Mental and somatic manifestations of anxiety in adolescents enrolled in secondary schools

De Avila-Arroyo, María Luz[1*]; López-Méndez, Edna Edith[2];Tenahua-Quitl, Inés[3]; Gallegos-Acevedo, Ma. Guadalupe[4]; Torres-Reyes, Alejandro[5]

SUMMARY

Introduction: Mental disorders among the population have become a health issue. In adolescents the presence of anxiety stands out and this presents a pathological state that can cause physical, psychological, and behavioral dysfunction affecting various areas of life. **Objective: I**dentify the mental and somatic symptoms of anxiety in adolescents enrolled in secondary schools; determine the intensity of the anxiety and the variance of such by age and gender, and identify the connection between anxiety and age. **Methodology:** This correlation study took place within a sample of 312 adolescents, secondary school students in the state of Puebla, ages 11 to 16; stratified random sampling was performed by grade and school group; the Hamilton Anxiety Scale was used, the study adhered to General Health Law, and the privacy and confidentiality of the information was protected. For statistical analysis the Chi-Square Test and Spearman correlation were applied. **Results:** The majority of adolescents revealed mental symptoms such as difficulty concentrating (57.5%) and somatic such as sensations of heat and coldness (52.8%) over the last month and seven days; more than 40% of the adolescents exhibit moderate/severe anxiety, however, no significant statistical difference was found due to age and gender, nor there was a connection between anxiety and age (p >.05)**. Conclusions:** The adolescents show mental and somatic symptoms of anxiety from early ages that can generate disorders in different areas and stages of life; it is necessary to perform nursing interventions to prevent complications.

Key words: Anxiety; Mental Symptoms; Symptoms with no Medical Explanation; Somatic Symptoms (DeCS; BIREME).

[1]Master's Degree in Nursing Sciences. Benemérita Universidad Autónoma de Puebla, Facultad de Enfermería. México. E-mail: maluz_dea-vila@hotmail.com

[2]Master's Degree in Nursing. Instituto de Seguridad y Servicios Sociales de los Trabajadores del Estado, Hospital Regional Puebla. México. E-mail: lic.edna@hotmail.com

[3]Master's Degree in Nursing Sciences. Benemérita Universidad Autónoma de Puebla, Facultad de Enfermería. México. E-mail: inesteq@gmail.com

[4]Master's Degree in Nursing Sciences. Universidad Autónoma de Zacatecas, Unidad Académica de Enfermería. México. E-mail: marialupi-tagacevedo@yahooo.com.mx

[5]Master's Degree in Nursing. Benemérita Universidad Autónoma de Puebla, Facultad de Enfermería. México. E-mail: alexanderre-yes20102029@gmail.com

* Study corresponding author

How to cite this article
From Avila-Arroyo ML, López-Méndez EE, Tenahua-Quitl I, Gallegos-Acevedo MG. Mental and Somatic Manifestations of Anxiety in Students of Secondary Schools. Sanus. 2018;3(7): 8-19. [Access ___ __ ____]; Available at: _____
month day year URL

INTRODUCTION

Mental disorders among the population have become a health issue. In adolescents, the presence of anxiety stands out, which is an emotion linked to survival since it is a response to unexpected or threatening situations, and serves as a defense mechanism in case of danger. These reactions are physiological when they are stimulated in the face of an imminent risk, in order to safeguard the integrity of the person. It means there is an adaptation to the circumstances displayed; in other words, it is a normal system function of an organism, triggered when an inadaptation stimulus occurs and appears at a moment when no justifiable circumstances exist. When there's an increase in the intensity and frequency of the stimulus, this becomes an emotional state in which the person is not able to feel calm, exhibits irritability, uneasiness, or physiological and behavioral disorders, which points to anxiety as a pathological state or disorder that can lead to physical, psychological, and behavioral dysfunction, thus affecting different areas of life [1-3].

Additionally, it is important to point out that anxiety can be externalized as a symptom of mental disorders or as a specific entity of mental pathology[2], in which biological, psychological, and social factors exist that predispose the individual to it[1]. This overview reveals various causes that may explain the development of anxiety, thus it is important to study this variable.

Some studies report as somatic symptoms those that emerge when anxiety occurs, such as dizziness, light-headed sensation, sweating, palpitations, syncope, paresthesia, and digestive problems, which are considered physical symptoms indicating physical disorders in organs and systems[2-5]. There are also cognitive, behavioral, and affective symptoms labeled as mental, such as unrest, nervousness, fear, insomnia, and intellectual function disorders in particular[1-4, 6-8] that manifest when chemicals in the brain, such as serotonin and dopamine, are suppressed. This happens when there are problems in certain areas of the biopsychosocial context of the individual. As a result, disorders in both behavior and state of mind are evident, reflecting motor neuro-vegetative, cognitive, of perception of the reality, emotional, and affective dimension[1, 2].

