Gender-Related Vulnerability to Social Anxiety During Coronavirus Disease 2019 Pandemic: A Systematic Review

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ABSTRACT

The present review aimed to evaluate research studies on gender patterns of social anxiety during the coronavirus disease 2019 (COVID-19) pandemic in order to determine whether there is an increased COVID-19-related vulnerability for women as compared to men. The re-conceptualization of essential social components of quality of life due to COVID-19 pandemic has globally increased rates of psychological disorders such as social anxiety, although the issue of increased gender-related susceptibility is not settled. The searching process was conducted from September 2022 to February 2023 across 3 databases: Cochrane, PubMed, and Google Scholar. The study followed PRISMA (Preferred Reporting Items for Systematic Reviews and Meta-Analyses) guidelines for systematic reviews. Ten studies met the inclusion criteria and were subsequently considered for the review. Empirical data originated from 8 different countries, including Canada, Poland, Spain, China, USA, Australia, United Kingdom, and Portugal. Cross-sectional studies outnumbered longitudinal studies and generally indicated significant gender differences (women were significantly more likely to have social anxiety), although effect sizes were small. However, the claim of increased vulnerability of women as related to the COVID-19 pandemic was only supported by 3 studies. Although gender differences in social anxiety were generally present across countries, there was insufficient research evidence on increased COVID-19-related vulnerability to social anxiety for women as compared to men. Further research should address the methodological limitations of studies, particularly as regards instrumentation or the involvement of cross-cultural variables.

Keywords: Anxiety, COVID-19 pandemic, sex characteristics

Introduction

The negative effects of the coronavirus disease 2019 (COVID-19) pandemic on mental health have been documented in a considerable and fast-growing body of research worldwide. Over the past 3 years, cross-cultural research has been accumulating and converging toward the same conclusion of the increasing prevalence of several mental disorders, including anxiety disorders.[1] Much research evidence has focused on generalized anxiety, post-traumatic stress, or panic disorder in the context of the COVID-19 pandemic experience and aftermath, suggesting increases in prevalence up to 25% (estimation of 76.2 million additional cases of anxiety disorders globally).[1] Factors contributing to these figures include disease characteristics as well as global and country-specific sociopolitical aspects of pandemic management.[2,3] More specifically, measures such as social distancing or isolation have obviously produced an enormous negative impact on the social dimension of quality of life; for instance, basic social norms (such as handshaking) and social interaction in general have been reconceptualized in the framework of the "new reality."[4,5]

These shifting perspectives of social life, in conjunction with disease-related fear and anxiety, have produced growing research interest in the category of social-related disorders. More specifically, aspects such as social isolation and distancing have been investigated as regards their influence on the prevalence, course, and severity of social anxiety disorder.[6] Social anxiety disorder is classified as an anxiety disorder related specifically to social situations such as social interaction or performance.[7] The Diagnostic and Statistical Manual of Mental Disorders specifies that the fear or discomfort relates to the actual or anticipated social situations and is disproportional to the actual threat. The experience of the disorder includes fear of negative evaluation by others, and the typical behavioral indicator is avoidance of social situations that are associated with embarrassment,

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shame, or discomfort.[7] Negative outcomes of social anxiety extend to substance use or behavioral addictions (e.g., internet addiction) and poorer quality of life overall.[8,9]

There is some research evidence connecting specific aspects of the pandemic to social anxiety. For instance, in an exploratory review, Saint and colleagues concluded on the substantial clinically relevant effects of wearing masks on social anxiety.[10] More specifically, individuals prone to social anxiety seem to experience more discomfort due to the ambiguity and uncertainty caused by the face occultation of the interlocutor. In fact, they are more likely to interpret ambiguous cues negatively, thus contributing to increasing levels of anxiety and interaction difficulties.[11,12] Moreover, a more recent systematic review on social anxiety during the COVID-19 pandemic has reported increasing rates of the disorder across different countries and cultures worldwide (11 countries considered).[13] The review discusses several facets of social anxiety and points out the gender-related vulnerability of the disorder. The authors argued that, as compared to men, women seem to be at higher risk of developing social anxiety symptoms during the COVID-19 pandemic.[13]

