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Anxiety and Anxiety Disorders among Mexican Children and Adolescents

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SCIENTIFIC RESEARCH ARTICLE

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Anxiety and Anxiety Disorders Among Mexican Children and Adolescents

Abstract

Anxiety and anxiety disorders are more common in children than adults, with an estimated prevalence of 9-21%, indicating a critical mental health issue in childhood. Without early culturally competent and transdiagnostic treatment, anxiety and anxiety disorders can lead to severe negative consequences in all life domains and extend to adulthood, causing impairment and increasing the cost for the individual and society. In Mexico, the prevalence of anxiety disorders among children and adolescents is still ambiguous. Gender and age differences have yet to be addressed, and most childhood cases of anxiety remain undetected and are left untreated. This cross-sectional research examined gender and age differences in anxiety and specific phobia (SP), social anxiety (SA), obsessive-compulsive disorder (OCD), and separation anxiety disorder (SAD) in a sample of 889 Mexican children and adolescents selected randomly. Several statistical analyses were conducted: descriptive, correlation, and gender and age differences. The main results revealed an interaction effect (gender x age group) for SP, SAD, and OCD. The findings obtained will help design culturally competent and gender and age-specific intervention strategies for addressing anxiety and its various disorders in Mexican children and adolescents, thus contributing to them having healthier developmental trajectories.

Keywords: internalizing disorders, gender, age, childhood, adolescence.

Ansiedad y trastornos de ansiedad en niñas, niños y adolescentes mexicanos

Resumen

La ansiedad y los trastornos de ansiedad son más comunes en la niñez que en la adultez, con una prevalencia del 9-21%. Sin un tratamiento temprano, oportuno, culturalmente competente y transdiagnóstico, repercuten negativamente en todos los ámbitos de la vida extendiéndose hasta la edad adulta, causando deterioro e incapacidad y aumentando el costo para el individuo y la sociedad. En México, la prevalencia de ansiedad y sus diversos trastornos en la niñez es desconocida, las diferencias por género y edad todavía no se han abordado y la mayoría de los casos no se detectan ni se tratan. Esta investigación transversal examinó las diferencias por género y edad en ansiedad, fobia específica (FE), ansiedad social (AS), trastorno obsesivo compulsivo (TOC) y trastorno de ansiedad social (TAS) en una muestra de 889 menores mexicanos seleccionados aleatoriamente. Se realizaron análisis descriptivos, de correlación, de diferencias y de varianza. Los principales resultados revelaron un efecto de interacción (género x grupo de edad) para FE, TAS y TOC. Los hallazgos obtenidos contribuirán a elaborar estrategias de intervención culturalmente competentes y específicas por género y edad para abordar la ansiedad y sus diversos trastornos en menores mexicanos, favoreciendo el que tengan un desarrollo socioemocional más saludable.

Palabras clave: ansiedad, trastornos de ansiedad, niñez, adolescencia, sexo.

Anxiety is an uncontrollable, diffuse, unpleasant, and persistent state of negative affect, characterized by apprehensive anticipation regarding unpredictable and unavoidable future danger and accompanied by physiological symptoms of tension and a constant state of heightened vigilance (Barlow, 2002). If early, effective, and culturally competent transdiagnostic treatment is not provided, anxiety can lead to presenting anxiety disorders, the most common mental disorders worldwide before and after the COVID-19 pandemic (Martínez-Fierro et al., 2022).

Anxiety disorders have severe negative consequences in all life domains, as job performance, schoolwork, health, and personal relationships, because they hinder an individual's ability to function normally (American Psychiatric Association, 2022). These disorders mostly begin during childhood, with an average onset age of ten. They often include separation anxiety disorder (SAD), obsessive-compulsive disorder (OCD), specific phobia (SP), social anxiety (SA), panic disorder, agoraphobia, and generalized anxiety disorder (Craske & Stein, 2016).

Globally, anxiety disorders show a continuous increase in prevalence, particularly in certain regions as low- and middle-income countries (LMICs), Latin America, incidence, DALY rates, and associated social and economic burdens (Javaid et al., 2023). The COVID-19 pandemic, according to the World Health Organization (WHO, 2022), exacerbated 25% of the levels of anxiety, which were already a health burden worldwide. The Health at a Glance 2021 Report of the Organization for Economic Cooperation and Development (OECD, 2021) stated that Mexico was one of the countries with higher mental health affectations due to the COVID-19 pandemic. Moreover, during the COVID-19 pandemic, children and adolescents had a higher prevalence of psychological and psychiatric disorders, as stress, anxiety disorders, depressive disorders, suicide risk, and eating disorders. The prevalence of anxiety symptoms was reported at 18.9% among children and adolescents. The rate of mild anxiety was 27%, and moderate anxiety was 7.4% (Xie et al., 2020). The proportion of mild to severe anxiety symptoms was 37.4% (Zhou et al., 2020). The increase in anxiety and anxiety disorders was associated with confinement, social distancing, lack of a stimulating psychosocial context allowing development and growth, and socioeconomic deterioration (Saurabh & Ranjan, 2020), which generated risks to the well-being of children and adolescents (Arantes de Araújo et al., 2021).

