-Wallis test with *post hoc* test Dunn. P<0.05 is considered statistically significant. SD: Standard deviation; MBBS: Bachelor of Medicine and Bachelor of Surgery

Table 2: Association of social anxiety disorder and depression with quality of life

Variable	Social phobia status			Depression status		
	Yes (n=33) SPIN >24	No (n=257) SPIN ≤24	P	Yes (n=26) BDI >13	No (n=264) BDI ≤13	P
SPIN						
Social fear	NA	NA		7.73±3.7	4.34±3.1	<0.0001
Avoidant behavior				9.42±3.9	6.50±4.0	0.0003
Physical symptoms				4.19±2.3	2.31±2.1	0.0002
Total				21.34±8.2	13.16±7.9	<0.0001
BDI	10.48±5.3	6.24±4.8	<0.0001	NA	NA	
WHOQOL-BREF						
Physical health	56.06±10.5	59.38±9.7	0.08	48.07±13.9	60.07±8.6	<0.0001
Psychological	62.12±11.3	66.08±10.4	0.08	54.00±15.5	66.77±9.2	<0.0001
Social relationship	68.18±17.1	76.10±14.9	0.01	59.29±20.5	76.76±13.8	<0.0001
Environmental	67.89±11.8	72.01±12.8	0.08	59.25±11.9	72.76±12.2	<0.0001

Data are represented in mean±SD. All the groups were compared by Mann-Whitney U-test. P<0.05 is considered statistically significant. SPIN: Social Phobia Inventory; BDI: Beck Depression Inventory; WHOQOL-BREF: World Health Organization Quality of Life Assessment Scale; NA: Not available

Table 3: Association of gender, residence and study medium with Social Phobia Inventory score

Variable	Gender			Residence			Study medium of primary education		
	Boy (n=136)	Girl (n=154)	P	Home (n=76)	Hostel (n=214)	P	English	Gujarati/Hindi	P
SPIN									
Social fear	4.20±3.1	5.00±3.4	0.02	4.07±3.1	4.85±3.3	0.08	5.46±3.2	4.33±3.3	0.0027
Avoidant behavior	6.53±4.1	6.97±4.1	0.43	6.05±4.2	7.02±4.1	0.04	7.88±3.9	6.33±4.1	0.0015
Physical symptoms	2.66±2.3	2.32±2.0	0.33	2.01±2.2	2.64±2.1	0.009	2.72±2.2	2.38±2.1	0.28
Total	13.40±8.4	14.33±8.1	0.30	12.14±8.2	14.52±8.2	0.01	16.08±7.7	13.05±8.3	0.0010

Data are represented in mean±SD. All the groups were compared by Mann-Whitney U-test. P<0.05 is considered statistically significant. SD: Standard deviation; SPIN: Social Phobia Inventory

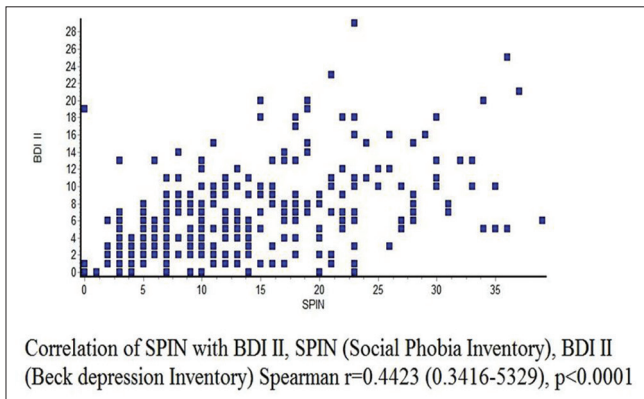


Figure 1: Correlation score of social phobia inventory with Beck Depression Inventory

The participants with SAD are more likely to experience depressive symptoms and have poor quality of life in social domain of WHOQOL-BREF, which include personal relationships, social support, and social relationship.^[28] It was reported earlier that lifetime diagnosis of SAD is associated with dissatisfaction with person’s main activity, family life, friends, leisure activities, and income.^[8] It was reported in the previous study that 69% of the patients of social phobia having associated major comorbid disorders and presence of comorbidity increase the risk for suicidal attempts.^[9] Although uncomplicated social phobia associated with suicidal ideation, financial dependency, distress and impairments, mental health professionals are rarely

consulted for the treatment.^[9] These findings are in consistent with our results.

In consistent with the previous study, social phobia increases likelihood for experiencing depressive symptoms and fear subtype of social phobia is strongly associated with depression.^[8] Major depression (after adjustment with lifetime social phobia) is associated with dissatisfaction and poor quality of life.^[8] Association of impairment in quality of life in depression is stronger than that with social phobia.^[8]

Participants with depression are more likely experience social anxiety in all the domains including social fear, avoidant behavior and physical symptoms, and correlates severity of social anxiety with severity of depression. These findings are in consistent with earlier study.^[8]

Participants staying at home with their families are less likely to experience social anxiety, especially in avoidant behavior and physical symptoms in comparisons to their peers. It is in accordance with earlier study that persons with poor social supports are more likely to experience social anxiety symptoms in comparison to persons with good social supports.^[23]

In contrast to earlier study, participants who received their primary education in English medium school are more likely to experience anxiety symptoms in comparison to participants who received their primary education in their mother tongue.^[31]

This discrepancy in finding of our study could be because of selection of participants from the medical school instead of secondary school students. As there is growing trend to view English medium schools as superior in comparison to local language schools and persons with social phobia have lower educational attainment, selection of participants from higher meritorious institute makes the participants who received their primary education in mother tongue, having lower anxiety score have been recruited in this study.^[5,31]

We recommend screening for SAD among adolescents and young adults, as it is a lifetime diagnosis, and it is associated with psychiatric illness such as depression, and their severity is correlated. Individuals with comorbid depression have poor quality of life.

Limitations

Although we have assessed the association of SAD with depression and quality of life among medical students using validated scale of assessment, our study has several limitations such as recruiting participants from single center and assessing frequency of SAD and depression by self-reported questionnaire, measurement errors, and participant bias are unavoidable, as avoidant personality disorder, other anxiety disorders and substance use disorders often coexist with SAD and may become a confounding factors in assessing SAD. Similarly, dysthymia and substance use disorders can be the confounding factors in assessing depression. Being a cross-sectional nature of study, cause-effect relationship cannot be established with this study. Further large sample-sized interview-based cohort studies are recommended for further evaluation.

Conclusion

The frequency of SAD is 11.37%. Participants with SAD are more likely to experience depression and poor quality of life and vice versa. Participants with poor social supports have more social anxiety symptoms.

As SAD is very prevalent in general population usually starts during adolescence age and it significantly affects educational attainment, poor wages, poor family relationship, increase risk of depressive disorder, and significantly impairs quality of life of individuals. High suspicion for screening of SAD and timely intervention by pharmacotherapy or psychotherapy may be helpful for long-term well-being of an individual.

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Conflicts of interest

There are no conflicts of interest.

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