Research on gender patterns of social anxiety both before and after the pandemic has generally greater vulnerability for women, although there are also reports of a lack of effect.[14-16] These findings reflect a general trend regarding anxiety disorders, with women being more vulnerable than men. However, specific characteristics related to social anxiety, such as the relevance of negative evaluation by others and interdependence self-constructs, are also involved.[17,18] Adding to gender-related factors and the effects of a major stressor such as the COVID-19 pandemic, it might be expected that the gender gap will be further enhanced. Indeed, research examining gender patterns of the stress response has concluded that women react significantly more intensively than men[19] and might therefore experience increased vulnerability to the disorder during the COVID-19 era.

The aim of the present review was to evaluate research studies on gender patterns of social anxiety during the COVID-19 pandemic. The review focused on data from adult populations, excluding children and adolescents. Considering that the developmental years are subject to different dynamics, the unification of studies was considered inappropriate.[20,21]

Methods

Search Strategy and Data Extraction
The PICO framework (Population/Intervention/Comparison/Outcome Framework) was used to develop the research question for the systematic review.[22] Each PICO element is specifically identified in Table 1. The research question in this systematic review was: "As compared to men, did women experience increased vulnerability to social anxiety symptoms during the COVID-19 pandemic?"

Three databases were searched for the present review—Cochrane, PubMed, and Google Scholar—during the period from September 2022 to February 2023. The search items were: "Social Anxiety" OR "Social phobia," AND "Covid" OR "Pandemic." The time filter selected studies published in the years 2020-2023. The final search syntax of the process was: Covid gender "social anxiety" -children –adolescents. Inclusion criteria for the records included:

1. Quantitative or mixed methodology studies, longitudinal or cross-sectional, including gender data on social anxiety during the COVID-19 pandemic;
2. Reviews on social anxiety during the COVID-19 pandemic, including gender data;
3. Articles in the English language.

Exclusion criteria for the records included:

1. Qualitative studies on social anxiety during the pandemic;
2. Theoretical papers;
3. Articles in languages other than English.

Two team members conducted the search process across the databases, and a joint set of records was created. Subsequently, the 2 reviewers engaged in a parallel, simultaneous review of records, first by title and abstract and then by full paper. Cohen's kappa value for inter-rater reliability was $k = 0.721$, which is considered a moderate value. However, it must be noted that cases of disagreement were all subsequently discussed in order to reach consensus on records, to be taken through the next step. A total of 565 articles were reviewed from 3 databases, specifically Cochrane: 68 articles, PubMed: 81 articles, and Google Scholar: 565 articles. After manually removing duplicate records (249), the total number of records screened by the 2 reviewers was 316. Records were screened for relevance of title and abstract and were excluded only when both reviewers agreed. In total, 273 records were excluded by title and abstract.

The remaining records were sought for retrieval of the full text. In 4 cases, the articles could not be retrieved; thus, ultimately, 39 full-text articles were read by both reviewers. Reviewers assessed the quality of papers by using a specific checklist, with items adapted from The Checklist for Assessing Quantitative Studies.[23] For each study, reviewers assessed its' design, method, sample characteristics, analyses, and results. Twenty-nine papers were excluded for the following reasons: data were collected before 2020; data from adolescents were included in the sample; and studies did not assess/report on gender. Ultimately, 10 papers were included in the review after receiving agreement from both reviewers.

The PRISMA chart below summarizes the review process (Figure 1).[24]

The information extracted from the research studies comprised the following: the author of the paper, the country of study, sample characteristics, including population type and sample size, mean age and gender composition, study methodology, including design and measures, and study results. The data were summarized in a narrative way. The small number of studies qualifying for final consideration facilitated the process.