Among children and adolescents, anxiety and anxiety disorders affect nearly 1 in 12 children and 1 in 4 adolescents (Kowalchuk et al., 2022). A meta-analysis of 41 studies of children aged 4–18 years in 27 countries found a global prevalence of 65% for anxiety (Polanczyk et al., 2015). Yet, anxiety and anxiety disorders remain largely unrecognized and untreated worldwide (WHO, 2021), particularly in LMICs, as Mexico, and no enduring preventive measures are still available, and, along with frequent therapy resistance, clinical needs remain unaddressed (Penninx et al., 2021). Therefore, it is imperative to invest in tackling these problems, especially because they were exacerbated during and after the COVID-19 pandemic.

In Mexico, 35% of the population consists of children and adolescents, of whom more than 51.1% live in poverty (United Nations Children's Fund [UNICEF Mexico], 2018). Even though the number of epidemiological studies about anxiety and anxiety disorders within Mexico is limited, it is estimated that 39.4% of Mexican children and adolescents present anxiety (Kieling et al., 2011) and that it has increased exponentially throughout the years, specifically as a consequence of the COVID-19 pandemic (López et al., 2021), and among both genders and all group ages (Caraveo-Anduaga & Martínez-Vélez, 2019). Nonetheless, most individuals needing mental health services receive no treatment (Suárez & Kazdin, 2023). Furthermore, three years into the pandemic, Mexico still does not have specific programs to attend to and prioritize mental health based on sufficient and specialized services. Since 2012, there have been only two

programs that do not deal with specialized services but instead refer to actions that indirectly provide psychological care or can plan and coordinate public policy actions on a mental health branch. Also, a specific budget for addressing the mental health needs of children and adolescents has yet to be included in public policies and legislation (World Vision Mexico, 2022).

To effectively address anxiety and anxiety disorders in this Latin population of an LMIC, timely, accurate disease detection and adequate treatment administration are needed, including individualized, more effective approaches for treatment with precision medicine (Penninx et al., 2021). A multilevel approach focused on mental health promotion and prevention is also required because it is crucial to adequately address the needs of anxious children and adolescents, avoiding institutionalization and over-medicalization, prioritizing non-pharmacological approaches, and respecting their rights in line with the United Nations Convention on the Rights of the Child (WHO, 2021). Moreover, it is pivotal to consider socioeconomic status (SES), sex, and age in schooled children and adolescents when addressing anxiety and its disorders. Sex and age are high-impact sociodemographic factors that interfere directly with young people suffering from anxiety (Pereira-Soares & Nunes-Baptista, 2019). For example, Latin girls are usually at a heightened risk for anxiety symptoms (Quiñones-Camacho & Davis, 2022). Schools are often a primary location for receiving psychological services, with 80% of children worldwide relying on school-based services to address their mental health needs (Racine et al., 2021). Lastly, SES can be a risk or protective factor for anxiety and anxiety disorders, depending on its level. Usually, lower SES is a risk factor. In comparison, higher SES is a protective factor since it corresponds to an improved family-quality environment and appropriate mental healthcare access (Reiss, 2013).

This cross-sectional correlational study determined the prevalence of anxiety and SP, SA, SAD, and OCD. It also examined differences by gender and age in a group of Mexican low-SES schooled children and teenagers.

Cognitive Theory (Beck et al., 1985) was the theoretical framework of reference that guided this research. This theory emphasizes the critical role of the mind's cognitions in determining behavior. These cognitions include a person's thoughts, feelings, beliefs, and perceptions. It also describes how people's perceptions of, or spontaneous thoughts about, situations influence their emotional, behavioral (and often physiological) reactions. The developmental psychopathology perspective (Cicchetti & Cohen, 1995; Masten & Braswell, 1991) was also used to consider external (family, social, and cultural environment) and internal (genetic, cognitive) risk and protective factors that contribute to the process and outcome of childhood anxiety.

Girls would present higher indexes of anxiety and its disorders than boys.

A significant two-way interaction effect of age group x gender in anxiety and its disorders would be obtained.

Method

Research Design

A cross-sectional design was used to examine anxiety and anxiety disorders among a sample of Mexican children simultaneously without establishing causality (Lee, 2018).

Participants

Participants included 889 children (476 boys and 413 girls) ages 6-15 years old ($M[SD]$=9.54[2.286]). Approximately 80-100 participants belonged to each grade from first to ninth. Using a simple random sampling method, participants were recruited from several low-SES public elementary and middle schools in Mexico City. All participants were required to 1) reside within the selected school during the data collection period and 2) consent to participate in the study. Participants with insufficient capacity to provide

informed consent, insufficient proficiency in Spanish (spoken) to answer assessment questions, and a primary diagnosis of intellectual disability, head injury, or substance misuse were excluded.

