

# Prevalence of Social Anxiety Disorder in Patients with Schizophrenia

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## Abstract:

Social anxiety disorder (SAD) or social phobia, although not included among the required symptoms for the diagnosis of schizophrenia (SZ), it is frequently observed before and after the onset of the disease and may represent either a prodromal manifestation, residual syndrome or of illness progression. We assess social anxiety in stable outpatients with SZ. A cross-sectional study was carried. We recruited outpatients with SZ diagnosis from Schizophrenia Program (PRODESQ) by Hospital de Clínicas de Porto Alegre (HCPA). Sample included both genders with ages between 18-70 years. SZ diagnosis must meet DSM-5-TR and ICD10 criteria, SAD by Liebowitz Anxiety Scale (LSAS), psychopathology by Brief Psychiatric Rating Scale (BPRS) and Generalized Anxiety by the Generalized Anxiety Disorder Scale (GAD-7). Of the 82 patients meeting the inclusion criteria, 59 met LSAS threshold of 32; among them 12.2% were mild (scores 32-43), 29.3% moderate (scores from 44-81) and 30.5% severe (above 82 points). Therefore, almost three-quarters (72%) of outpatients with SZ fulfill SAD criteria, mostly at moderate to severe degree. This data must be confirmed in larger samples including additional measures, biochemical and structural, that if confirmed, can provide information for the development of new forms of treatment of people with the diagnosis of SZ, addressing associated disability and damage linked to social anxiety, with the focus on better outcomes in SZ.

**Keywords:** social anxiety; schizophrenia, anxiety; psychopathology; cross-sectional study.

## Resumo:

O transtorno de ansiedade social (SAD) ou fobia social, embora não esteja incluído entre os sintomas necessários para o diagnóstico de esquizofrenia (SZ), é frequentemente observado antes e depois do início do transtorno e pode representar uma manifestação prodromática, síndrome residual ou qualquer sinal de progressão da doença. O objetivo é avaliar a ansiedade social em pacientes ambulatoriais estáveis com SZ. Foi realizado um estudo transversal com pacientes do Programa de Esquizofrenia (PRODESQ) do Hospital de Clínicas de Porto Alegre (HCPA). A amostra incluiu ambos os sexos com idades entre 18-70 anos. O diagnóstico de SZ atendeu aos critérios do DSM-5-TR e CID10, SAD pela Liebowitz Anxiety Scale (LSAS), psicopatologia pela Brief Psychiatric Rating Scale (BPRS) e Ansiedade Generalizada pela Escala de Transtorno de Ansiedade Generalizada (GAD-7). Dos 82 pacientes que preencheram os critérios de inclusão, 59 atingiram o ponto de corte LSAS de 32; entre eles, 12,2% foram leves (escores de 32 a 43), 29,3% moderados (escores de 44 a 81) e 30,5% graves (acima de 82 pontos). Portanto, quase três quartos (72%) dos pacientes ambulatoriais com SZ preenchem os critérios do SAD, a maioria em grau moderado a grave. Esses dados devem ser confirmados em amostras maiores incluindo medidas adicionais, como bioquímicas e estruturais, que se confirmados, podem fornecer informações para o desenvolvimento de novas formas de tratamento de pessoas com SZ, abordando a incapacidade associada e danos ligados à ansiedade social, com foco em melhores resultados na SZ.

**Palavras-chave:** ansiedade social; esquizofrenia; ansiedade; psicopatologia; estudo transversal.

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## Introduction

Social anxiety disorder (SAD) or social phobia is known by a marked or intense fear or anxiety of one or more social situations in which the individual is exposed to possible negative evaluation (APA, 2022; Barzeva et. al., 2020), judgment or rejection (Barzeva et. al., 2020). The main occurrence is the worry of judgement of being anxious, weak, crazy, frightened, unpleasant, etc. Fears acting or appearing in a certain way or demonstrating symptoms of anxiety, such as blushing, shaking, sweating, stumbling over words (APA, 2022). This is a complicated experience in SZ, since affected subjects perceived additional threats to

their integrity (Teixeira & Belmonte-de-Abreu, 2022 and 2023).