It should be noted that in Mexico, the average age at which anxiety disorders begin is 15 years of age and even adolescents from 12 to 15 may experience anxiety. This information is important as, during adolescence, several physical and behavioral changes generate in individuals making them prone to manifestations of anxiety which may become acute, thus generating problems[1, 11-12]. Moreover, it has been documented that from this stage forward, anxiety affects men and women equally, even though its incidence is not clear[2]. Despite a study in Mexican adolescents that showed no differences by gender[11], there exists literature from Spain and Mexico which reveals that it is more prevalent in women than in men[9,12].

Furthermore, scientific evidence has presented percentages of anxiety disorder among Spanish adolescents above established parameters (26.41%). It highlights that symptoms related to separation anxiety and fears are the most externalized[9]. Additionally, other results indicate that psychosomatic symptoms that showed the highest incidence in students of secondary schools were difficulty with sleeping and focusing, headache and stomachache, as well as feeling sad and tense. Older adolescent students exhibited the highest anxiety scores with averages of 7.4 above the cut points[9, 13].

It is noteworthy that the search for literature on anxiety in adolescents has turned up limited results. Additionally, the reports found reveal a variety of ways to measure the variable. This suggests the need for more research in this area as it is reported as a mental health issue that begins during childhood or adolescence and may continue into adulthood[1]. It also generates disorders in the life of the individuals and places high costs on public health, not to mention it being considered as a risk factor for drug abuse, loss of identity, suicide, and family disruptions, which ultimately trigger greater health issues[14]. Consequently, it becomes necessary to develop health strategies to prevent, detect, and manage this problem with the goal of avoiding future complications. This can be through specific nursing interventions for the care of adolescents with anxiety.

Therefore, the objective is to identify mental and somatic symptoms of anxiety in adolescents enrolled in secondary schools in Puebla as they arise; similarly, it is necessary to determine the intensity of the anxiety and differences according to age and gender, and identify the connection between anxiety and age.

METHODOLOGY

A correlation study was performed within a population of 1670 adolescents from secondary school ages, ranging from 11 to 16 years of age, from the State of Puebla, Mexico. Random sampling took place stratified by shift and school grade through a finite population formula with a confidence level of 95%, an error rate and degree of accuracy of .05, thus a sample from 312 participants was obtained. To collect data, a personal data card was used to identify the socio-demographic characteristics as well as the Hamilton Anxiety

Scale consisting of 14 items, although in this study only 1 to 13 were considered after eliminating the question that evaluates the behavior during the interview. It has a Likert type answer option ranging from absent (0), mild intensity (1), moderate intensity (2), high intensity (3), and maximum intensity (4). Items 1 to 6 measure mental symptoms (anxious mood, stress, fears, insomnia, alteration of intellectual functions and depressive mood) and 7 to 13 the somatic (muscular, general, cardiovascular, respiratory, gastrointestinal, urogenital, and of the autonomic nervous system). For the statistical analysis the sum was obtained where the minimum score was 0 and the maximum 52, cut points were set which classify it in absence or remission of the disorder (0 to 5), mild anxiety (6 to 14) and moderate/severe anxiety (more than 15). The instrument showed a Cronbach´s Alpha of .881 which indicates acceptable internal consistency. This instrument has been applied in various studies in Mexican population and is used by the Ministry of Health to detect anxiety[7, 12, 13].

Table 1. Mental symptoms of anxiety in adolescents es

Symptoms	**Last thirty days**			**Last seven days**		
		CI 95%			**CI 95%**	
Mental symptoms	**%**	**LI**	**LS**	**%**	**LI**	**LS**
Anxious mood						
Unrest	58.8	54	65	54.2	48	60
Irritability	38.9	33	44	35.5	30	41
Apprehension (fearful anticipation)	32.9	28	38	26.9	20	30
Stress						
Startle reactions (anger)	51.5	46	57	51.2	45	57
Tiredness	41.2	36	47	37.5	32	43
Inability to wait sensations	39.2	34	45	33.6	28	39
Fear						
Of being alone	28.6	23	34	17.9	23	33
Of strangers	35.9	30	41	30.6	25	36
Of darkness	31.6	26	37	29.6	24	35
Insomnia						
Interrupted sleep	48.2	42	54	41.9	36	47
Unsatisfying sleep, awakening not rested	47.5	42	53	41.9	44	55
Difficulty falling asleep	38.5	33	44	34.6	29	40
Intellectual functions						
Difficulty concentrating	57.5	52	63	57.8	52	63
Poor memory	47.5	42	54	43.2	38	49
Depressed mood						
Loss of interest (things in life)	45.2	38	49	35.2	30	41
Does not enjoy spare time	39.9	34	45	33.9	30	41
Early morning insomnia	29.6	24	35	28.6	23	34