Measurement

Spence Children's Anxiety Scale (SCAS): Adapted to the Mexican population by Hernández et al. (2010). It consists of 38 items rated on a 3-point Likert scale from 0 (Never) to 3 (Often) that assess anxiety. Besides its correspondence to DSM-IV-TR classification, it has an adequate internal consistency (α = 0.80 to 0.93). The cut point to determine the presence of anxiety is 92.

Anxiety Disorders Inventory (ITA-UNAM): Developed for the Mexican population by Hernández et al. (2003) (α = 0.96). It consists of 122 items grouped in four scales that assess several anxiety disorders: OCD (27 items), SP (52 items), SA (27 items), and SAD (16 items). The cut points to determine the presence of these disorders are 106 for SP, 32 for SAD, 47 for SA, and 58 for OCD.

Procedure

The researchers worked with public elementary and middle schools to acquire access to this population. These collaborating institutions were informed of the study's purpose and methods and assured that researchers would follow ethical procedures and guidelines specified by the Mexican General Law of Health (Cámara de Diputados del H. Congreso de la Union, 1984) and the American Psychological Association (APA, 2017). Informed consent was obtained after the study's aims were discussed with the directors of the collaborating institutions, the prospective participants, and their parents or legal guardians. The collaborating institutions and the children's parents or legal guardians provided informed written consent. All eligible participants were invited to collaborate in this study voluntarily and received information about the study's general objectives, use of data, and confidentiality agreement. Participants consenting to the study provided their written consent or fingerprint as written consent when they exhibited reading and writing difficulties. The appropriate measures were taken into account to protect access to the fingerprints by applying the general institutional policies and procedures to secure the information, which included having authorized access to restricted data and to the office buildings where the information is safely placed and secured. Participants received information about the study's general objectives, use of data, and confidentiality agreement. Researchers took care to answer participants' questions without biasing participation choice. Participants were empowered to refuse to answer any question or to discontinue study participation at any time.

The research took place in collaborating institutions' on-site classrooms. Assessment questions were adapted to the participants' cognitive level of understanding, considering their age, developmental level, and evolving capacities. Participants were individually interviewed, and the researchers recorded responses on questionnaires using Google Forms. While interviews lasted approximately 30 to 45 minutes each, no time limit was established.

The collaborating institution's Committee of Ethics and Review Board reviewed and approved this study. This review serves as the Mexican equivalent of an American IRB Review.

Data Analyses

Statistical analyses were carried out using SPSS version 25. These included descriptive correlation analyses employing Pearson correlation and gender differences using Student's t-test. Likewise, the gender odds ratio was calculated using crosstabs. The size effect of the odds ratio was assessed with Cohen's d (Chen et al., 2010; Domínguez-Lara, 2018). Also, the researchers conducted a 2 (gender: boys and girls) x 3 (age group: 6-8 [n=297], 9-10 [n=283], and 11-15 [n=309] years old) factorial analysis of variance to examine differences in anxiety and its various disorders between boys and girls and their corresponding age group. Significant main effects for the gender

factor and interaction effects were analyzed using Bonferroni Correction. The main effects for the factor group of age were analyzed by carrying out posthoc tests with the Tukey-HSD Test.

Results

Results showed that 12% of the sample presented anxiety, 16% SP, 27% SA, 24% SAD, and 18% OCD. A higher prevalence of anxiety and these disorders was observed in girls than in boys and the 9 to 10-year-old group. Compared to boys, girls were found to be 2.3 times more associated with anxiety symptoms, 1.8 times more associated with SP, 1.6 times more associated with SAD, 1.4 times more associated with obsessive-compulsive disorder, and 1.172 times more associated with SA (Table 1). Gender differences were significant according to the Student's t-test on all study variables (Table 2).

Table 1
Odds Ratio by Gender regarding Study Variables (N=889)

Study Variables	OR	95% CI		Size Effect[a]
Anxiety Symptoms	2.305	1.570	3.383	Low
SP	1.844	1.352	2.514	Low
SAD	1.648	1.294	2.100	Low
OCD	1.432	1.076	1.906	Insignificant
SA	1.172	0.942	1.429	Insignificant

Notes: Abbreviations: OR: Odds Ratio, CI: Confidence Interval, SP: Specific Phobia, SAD: Separation Anxiety Disorder, OCD: Obsessive Compulsive Disorder, SA: Social Anxiety.
[a]Size effect according to Cohen's d.