SAD is commonly begins during early childhood or adolescence and about 70-80% of people also meet criteria for other diagnoses. Despite this early onset, most affected individuals with this condition do not seek treatment unless they develop another mental disorder (Barlow, 2016). It is an interpersonal, intrapersonal, and social system disorder, which impairs reciprocal interaction and communication, such as failure of social cohesion and increased rejection, emotional and marked by physical feelings, such as nervousness and sweating, avoidance attitude to feared situations, and dysfunctional beliefs, even in actual social situations or when imagining these moments (Hunger et. al., 2020). The DSM-5-TR includes one performance-related specifier, in which fear is restricted to speaking or performing in public (APA, 2022). The social anxiety is not included among the necessary symptoms of schizophrenia, but is frequent before the onset of the disorder (Silva et. al., 2016) and can represent both a residual and a complication of the disease, contributing to great personal suffering and functional impairment after the acute phase of the disease.

SAD is a comorbidity in SZ that has been described in several studies (Aikawa et. al., 2018; Kibru et. al., 2020; Teixeira & Belmonte-de-Abreu, 2022 and 2023), negatively affecting quality of life, treatment outcomes (Kibru et. al., 2020; Nemoto et. al., 2019), medication adherence (Kibru et. al., 2020), social cognition, social functioning, with different risk factors such as illness duration (Aikawa et. al., 2018), age of onset (Aikawa et. al., 2018; Kibru et. al., 2020), gender, poor social support, prior hospitalization, suicide ideation and attempts (Kibru et. al., 2020). It is believed that in the first episode of schizophrenia there is a high comorbidity with SAD, usually associated to negative symptoms and low self-esteem, childhood sexual abuse, separation anxiety, and school phobia (Kibru et. al., 2020). Previous study of Roy et. al. (2018) found a lifetime prevalence of SAD of 28.8% in schizophrenic patients, and 47.5% in subjects with psychotic disorders (schizophrenia, schizoaffective disorder, delusional disorder, psychosis without other specification and schizophreniform disorder). In another study (Kibru et. al., 2020) of 423 schizophrenic patients, the prevalence of SAD was 36.2%, with the severity of symptoms of social anxiety - mild, moderate, and severe - of 18.66%, 11.78%, and 5.77% respectively. Another sample of 109 participants found 52.7% cases reaching Liebowitz scale (LSAS) scores higher than 30, suggesting that their social anxiety symptoms reached a clinical level (Aikawa et. al., 2018).

Despite this evidence there is a paucity of studies targeting physiopathology, risk factors and treatment of SAD. This knowledge would be critical to increase recovery in patients with schizophrenia (Nemoto et. al., 2020).

Considering these issues, we explored the occurrence of social anxiety in patients with SZ, with the hypothesis that

it is significant, verifying its relevance for the diagnosis and treatment of SZ.

## Methods

We recruited outpatients with SZ diagnosis by DSM-5-TR and ICD 10 criteria with three different steps (clinical assessment by Psychiatrist, Family interview and confirmatory panel with at least Psychiatrist and Supervisor), from Schizophrenia Program (PRODESQ) by Hospital de Clínicas de Porto Alegre (HCPA). Sample included both genders with ages between 18-70 years. Of the 140 patients being screened, 45 patients were excluded, 15 of these for seeing in the electronic medical record that they did not have a diagnosis of schizophrenia, 06 for being in the modality of telemedicine care and 24 for not accepting to participate in the research. 95 patients were interviewed, of which 13 patients were excluded, 10 of them for having other diagnoses (schizoaffective disorder, bipolar disorder, autism, acute psychotic disorder, psychosis due to cognitive illness, organic personality disorder) and 03 patients for missing information and not having responded to all the scales. Thus, the sample consisted of 82 patients.

Data were collected between March and December 2022, for convenience, in a Cross-sectional design. The exclusion criteria were patients with other psychiatric diagnoses, moderate and severe intellectual disability, cognitive impairment, chronic or active inflammation or autoimmune disease, and treatment with anti-inflammatory drugs.

Ethics: The study was approved by the Research Ethics Committee (CAAE 63681021.8.0000.5327) and the patients and family members signed the Informed Consent Form after reading, listening to and reporting that they fully understood it. The sample was collected after a pilot study, carried out with different participants from the research being presented, in order to provide greater security, feasibility and understanding of the scales.

We assessed outcomes by clinical interview and clinical scales, with the application of self assessment scales (Liebowitz Social Anxiety Scale – LSAS and Generalized Anxiety Disorder Scale - GAD-7) and clinician scale with half of the items with standardized questioning and half by direct observation (Brief Psychiatric Rating Scale - BPRS). Sociodemographic data included age, gender, educational, family income, and clinical data age of illness onset, illness duration, number of hospital admissions, comorbidities and medications.