Results and Discussion

Results are presented in Table 2, specifying for each study the authors, country, population/sample, study design, measures, and results. As regards geographical distribution, studies came from Canada, Poland, Spain, China, USA, Australia, United Kingdom, and Portugal.[13,25-33] Sample sizes ranged from 199 to 3137 participants. The mean age of adults participating in the studies varied from 20 years old to 48.8 years old. As regards the type of paper, there were 1 review study, 2 longitudinal studies, and 7 cross-sectional studies.

Studies Reporting Gender Differences in Social Anxiety
Gender differences in social anxiety were reported in 7 out of 10 sources considered for the review.[13,25-29,33] Studies reporting significant gender differences included 1 review study, 1 longitudinal study, and 5 cross-sectional studies. None of the studies had their main aim of

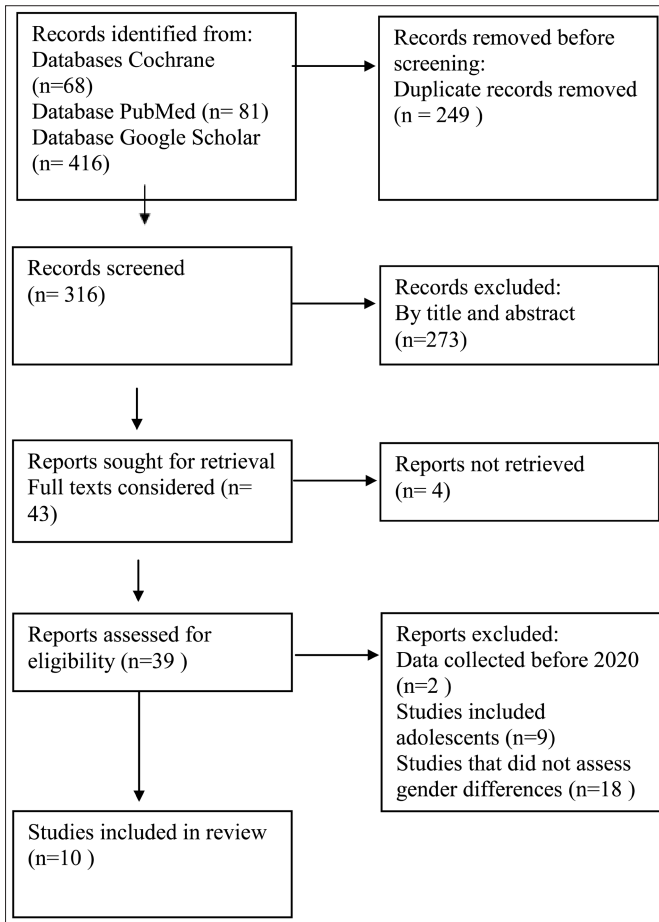**Table 1.** PICO Elements for Defining the Review Question

Population	Adults
Intervention/exposure	Coronavirus disease 2019 pandemic (pre-post pandemic)
Comparison	Men vs. women
Outcome	Social anxiety symptoms

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Figure 1. PRISMA Chart for Identification of Studies via Databases

analyzing gender differences; gender comparisons were only included as secondary additional information.

Cross-sectional studies were conducted in Portugal, China, Spain, Canada, and Poland. Data from the Polish cross-sectional study with university students indicated significant gender differences, with women showing higher scores than men.[26] The study used a well-known measure of social anxiety, the Liebowitz Social Anxiety Scale, a measure that has been used across different countries and cultures and has shown good reliability and validity.[34] The scale has been used to assess global social anxiety across 4 different facets and comprises 24 items, assessing interaction and performance. However, the authors in the present study only reported on the significance of gender differences but not the effect size of this difference.[26] Acknowledging the modest sample size of 255 participants, these results need careful consideration.