Table 2
Gender Differences among Study Variables using Student's t-test (N=889)

Study Variables	Gender		Levene's Test		Student's t-Test				
	Girl	Boy	F	p Value	t	df	p Value	95% CI	
	M(SD)	M(SD)						Lower Limit	Upper Limit
Anxiety Symptoms	78.66(13.480)	73.80(12.380)	2.374	0.124	-5.610	887	0.000	-6.56992	-3.16452
SP	91.03(20.800)	81.14(19.640)	0.514	0.474	-7.287	887	0.000	-12.55434	-7.22646
SAD	27.39(7.850)	24.93(7.070)	6.908	0.009	-4.882	836.244	0.000	-3.45081	-1.47171
SA	39.83(10.300)	38.05(11.190)	2.795	0.095	-2.449	887	0.015	-3.19932	-0.35245
OCD	47.98(13.290)	44.23(12.930)	0.008	0.931	-4.258	887	0.000	-5.47745	-2.02098

Notes. Abbreviations: M: Mean, SD: Standard Deviation, df: degrees of freedom, CI: Confidence Interval, SP: Specific Phobia, SAD: Separation Anxiety Disorder, OCD: Obsessive Compulsive Disorder, SA: Social Anxiety.

Findings obtained with Pearson's correlation (Table 3) revealed that, in general, correlations between study variables were relatively higher for girls than boys, except for SP and SAD, SP and SA, SA and SAD, and OCD and SA, which were higher in boys than in girls. Also, this analysis showed that anxiety was positively associated with SP, SAD, SA, and OCD for both boys and girls. Furthermore, all anxiety disorders were positively correlated in both genders.

Table 3
Correlation Analysis of Study Variables by Gender (N=889)

Study Variables	1	2	3	4	5	M	SD
1. Anxiety	—-	0.456**	0.392**	0.322**	0.319**	73.790	12.380
2. SP	0.522**	—-	0.752**	0.623**	0.569**	81.140	19.640
3. SAD	0.543**	0.669**	—-	0.600**	0.554**	24.930	7.070
4. SA	0.361**	0.599**	0.522**	—-	0.616**	38.050	11.190
5. OCD	0.462**	0.647**	0.641**	0.540**	—-	44.230	12.930
M	78.660	91.020	27.390	39.830	47.980		
SD	13.480	20.790	7.850	10.300	13.290		

Notes. Abbreviations: M: Mean, SD: Standard Deviation, SP: Specific Phobia, SAD: Separation Anxiety Disorder, OCD: Obsessive Compulsive Disorder, SA: Social Anxiety.

Intercorrelations for boys (n=476) are presented above the diagonal, and intercorrelations for girls (n=413) below the diagonal. Means and standard deviations for male participants are displayed in the vertical columns and means, and standard deviations for female participants are displayed in the horizontal rows. For all study variables, scores were positive, and the higher the scores, the higher the probability of those disorders being correlated.

**p<.01

The factorial variance analysis outcomes showed that a significant interaction effect (gender x age group) was obtained for SP, SAD, and OCD. Significant main effects for gender and group of age were obtained for anxiety and SA (Table 4).

Table 4
Factorial Analysis of Variance with Anxiety and Anxiety Disorders as Dependent Variables and Age Group and Gender as Factors (N=889)

Anxiety				
Factors	**df**	**F**	**p-value**	η^2
Age Group	2	5.969	0.003	0.013
Gender	1	32.238	0.000	0.035
Age Group x Gender	2	.827	0.438	0.002
Error	883			
Total	889			
SP				
Factors	**df**	**F**	**p-value**	η^2
Age Group	2	17.564	0.000	0.038
Gender	1	54.351	0.000	0.058
Age Group x Gender	2	3.488	0.031	0.008
Error	883			
Total	889			
SA				
Factors	**df**	*F*	**p-value**	η^2
Age Group	2	6.457	0.002	0.014
Gender	1	5.946	0.015	0.007
Age Group x Gender	2	2.830	0.060	0.006
Error	883			
Total	889			

SAD				
Factors	**df**	*F*	**p-value**	η^2
Age Group	2	22.093	0.000	0.048
Gender	1	26.039	0.000	0.029
Age Group x Gender	2	3.354	0.035	0.008
Error	883			
Total	889			
OCD				
Factors	**df**	*F*	**p-value**	η^2
Age Group	2	23.879	0.000	0.051
Gender	1	18.285	0.000	0.020
Age Group x Gender	2	7.719	0.000	0.017
Error	883			
Total	889			

Notes. Abbreviations: df: degrees of freedom, η2: Eta squared for measuring size effect, SP: Specific Phobia, SAD: Separation Anxiety Disorder, OCD: Obsessive Compulsive Disorder, SA: Social Anxiety.

Regarding the main effects of gender, results obtained with Bonferroni Correction revealed that girls significantly exhibit more anxiety, $F_{(1,883)}$=32.238, p<.000, and SA, $F_{(1,883)}$=5.946, p=.015, than boys. Concerning the main effects of age group, findings obtained with the Tukey-HSD Test showed that participants in the 9 to 10-year-old group significantly presented more anxiety than those in the 11 to 15-year-old group (p<.05) and a higher index of SA in comparison to participants in the 6 to 8-year-old group (p<.05) (Table 5).