*Liebowitz Social Anxiety Scale (LSAS)*: developed in 1987 by Michel Liebowitz and translated, adapted and validated in four languages, including Portuguese (Dos Santos, 2012). It assesses the performance and social interaction situations that individuals with SAD tend to avoid or fear. It consists of 24 items divided into two subscales: social interaction (11 items) and performance (13 items), assessed on a four-point Likert scale (zero to three) (Osório, Crippa & Loureiro, 2005). The total score is obtained by adding the fear and

avoidance columns (Caballo et. al., 2019; Rytwinski et. al., 2009). We used the Brazilian survey by Dos-Santos et. al., 2012 with a cut-off criterion of 32 points, on which 32-43 points correspond to mild, 44-81 to moderate and over 82 to severe.

**Brief Psychiatric Rating Scale (BPRS):** 18 items with grading criteria referring to aspects of the patient's symptomatology, severity and type (positive, negative, affective and cognitive domains) in a 7-point Likert scale (0 = absent, 1 = normal, 2 = borderline illness, 3 = mild illness, 4 = moderately ill and 5 = markedly ill, and 6 = severely ill and 7 = extremely ill). The cut-off score for symptom remission was less than 5, with ranges for mild, moderate, and severe severity of 5- 9, 10-19, and greater than 20, respectively (Park et. al., 2019).

**Generalized Anxiety Disorder Scale (GAD-7):** is a 4-point Likert self-assessed scale (0-3) ranging from "never" to "every "day", asking how often the patient was bothered, in the last two weeks. The index is obtained by summing the scores, with cut-off points 5, 10, and 15 allowing the classification of anxiety into none/normal (0-4), mild (5-9), moderate (10-14), and severe (15-21) (Sousa et. al., 2015).

### Statistical analyses

Analyses were performed using SPSS software version 27.0 (Statistical Package of Social Science). Data are considered statistically significant when  $p < 0,05$ . A descriptive analysis was performed of the clinical and sociodemographic characteristics of the total sample and both groups, shown as mean and standard deviation or frequency and percentage. Quantitative variables (age, time of diagnosis of SZ, number of psychiatric hospitalizations) were described using mean and standard deviation for normal distribution or median and interquartile range for non-normal distribution. Categorical variables (gender, family income, education, scales, medications, comorbidities) were described by absolute frequencies and percentages. The t-student test was used to compare means between the groups (patients with and without social anxiety). In case of asymmetry, the Mann-Whitney test was applied. When comparing proportions, Pearson's chi-square or Fisher's exact tests were used. The significance level adopted was 5% ( $p < 0.05$ ).

## Results

### Sample characteristics

Final sample consisted of 82 patients, of which 61 (74.4%) males and 21 (25.6%) females. The mean age was 47.3 years, education was distributed as 47.6% with high school (2<sup>o</sup> degree complete) and 32.9% elementary school (1<sup>o</sup> degree complete). Median family income was 3 Brazilian minimum wages (around 11,000 USD/year).

Mean age of illness onset and duration (schizophrenia) were 21.9 years and 25.4 years, respectively, with a median number of two (2) psychiatric hospitalizations.

Physical comorbidities were observed in 65 cases (79.3%), distributed as obesity (28%), dyslipidemia (17.1%), smoking

(15.9%), and diabetes (14.6%). Most patients were being treated with Clozapine (96.3%) and 31.7% with other antipsychotics. The other most commonly used drugs were Clonazepam (37.8%) and Amitriptyline (12.2%).

There were no significant differences in demographic and clinical variables between with SAD (AS+) and without SAD (AS-) groups, ( $p > 0.050$ ), in which there seems to be homogeneity especially in mean age, education, age at onset of illness, illness duration, number of hospitalizations, metabolic alterations and clozapine use. These demographic and clinical characteristics of the sample are further detailed in table 1.

### Social anxiety symptoms in schizophrenia diagnosis

In this work, 59 of 82 patients met social anxiety inclusion criteria (72%), with 32 and more points in LSAS; among them 10 (12.2%) with mild social anxiety level, 24 (29.3%) with moderate, and 25 (30.5%) with severe (figure 1). Among the group only of social anxiety positives 17% had mild, 40.7% moderate and 42.4% severe.