A similar study with a larger sample of university students from Spain reported gender differences in social anxiety during lockdown, with women outscoring men.[27] However, these authors also reported a small but significant effect size of the difference (Hedge's $g = 0.33$, $P = .001$). Nonetheless, it should be noted that the study used a more generic instrument for assessing social anxiety, namely the Anxiety and Depression Disorders Symptoms Scale (ESTAD).[35] This scale is a self-report measure assessing symptoms of different disorders related to anxiety, stress, and depression through a total of 35 items divided into 7 subscales based on a Likert scale (1-4). Hence, social anxiety comprises only 1 of the 7 subscales. The authors in the present study did not report the value of internal consistency for the specific social anxiety subscale but only for the total scale. Hence, care should be taken when considering the present findings.

In contrast with the above studies, data from Portugal provide more specific information as they report on social anxiety that is specifically related to COVID-19.[33] The authors used a COVID-19-specific instrument and reported good reliability values for the scale and its subscales.[36] They found a significant gender difference in social anxiety related to COVID-19, with women outscoring men. However, the effect size of the difference was rather small ($d = 0.20$). Despite this, findings suggest that there is at least some evidence of greater COVID-19-related vulnerability to social anxiety for women as compared to men.[33] The study of Ju and colleagues with discharged COVID-19 patients adds further support to this point.[28] The study used the Self-Consciousness Scale for assessing social anxiety among discharged COVID-19 patients in China.[37,38] Results showed significantly higher scores of social anxiety for women as compared to men. The authors concluded that women who had COVID-19 were significantly more likely than men to develop social anxiety symptoms, although they have again reported a small effect size of the difference ($d = 0.43$).[28] This study also seems to provide some support for the increased vulnerability to COVID-19-related social anxiety among women as compared to men.

Cross-sectional data from Canada involving undergraduate students has considered gender differences from yet another perspective, i.e., by investigating the effects of social anxiety on socio-emotional functioning.[25] The authors reported significant gender effects of social anxiety on socio-emotional functioning, suggesting that women become more impaired than men. Hence, although the study did not assess gender differences in social anxiety prevalence, it provided evidence that effects on socio-emotional functioning are significantly worse for women. This study is in line with studies before the pandemic, showing greater impairment of women across different life domains due to social anxiety.[39,40] These findings suggest that prevalence data on gender comparisons provide only limited information on gender-related patterns of social anxiety. Indeed, research on the effects of social anxiety on quality of life has shown that women experience harsher effects, particularly as regards their performance at school or work.[41,42] For instance, as compared to men, women with social anxiety experience the most detrimental consequences of the disorder in their probability of getting or keeping a job.[40]

Data from cross-sectional studies are supported by longitudinal research. A longitudinal study from the United States comparing prepandemic to postpandemic data in 1 community sample concluded that women experienced a significant increase in social anxiety rates as compared to men.[29] Although the effect size was small ($d = 0.17$), this is the only study so far supporting the hypothesis of a greater postpandemic vulnerability to social anxiety for women as compared to men. The study used the Social Anxiety Scale for adolescents, as participants were recruited while still in high school (prepandemic data).[43] It must be noted that the sample of this study is particularly young, and therefore the data are in line with longitudinal studies with adolescents, reporting similar gender effects on social anxiety.[44]

The review by Kindred and colleagues probably represents, so far, the most comprehensive attempt to assess the effects of the COVID-19 pandemic on social anxiety.[13] The authors provided a review of 33 studies from 11 different countries by referring to both clinical and community samples. Although the assessment of gender differences was not their primary objective, they concluded on the existence of important gender differences in the effects of COVID pandemic on social anxiety. The authors particularly highlighted data from longitudinal studies, suggesting that rates of social anxiety in girls/women have increased because of the pandemic. Reflecting on size effects, the authors concluded that women represent a particularly vulnerable group to social anxiety. Even so, it must be noted that Kindred and colleagues' review also includes studies with children and

Table 2. Data Extraction: Author, Country, Population/Sample, Study Design, and Results