Table 5
Significant Main Effects for Anxiety and SA (N=889)

Anxiety				
Factors	*M*	*Standard Error*	95% CI	
Gender			Lower Limit	Upper Limit
Boys	73.818	0.589	72.663	74.974
Girls	78.725*	0.633	77.483	79.967
Age Group				
6-8 years old	75.952	0.750	74.480	77.424
9-10 years old	78.243	0.764	76.743	79.743
11-15 years old	74.619	0.731	73.185	76.053
SA				
Factors	*M*	*Standard Error*	95% CI	
Gender			Lower Limit	Upper Limit
Boys	38.075	0.491	37.111	39.039
Girls	39.832*	0.528	38.797	40.868
Age Group				
6-8 years old	37.792	0.625	36.565	39.020
9-10 years old	40.786	0.637	39.535	42.037
11-15 years old	38.282	0.609	37.087	39.478

Notes. Abbreviations: M: Mean, SD: Standard Deviation, CI: Confidence Interval, SA: Social Anxiety.

*Mean difference was significant at p<.05.

For interaction effects, outcomes revealed significantly higher indexes of SP, SAD, and OCD in girls than in boys, particularly in the 9-10 and 11-15 age groups (Table 6).

Table 6
Significant Interaction Effects for SP, SAD, and OCD (N=889)

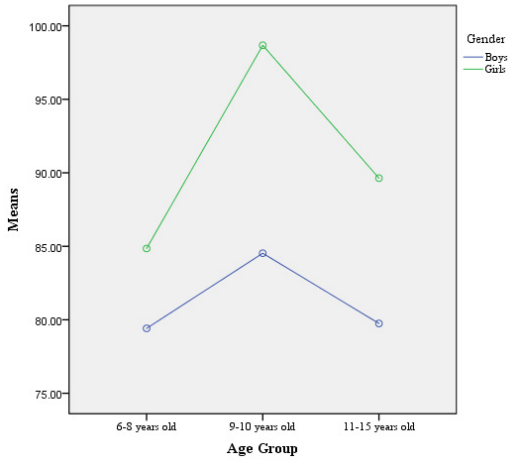
SP					
Age Group	**Gender**	*M*	***Standard Error***	**95% CI**	
				Lower Limit	**Upper Limit**
6-8 years old	Boy	79.416	1.536	76.401	82.430
	Girl	84.847*	1.729	81.454	88.241
9-10 years old	Boy	84.527	1.616	81.356	87.698
	Girl	98.677*	1.716	95.309	102.044
11-15 years old	Boy	79.750	1.564	76.680	82.820
	Girl	89.638*	1.621	86.456	92.819
SAD					
Age Group	**Gender**	*M*	***Standard Error***	**95% CI**	
				Lower Limit	**Upper Limit**
6-8 years old	Boy	24.964	0.563	23.858	26.070
	Girl	26.107	0.634	24.862	27.352
9-10 years old	Boy	26.347	0.593	25.183	27.510
	Girl	30.564*	0.629	29.329	31.799
11-15 years old	Boy	23.563	0.574	22.436	24.689
	Girl	25.685*	0.595	24.517	26.852
OCD					
Age Group	**Gender**	*M*	***Standard Error***	**95% CI**	
				Lower Limit	**Upper Limit**
6-8 years old	Boy	42.681	0.986	40.745	44.617
	Girl	42.084	1.110	39.905	44.263
9-10 years old	Boy	45.840	1.038	43.804	47.876
	Girl	53.564*	1.102	51.401	55.727
11-15 years old	Boy	44.325	1.005	42.353	46.297
	Girl	48.174*	1.041	46.131	50.218

Notes. Abbreviations: M: Mean, CI: Confidence Interval, SP: Specific Phobia, SAD: Separation Anxiety Disorder, OCD: Obsessive Compulsive Disorder.

*Mean difference was significant at p<.05. n=166 boys, n=131 girls in the 6-8 years old group, n=150 boys, n= 133 girls in the 9-10 years old group, n=160 boys, n=149 girls in the 11-15 years old group.