Source: Instrument ***n*** = 312

Note: Mental symptoms of anxiety more often displayed are included

Table 2. Somatic symptoms of anxiety in adolescents

Symptoms	Last thirty days			Last seven days		
		CI 95%			CI 95%	
Somatic symptoms	%	LI	LS	%	LI	LS
Muscular somatic symptoms						
Clonic jerking (fast movements of hands and feet)	37.5	32	43	33.2	28	39
Muscular pain	36.9	31	42	36.9	31	42
Jerking of muscles	17.6	13	22	14.0	10	18
General somatic symptoms						
Feeling hot or cold	52.8	47	58	44.2	39	50
Paresthesia sensations (punctures or tingling in the body)	40.9	35	46	34.9	29	40
Blurred vision	35.9	30	41	35.5	30	41
Cardiovascular symptoms						
Thoracic pain (in the chest)	22.6	18	27	18.6	14	23
Tachycardia (fast heart beats)	17.3	13	22	14.3	10	18
Palpitations (heart jolts)	12.6	9	16	11.6	8	15
Respiratory symptoms						
Sighs	45.5	40	51	43.2	38	49
Choking or shortness of breath sensation	31.6	26	37	22.6	19	28
Dyspnea (difficulty breathing)	18.9	14	23	15.9	12	20
Gastrointestinal symptoms						
Borborygmus (bowel sounds)	23.3	18	28	16.9	13	21
Weight loss	22.3	18	27	19.9	15	24
Abdominal cramps (spasms)	21.9	17	27	16.6	12	21
Urogenital symptoms						
Frequent urination	17.9	14	22	14.6	11	19
Imperious mictional urge (an urge to urinate)	12.3	9	16	12.3	9	16
Amenorrhoea (lack of menstrual period)	9.6	6	13	8.6	5	12
Symptoms of the autonomic nervous system						
Dry mouth	40.5	35	46	35.5	30	41
Tension headache (headache)	36.9	36	47	36.9	31	42
Vertigo (dizziness)	25.9	24	34	25.9	21	31

Sourec: Instrument ***n*** = 312

Note: Mental symptoms of anxiety more often displayed are included

To identify mental and somatic symptoms of anxiety observed among adolescents, the manifestations corresponding to mental and somatic symptoms were taken into account and a survey derived from them was prepared in which the presence (Yes) or absence (No) during the last month and seven days was asked before the data collection pilot tests were conducted on secondary school adolescents and university students.

The research was approved and authorized by the committee assigned by the Department of Research and Postgraduate Studies of the university where the researcher was doing his research. In order to conduct said research, the Regulations of the General Health Act in the field of health research were considered[15]; the integrity of the participant was respected at all times and the signing of an informed consent of the father or guardian and the adolescent was requested. The random selection of the participant without requesting the name was based on the list number previously determined in the Microsoft Excel program.

To analyze the data, descriptive statistics were used through frequency, proportions, and central tendency measures; Chi-Square Test for gender and age classified into two groups based on ranks and the Spearman correlation.

RESULTS

The results of this study indicate that most of the students were from first year of secondary school (37.9%), were 12 years of age (33.2%), and had been in school for 8 years (34.2%). Tables 1 and 2 reveal the most frequent mental and somatic symptoms in the last thirty-seven days. It is noted that among the participants there existed a greater presence of mental symptoms, where the highest percentages corresponded to unrest, difficulty to concentrate, startle reactions, interrupted and unsatisfying sleep, awakening not rested in the morning, poor memory, loss of interest in things in life, fear of the unknown, and irritability. Regarding somatic symptoms, the ones with the highest percentages were sensations of heat or coldness, sighs, paresthesia sensations, dry mouth, clonic jerking, muscular pain, and tension headache.