Authors	Country	Population/Sample	Study Design and Measures	Results
Archbell et al[25]	Canada	Community, n = 1073 M_{age} = 20.3 years, SD = 4.49, 77.9% female	Cross-sectional study Liebowitz Social Anxiety Scale[32]	Significant differences, $P < .05$
Czorniej et al[26]	Poland	Students, n = 255 M_{age} = 24.30 years, SD = 1.69, 53.7% female	Cross-sectional study Liebowitz Social Anxiety Scale[32]	Significant differences, $P < .05$. Cohen's d not reported
Falco et al[27]	Spain	Community, n = 439 M_{age} = 36.64 years, SD = 13.37, 73.1% female	Cross-sectional study ESTADAnxiety and depression disorders symptoms scale[33]	Significant differences, Hedge's $g = 0.33$, $P = .001$.
Ju et al[28]	China	Discharged COVID-19 patients, n = 199, M_{age} = 42.72 years, SD = 17.53, 53.3% female	Cross-sectional study, Self-consciousness Scale[35,36]	Significant differences, $d = 0.43$
Juvonen et al[29]	United States of America	Community n = 1557 M_{age} = 22.5 years, SD = 0.75 Gender: 62% female	Longitudinal study Data collection: Prepandemic (2017-2019) Postpandemic: March 2021 to June 2021 Social anxiety scale[41]	Significant differences, $d = 0.17$
Li et al[30]	China	Community, n = 600 Median age = 20 years, 46% female	Cross-sectional study Social Interaction Anxiety Scale[44]	No significant differences $P > .05$, $d = 0.04$
Liang et al[31]	China	University students, n = 3137 Mean age not reported, 78.58% female	Cross-sectional study Social Avoidance and Distress Scale[45]	No significant differences, $P > .05$
Lim et al[32]	Australia (n = 701), United Kingdom (n = 483), and the United States (n = 378).	Community n = 1562 M_{age} = 48.8 years, 84.2% female	Longitudinal study data collection: 3 points in time starting March 2020 Mini Social Phobia Inventory[48]	No significant differences $P > .05$
Magano et al[33]	Portugal	Community, n = 1122, M_{age} = 31.91 years, SD = 13.76 65% female	Cross-sectional study COVID-19 Anxiety Scale[34]	Significant differences, $d = 0.20$
Kindred and Bates[13]	11 countries	Clinical and community 33 studies	Review study 2020-2022	Significant differences, d-values 0.02-0.52

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adolescents, which tend to show increases in social anxiety among girls during and after the pandemic.[44,45] Data from adult samples, being mainly cross-sectional, do not provide so clear and uncontroversial conclusions on gender effects on social anxiety, particularly as regards a supposed increased vulnerability for women. Moreover, there are few studies reporting statistically non-significant gender differences, which need to be considered and are discussed in the following section.

Studies Reporting No Gender Differences in Social Anxiety
Studies reporting no gender differences included 1 longitudinal study and 2 cross-sectional studies. The 2 cross-sectional studies reported data from China. Li and colleagues[30] used the Social Interaction Anxiety Scale to assess social anxiety in a community sample during the first months of the pandemic. This measure of social anxiety aims to provide a general assessment of social interaction fears, and the authors found comparable levels for men and women.[46] It should be noted that the sample was gender balanced (47% women), particularly as compared to other studies showing large gender imbalances (e.g., samples up to 70% or 80% women).[25,27]

Similarly, Liang and colleagues'[31] study with a much larger sample of Chinese university students reported an increase in social anxiety levels as compared to Chinese norms but no significant gender differences. Hence, the authors reported similar levels of social anxiety for men and women. This study used another measure of social anxiety, the Social Avoidance and Distress Scale, a measure used to assess levels of distress, discomfort, fear, and avoidance of social situations, in a predominantly female sample (over 78%).[47,48] It should be noted that out of 3 studies from China that were taken into consideration for the present review, 2 reported no gender differences in social anxiety. Conversely, the only study reporting gender differences was that with discharged COVID-19 patients (see discussion above).[28] It could be noted that the 2 studies reporting no differences were conducted with university students, i.e.,

the mean age of samples was quite young; conversely, the study finding gender differences reported a mean age of participants of approximately 43 years. Hence, a possible explanation could be that of shifting gender norms, which have become less distinct in the younger generations; a similar explanation was provided in a review by Jefferies and Ungar[49] in order to interpret the absence of gender differences in their study, which included 7 culturally different countries.