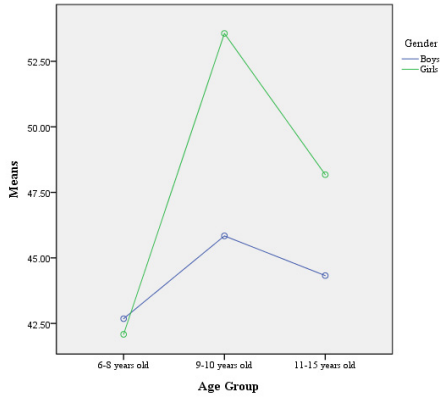
Concerning interaction effects for an SP, results obtained with Bonferroni Correction demonstrated that girls in the 6-8 age group present a significantly higher level of an SP than their male peers, $F_{(1,883)}$=5.517, p=.019. Also, female participants in the 9 to 10-year-old group are significantly more prone to exhibiting SP than boys of the same age, $F_{(1,883)}$=36.045, p<.000. A similar effect was found in girls in the 11 to 15-year-old group in comparison with male participants of their age $F_{(1,883)}$=19.262, p<.000. Regardless of gender, the 9 to 11-year-old group had the highest level of SP in comparison with the rest of the age groups (6-8 and 11-15 years old). The difference between the 6-8 and 11-15 groups was insignificant (Figure 1).

Figure 1.
Interaction effects of Gender x Age Group for Specific Phobia



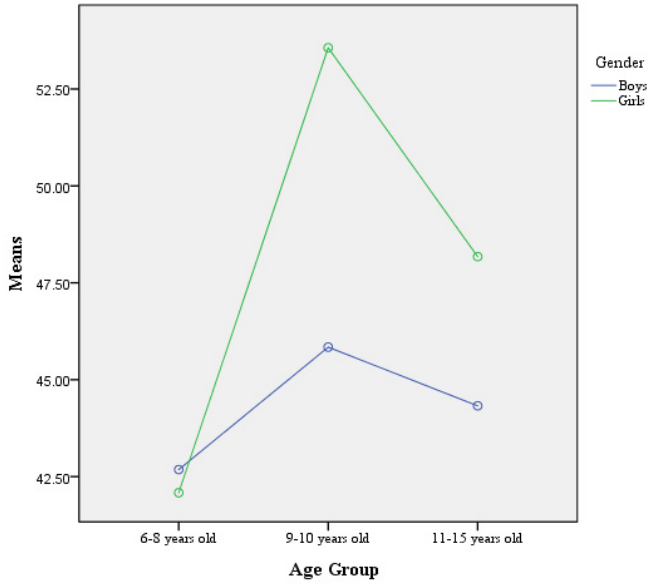
Regarding interaction effects for SAD, findings obtained with Bonferroni Correction showed that girls in the 9 to 10-year-old group present a significantly higher level of SAD than their male peers, $F_{(1,883)}$=23.794, p<.000. Also, female participants in the 11 to 15-year-old group are significantly more prone to exhibiting SAD than boys of the same age, $F_{(1,883)}$=6.594, p=.010. Regardless of gender, the 9-11 age group had the highest level of SAD compared to the rest (6-8 and 11-15 years old). The difference between the 6-8 and 11-15 groups was significant at p<.05 (Figure 2).

Figure 3.
Interaction effects of Gender x Age Group for Obsessive-Compulsive Disorder



Concerning the interaction effects for OCD, outcomes obtained with Bonferroni Correction demonstrated that girls in the 9 to 10-year-old group present a significantly higher index of OCD than boys of the same age, $F_{(1,883)}$=26.043, p<.000. A similar effect was found in girls in the 11 to 15-year-old group in comparison with their male peers $F_{(1,883)}$=7.080, p<.008. Regardless of gender, the 9-11 age group had the highest level of OCD compared to the rest (6-8 and 11-15 years old). The difference between the 6-8 and 11-15 groups was significant at p<.05 (Figure 3).

Figure 3.
Interaction effects of Gender x Age Group for Obsessive-Compulsive Disorder



Discussion

Anxiety disorders are one of the most common forms of psychopathology that affect children and adolescents. Unfortunately, most of them remain undiagnosed and not treated (Connolly & Bernstein, 2007). Growing evidence suggests that Latin children have a heightened risk for anxiety symptoms (McLaughlin et al., 2007) and that anxiety disorders are one of the emerging public health problems in many LMICs (Quiñones-Camacho & Davis, 2022) as Mexico. However, Mexico is still lacking in epidemiological and correlational studies concerning anxiety and anxiety disorders during childhood and adolescence, and screening of this problem, particularly in non-clinical samples, is seldom carried out even though it is crucial for adequately identifying children and adolescents at risk for this type of problem, measuring or tracking the levels of symptoms, and evaluating the progress made with interventions (Bandelow et al., 2017).

This study's findings align with previous research conducted in developing countries in which anxiety is highly prevalent, more frequent in girls than boys, and significantly associated with age (Anjum et al., 2022).