It is observed that SAD increases with schizophrenia severity, highlighting significantly higher prevalence of SAD at the moderate and severe levels ( $p < 0.001$ ), as presented in Figure 1.

Generalized Anxiety measured by GAD-7 reached 32.9% with mild, 26.8% moderate and 7.3% severe level. On the BPRS scale, the classification of levels was 8.5%, 31.7% and 54.9%, respectively.

The scores on the BPRS and GAD-7 scales were significantly higher in the SAD group ( $p < 0.001$ ), shown in Figure 2.

The BPRS domains (positive, affective, and cognitive disorganization) and the total BPRS score were significantly higher in the group with SAD, as shown in table 2. The only exception was the negative domain of the BPRS, which did not increase significantly.

## Discussion

We detected a prevalence of 72% of SAD in stable outpatients diagnosed with SZ attending at the HCPA outpatient clinic, being 12.2% with mild level of social anxiety, 29.3% moderate, and 30.5% severe. This prevalence is higher than those seen in the literature: 52.7%, 36.2% and 28.8% (Aikawa et. al., 2018; Kibru et. al., 2020; Roy et. al., 2018, respectively), a fact that can be due to several factors (different culture, scale cutoff point, stage of psychopathology, among others). Regardless of this difference, what is unanimous and important to emphasize is that there is a significant rate of the presence of SA in patients with SZ (Aikawa et. al., 2018; Kibru et. al., 2020; Nemoto et. al., 2019 and 2020; Roy et. al., 2018).

The greater the severity of SZ symptoms, the greater the social anxiety, and the patients with SAD showing higher scores on the BPRS and the GAD-7. In addition, we had this increase in generalized anxiety in patients with SAD, which may hypothesize that the comorbidity of social anxiety is related to the increase in generalized anxiety. And we also observed that three of the four BPRS domains

(positive, affective, and cognitive disorganization) and the total BPRS score were higher in the SAD patients, may indicate the highest SAD in schizophrenia, and more precisely in psychosis.

### Conclusion

Our discoveries indicate that there is a significant frequency of social anxiety in stable outpatients diagnosed with SZ, agreeing with previous findings. Furthermore, social anxiety appears to increase with the severity of schizophrenia, which confirms that SAD will have greater repercussions in these patients.

These findings, if confirmed a larger sampling, point to the need for new forms of treatment in SZ, addressing disability and impairment due to SAD. These additional or modified treatments, even pharmacological, physical or psychological, may induce positive effects on the disease outcome.

Cognitive Behavioral Therapy treatments that address adolescent anxiety may seem appropriate for the treatment of SAD in SZ, Asbahr, Labbadia & Castro (2017) shows, in which we initiated a pilot study with image and text adaptation for psychological intervention in schizophrenia (study in progress).

The results of these analyses may be limited by the modest sample size, but nevertheless the results appear to have been significant. However, diagnostic robustness was increased by three-step diagnosis, treatment adherence, and clinical stability.

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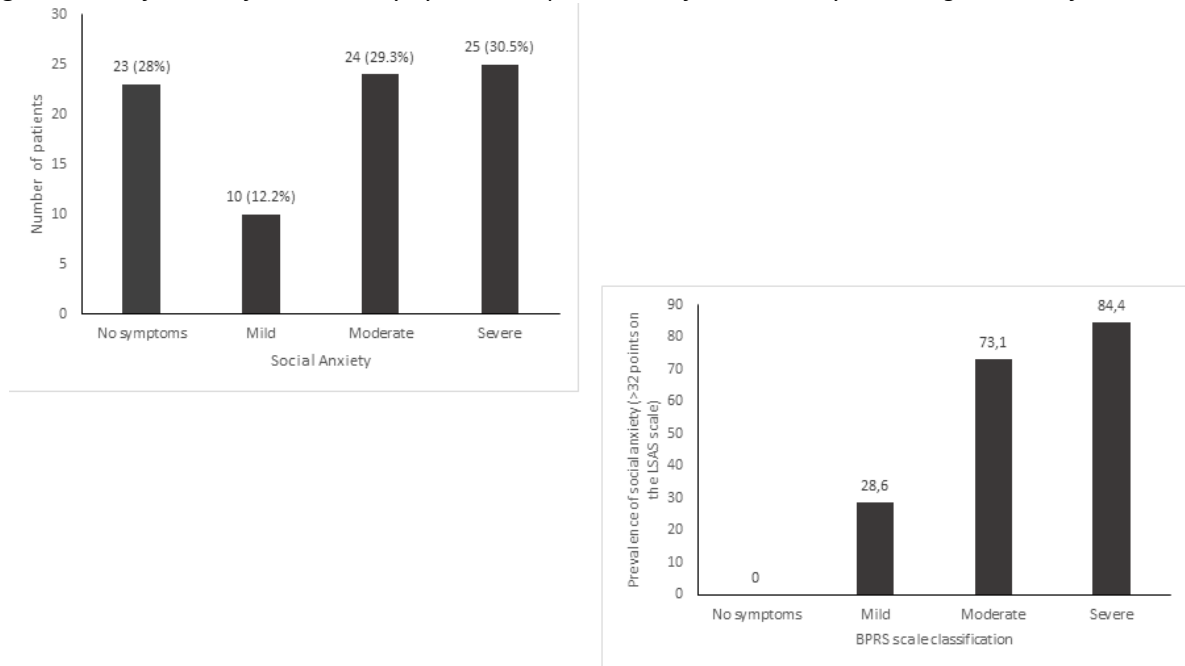
**Table 1.** Demographic and clinical characteristics of the sample: age; gender, educational status; family income; number of hospitalizations; duration of illness; comorbidities, medications in the total sample and by groups.