However, "the generational explanation" is not supported by the data from the longitudinal study by Lim and colleagues.[32] The community sample of this study had a mean age of 48.8 years old, and the data came from 3 different countries, including Australia, the United States, and the United Kingdom. The authors reported that gender was not a predictor of social anxiety onset at 3 different time points assessed. This study used yet another different measure, the Mini Social Phobia Inventory, a shortened version of the Social Phobia Inventory aimed to assess generalized social anxiety.[50] However, gender comparisons in this study need careful consideration considering the large gender imbalance, comprising 84% of women.

To summarize, the 3 studies reported no gender differences, despite the different measures of social anxiety used for data collection. These results are in line with the Jefferies and Ungar study,[49] which involved a general estimation of data from 7 culturally different countries, out of which only 3 cases of gender differences were found. The authors proposed that cultural variations in gender roles and social norms might be responsible for the findings but warrant further research in this direction. The involvement of cultural norms related to gender roles has been claimed in research, and it has been argued that failure to find gender differences might be due to the lack of specificity of measures of social anxiety.[51,52] Despite this, it should be acknowledged that studies reporting a lack of gender differences in social anxiety during and after the COVID-19 pandemic are insufficient to draw solid conclusions.

Limitations and Directions for Future Research

The present review has several limitations that need to be considered. Firstly, the review included a small number of papers, and we did not find any study whose primary purpose was to assess gender differences in social anxiety. Secondly, the review considered only studies published in English, therefore excluding papers published in original languages and limiting the pool of studies considered. Third, although the geographical distribution of studies and consequently cultural diversity were very pronounced, there was little or no discussion of cultural aspects in the reviewed studies. Moreover, the markedly different impact of COVID-19 across different countries, in terms of policies, adds further to the complexity of understanding the issue. The social aspect of this specific anxiety disorder suggests the need for discussion in terms of contextual factors, including cultural norms and values, which is lacking in the present review. Fourth, there was a great variety of social anxiety measures, some of which had important limitations due to a lack of specificity. More specific social anxiety measures that tap into the peculiarities of this disorder, as well as those related to culture, need to be considered in further research. Comparative studies, which enable cross-cultural comparisons of gender data, are warranted for future studies. Finally, considering that the review included only quantitative studies, it is rather limited in the aspect of bringing individual perspectives or experiences of individuals who do not identify as male or female (e.g., gender fluid individuals). Qualitative research in this aspect might provide a more comprehensive understanding of gender-related phenomena within the context of social anxiety and needs to be considered in future studies.

Conclusion

The aim of the present review was to evaluate gender patterns of social anxiety during the COVID-19 pandemic in adult populations. Results showed that a relatively small number of studies included gender analyses, and in none of the cases, gender patterns were the main purpose of the paper. Cross-sectional studies outnumbered longitudinal studies and generally indicated significant gender differences but with small effect sizes. The claim of increased vulnerability of women as related to the COVID-19 pandemic was supported only by 3 out of the 10 studies: 2 cross-sectional studies using COVID-19-related measures of social anxiety and 1 longitudinal study. Studies used a variety of assessing instruments for social anxiety, including both general measures and COVID-19-specific measures, thus increasing the difficulty of proper comparisons. In conclusion, the present review found that gender differences in social anxiety were present in most of the countries investigated, and there was at least some indication of COVID-19-related vulnerability for women as compared to men. However, at present, there is not enough evidence to conclude that there is an increased gender-related vulnerability to social anxiety due to COVID-19. Further research is warranted to address the methodological limitations of existing studies and provide more solid conclusions.

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