The high prevalence of anxiety and anxiety disorders may be because the sample belongs to a low socioeconomic status. Economic hardship is usually associated with an increased risk for anxiety, particularly in 6-11-year-old children. Living in poverty or within families struggling to meet essential physical needs, including food and shelter, can lead to severe emotional distress (Zare et al., 2018). Therefore, growing up in a disadvantaged environment is related to more frequent symptoms of mental problems.[37] Likewise, similar to other

studies (Madasu et al., 2019; Moalla et al., 2023), the most common anxiety disorders were SA, followed by SAD, OCD, and SP. Correlation analysis revealed that anxiety disorders are interrelated for both girls and boys, which may be explained because anxiety disorders are highly comorbid with each other (Goldstein-Piekarski et al., 2016). The fact that SA was the most prevalent anxiety disorder may be because individuals from collectivistic cultures have a higher fear of negative evaluation (Schreier et al., 2010). In collectivistic cultures, individuals are seen as embedded within their group identity, and the notion of a separate, autonomous self is deemphasized. Therefore, collectivistic cultures prioritize the group over the individual and value group goals, group harmony, maintaining relationships and order, and duties and obligations (Koydemir & Essau, 2018). Consequently, being part of the group, its recognition and acceptance, and group conformity and allegiance are essential to avoid social rejection, social exclusion, and ostracism, particularly during childhood and adolescence, where peer influence strongly shapes psychological development (Mitic et al., 2021). Peer groups can provide an arena in which children and adolescents can learn, clarify, and maintain norms for social behaviors and practice these behaviors, promoting socioemotional competence when individuals attempt to form their identity and establish autonomy from their parents. Thus, social relationships —both quantity and quality— affect mental health, health behavior, physical health, and mortality risk (Umberson & Montes, 2010). These outcomes highlight the need to consider the critical role of the mind's cognitions in determining behavior, as stated by Cognitive Theory (Beck et al., 1985), and the external risk and protective factors contributing to childhood anxiety's process and outcome according to the developmental psychopathology perspective (Cicchetti & Cohen, 1995; Masten & Braswell, 1991).

Regarding gender differences, as in previous studies (Klaufus et al., 2022; Madasu et al., 2019), anxiety and anxiety disorders were more prevalent in girls than boys. These results may be explained because ethnic, cultural, and family norms and social identity elements may influence how anxiety is experienced and expressed. Anxiety symptomatology is generally related to gender norms and community-level gender norms perceptions, all of which provide evidence that gender norm perceptions appear to play a role in mental health sex disparities (Koenig et al., 2021). As such, women and men adhere to gender-congruent stereotypes when experiencing anxiety or anxiety disorders to fit with traditional gender roles. Adherence to traditional male roles may prompt men to suppress feminine stereotypical symptoms. In contrast, women may express more feminine stereotypical symptoms (Mumang et al., 2021). In Mexico, traditional social roles (Díaz-Guerrrero, 2007) strongly associate women with being expressive, emotional, frail, and vulnerable, enabling them to openly express their emotional distress and difficulties and vent their emotions. In contrast, men work to alter their own experience of negative emotions and events resulting from stressful sources in a way in which their manliness is not compromised or threatened, hence avoiding social disapproval and fitting social expectations. Ideals of masculinity often discourage men from awareness and expression of psychic pain and admission of weaknesses and vulnerabilities. The masking of emotional distress or problems may be a face-saving strategy for many men who are less skilled at emotional expression and bound by expectations that men must be strong and invincible (Falicov, 2003).

The development of symptoms of anxiety disorders is associated with an increased vulnerability with age (Orgilés et al., 2012). Separation anxiety, SP, and OCD appear particularly common in children between the ages 6-9 years (Mohammadi et al., 2020) or 4-11 (Spence et al., 2018), while previous studies have found that social phobia is not significantly associated with age (Moalla et al., 2023; Olivares et al., 2010) or that SA symptoms frequently appear between the ages of 14-17 (Zolog et al., 2011). Moreover,

anxiety disorders have a higher comorbidity since age 10 (Mohammadi et al., 2020). The outcomes of this research indicated that the age range 9-10 was associated with a higher prevalence of anxiety symptoms and anxiety disorders, especially in girls, which could be explained because it is the typical average age of onset for psychopathology and the ages where comorbidity between anxiety disorders usually take place (Lijster et al., 2017). These findings suggest that considering the heterogeneity of the developmental trajectories of anxiety across ages is vital because not all children fit into a particular pattern (Allan et al., 2014). Hence, for adequate diagnosis and treatment, current models of the etiology of maladaptive anxiety in children assume an intricate interaction between various biological, developmental, psychological, social, cultural, and environmental components (Ollendick & Grills, 2016). SAD is expected between 6-9 years in response to coping with the temporary absence of caregivers in preschool. It tends to decrease with age due to the departure from problems associated with the normative challenges of separation from caregivers during the early school years (Ahlen & Ghaderi, 2020). Symptoms of SP have a median age of onset at eight years old (Wardenaar et al., 2017). It tends to decrease with age (Hale et al., 2008). Nonetheless, childhood phobias and anxiety disorders do not have a single etiological pathway—they are multiply determined by child- and parent-centered variables (de Vries et al., 2019). As such, it is crucial to consider the idea of goodness-of-fit between child factors (e.g., temperament) and the surrounding environment (e.g., parenting behaviors) when studying psychopathology in childhood and adolescence. OCD tends to appear between 6-9 years. However, children are less likely to have insight into the irrationality of their obsessions and compulsions because their meta-cognitive skills are still being developed (Geller et al., 2001). Furthermore, children need to differentiate true compulsions from regular routines or ritualized behaviors, typically transient and without cause for concern. To be considered a compulsion a behavior must be distressing or impairing (Krebs & Heyman, 2015). Finally, SA symptoms increase between the ages of 8.5 and 14 years because preadolescence has been linked to challenges associated with generalized anxiety (e.g., fears concerning danger and death) (Weems & Costa, 2005). Adolescence has been associated with challenges associated with SA (e.g., fear of negative evaluations by others) (Westenberg et al., 2007).