Variables	Total sample (n=82; 100%)	SA - (n=23; 28%)	SA + (n=59; 72%)	p
Age (years) – mean ± DP	47,3 ± 11,2	48,6 ± 10,8	46,8 ± 11,4	0,512
Gender – n(%)				0,178
Male	61 (74,4)	20 (87,0)	41 (69,5)	
Female	21 (25,6)	3 (13,0)	18 (30,5)	
Education – n(%)				0,643
1º degree incomplete	13 (15,9)	2 (8,7)	11 (18,6)	
1º degree complete	27 (32,9)	7 (30,4)	20 (33,9)	
2º degree complete	39 (47,6)	13 (56,5)	26 (44,1)	
3º degree complete	3 (3,7)	1 (4,3)	2 (3,4)	
Income (in MI)* – median (P25 – P75)	3 (2 – 4)	3 (2 – 4)	2 (2 – 3)	0,271
Age at onset (years) – mean ± DP	21,9 ± 6,3	22,4 ± 6,2	21,7 ± 6,4	0,648
Duration of disease (years) – mean ± DP	25,4 ± 10,6	26,2 ± 9,0	25,1 ± 11,2	0,674
Number of hospitalizations – median (P25 – P75)	2 (1 – 4)	2 (1 – 4)	2 (1 – 4)	0,967
Comorbidities – n(%)				0,372
Yes	65 (79,3)	20 (87,0)	45 (76,3)	
No	17 (20,7)	3 (13,0)	14 (23,7)	
Types of Comorbidities – n(%)				
Dyslipidemia	14 (17,1)	4 (17,4)	10 (16,9)	1,000
Smoking	13 (15,9)	5 (21,7)	8 (13,6)	0,501
Diabetes	12 (14,6)	2 (8,7)	10 (16,9)	0,494
Obesity	23 (28,0)	4 (17,4)	19 (32,2)	0,286
Drug use – n(%)				
Clozapine	79 (96,3)	23 (100)	56 (94,9)	0,556
Other antipsychotics	26 (31,7)	5 (21,7)	21 (35,6)	0,344
Clonazepam	31 (37,8)	6 (26,1)	25 (42,4)	0,266
Amitriptyline	10 (12,2)	5 (21,7)	5 (8,5)	0,134

\*Brazilian minimum income (around 11.000 USD/year)

**Table 2.** Associations of BPRS with social anxiety.

	SA - (n=23; 28%)	SA + (n=59; 72%)	p
BPRS – median (25 <sup>th</sup> – 75 <sup>th</sup> percentiles)			
Positive Domain	2 (0 – 4)	5 (2 – 8)	.002
Negative Domain	2 (1 – 5)	3 (2 – 5)	.155
Affective Domain	4 (3 – 9)	9 (6 – 12)	.007
Disorganized Cognitive Domain	3 (0 – 6)	7 (3 – 11)	<.001
Total score	13 (6 – 22)	24 (16 – 32)	<.001

**Figure 1.** Classification of social anxiety by LSAS and prevalence of social anxiety according to levels of the BPRS scale.**Figure 2.** BPRS and GAD-7 scores according to the presence or absence of social anxiety.