Conclusions

In conclusion, the results of this research are similar and consistent to those found in other studies conducted in developing countries. Moreover, this study highlights the need to consider high-impact sociodemographic factors as gender and age associated with anxiety in children and adolescents since the age of onset can vary widely as well as the age trajectory of psychopathology and gender affects how psychopathology is experienced and presented, and for adequately tackling the problem, reducing the enormous burden of disease from anxiety disorders, and designing and conducting mental health promotion and prevention interventions aimed to strengthen children's capacity to regulate emotions, cope with adverse or stressful circumstances, establish quality relationships, and build resilience. In addition, it is crucial to provide schools with effective and sustainable intervention strategies since most schooled children rely on school-based services to address their mental health needs. Lastly, the findings emphasize the importance of early identification, prevention, and timely treatment of children and adolescents in developing countries, focusing on the Latinx population.

This study had a few limitations that should be considered. The study was based on self-reported screening tools and only included cross-sectional data. In addition, the researchers did not conduct any diagnostic interviews and focused primarily on gender and age-based differences. Moreover, only schooled children ages 6–15 from lower socioeconomic status were included, so conclusions cannot be generalized. Future research should

consider other risk and protective factors (e.g., family dynamics, personal strengths, adverse childhood experiences) of anxiety and anxiety disorders, including diagnostic interviews and a more comprehensive age range (e.g., 6-18 years), samples from other socioeconomic status, non-schooled samples, and longitudinal data.

Nonetheless, the strengths of this study include the fact that children's anxiety symptoms ranged from no symptoms to clinical levels and that data showed a tendency of age and gender-related differences in anxiety and anxiety disorders. Previous studies have not evaluated these differences between subgroups of children in Mexico. Finally, this research adds to the growing body of literature on the field and helps identify evidence gaps in the Latinx population.

Clinical Implications

Systematically screening for child anxiety problems should be repeated frequently to adequately identify symptomatology, address the problem, promote mental health, and prevent the development and maintenance of psychopathology. Besides self-report instruments, it is necessary to include diagnostic interviews and parental assessments to appropriately identify culture-specific symptomatology and transdiagnostic risk and protective factors for understanding etiological processes and preventing multiple internalizing disorders rather than focusing on syndrome-specific risks (Schweizer et al., 2021). Caregivers should be included when developing and conducting interventions because parental behavior influences children's anxiety symptoms and is imperative for understanding causes and designing interventions. Multi-cultural brief cognitive behavioral therapy (CBT) would be the best intervention strategy as CBT has the best and broadest level of evidence across all anxiety disorders (Hoyer & Lueken, 2021). However, these effective and cost-effective programs require a multilevel approach with varied delivery platforms as digital media, health or social care settings, schools, or the community – and diverse strategies to reach children and adolescents, particularly the most vulnerable. Furthermore, gender-specific personalized approaches are needed to identify the most effective intervention, or combination thereof, for each anxious child and teenager within a stepped model of care that provides access to evidence-based services for different levels of need (Dowell et al., 2018).

Declarations

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Geolocation information
This study was conducted at several public schools in Mexico City, Mexico.

Competing Interest
The authors have no competing interests to declare relevant to this article's content.

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This study is part of a non-funded research. There are no financial interests to report.

Disclosure Statement
No financial interest or benefit has arisen from the direct applications of this research.

Data Availability
Not available

Code Availability
Non-applicable

Compliance with Ethical Standards
Ethical Statements
The authors would like to assert that they have abided by the Ethical Principles of Psychologists and the Code of Conduct as set out by the APA and the Mexican General Law of Health. The institutions' Committee of Research and Ethics

gave ethical approval. This review serves as the Mexican equivalent to an American IRB Review.

Research Involving Human Participants
This research complies with international, national, and institutional standards for research involving human participants.

Conflict of Interest
The authors declare that they have no conflict of interest.

Informed Consent
Informed consent was obtained from legal guardians (i.e., parents of the children) and children themselves.

Author Contributions: The first and corresponding author of the manuscript was responsible for data collection, analysis, and interpretation, the conception and design of the study, and drafting and preparing the manuscript. The second author critically revised the manuscript.

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