With respect to the intensity of anxiety symptoms,

Table 3. Intensity of the symptoms of anxiety in adolescents

Symptoms of Anxiety	Absent	Mild intensity	Moderate intensity	High intensity	Maximum intensity
	%	%	%	%	%
Mental					
Anxious mood	19.9	39.9	26.6	6.6	7.0
Stress	23.6	35.2	20.3	14.0	7.0
Fears	31.6	27.9	19.6	12.6	8.3
Insomnia	31.6	31.2	19.3	10.0	8.0
Intellectual functions	22.6	35.2	20.9	15.6	5.6
Depressed mood	44.5	24.9	13.6	9.3	7.6
Somatic					
Muscular	35.2	34.2	15.9	9.6	5.0
General	29.9	32.6	19.3	9.3	9.0
Cardiovascular	52.8	29.2	11.3	3.7	3.0
Respiratory	50.5	26.9	12.6	7.3	2.7
Gastrointestinal	58.8	27.9	8.6	3.0	1.7
Urogenital	66.4	23.3	6.6	2.0	1.7
Of the autonomic nervous system	39.9	32.9	15.3	7.3	4.7

Source: Instrument ***n*** = 312

Table 4. Anxiety by age and gender in secondary school students

Variables	*f*	%	*f*	%	χ^2	*gl*	*p value*
Age	**11 a 13**		**14 a 16**				
Remission of the disorder	37	19.1	13	12.1	2.584	2	.275
Mild anxiety	74	38.1	47	43.9			
Moderate/severe anxiety	83	42.8	47	43.9			
Gender	**Hombre**		**Mujer**				
Remission of the disorder	22	15.7	28	17.4	.232	2	.891
Mild anxiety	58	41.4	63	39.1			
Moderate/severe anxiety	60	42.9	70	43.5			

Source: Instrument ***n*** = 312

it was found that most of the adolescents displayed mild and moderate intensity; where the most prevailing mental symptoms were anxious mood, diminished intellectual functions and stress; by contrast, the somatic symptoms more externalized were muscular, general, and of the autonomic nervous system (Chart 3).

No statistically significant difference was found between the intensity of the anxiety and the two age groups ($\chi2$ = 2.548, p = .275), neither with the gender ($\chi2$ = .232, p = .891). It is noted, however, that among adolescents ages 11 to 13 a considerable percentage of moderate/severe anxiety was obtained (42.8%), followed by mild anxiety (38.1%), and absence or remission of the disorder (19.1%), and that students ages 14 to 16 displayed the higher percentages of mild and moderate/severe anxiety (43.9%). Regarding gender, moderate/severe anxiety was similar in women (43.5%) and men (42.9%) (Table 4). There were no statistically significant differences between anxiety and age (rs = .070, p >. 001).

DISCUSSION AND CONCLUSIONS

From this study mental and somatic symptoms of anxiety in adolescents in secondary school in the state of Puebla were identified; moreover, the intensity of the anxiety and the differences by age and gender and the connection between anxiety and age were determined.

It was found that mental symptoms of anxiety among secondary school students prevailed, although somatic symptoms were also displayed; these include difficulty to concentrate, interrupted unsatisfying sleep, tension headache, and vertigo which coincides with other reports that point to these symptoms as the main symptoms[2, 13]. Such results suggest that this age group is displaying cognitive and physiological disorders, that if not controlled, the complications can cause problems during their development[1, 2], thus the reason why it is necessary that psychoeducation interventions are performed in educational institutions to build coping skills [14].

Additionally, the intensity of the symptoms displayed by the adolescents ranged from mild to moderate for both, mental and somatic, which is consistent with the previous findings that can be reflected by their constant presence during the last month and seven days. It is worth noting that no studies reporting on the frequency of the anxiety intensity were observed. However, the results of this study confirm the information in literature that mentions attention and concentration difficulties, memory problems, slower thinking, and feelings of depersonalization and derealization as the primary symptoms during this stage[2], thus the reason why it is necessary to identify the specific causes that trigger anxiety to carry out detection and management interventions considering health-care workers, education authorities, and the student's families.

Regarding age, secondary school adolescents ages 11 to 16 displayed considerable percentages of anxiety (40%), ranging from mild to moderate/severe, confirming that anxiety is externalized during adolescence and that the symptoms remain with advancing age and during the development of this stage as mentioned by other studies[1, 10, 11].

Moreover, it turns out that when comparing by gender, there exist anxiety in both men and women, similar to situations related in another study similar to this one, which indicated that there is no statistically significant difference in its study population. In turn, the results from this study are similar to those from other sources, suggesting that the presence of anxiety disorders by gender has not been yet clarified[2, 11], which may be due to the cultural or academic context where the participants are developing. Regarding the connection

between anxiety and age, no statistical difference was found, which differs from Órgiles et al.[9] who, in 2012, indicated that anxiety increases with age. The result of this study could be due, in part, to the homogeneity of the data when failing to display a greater distribution for some age group, since clinical symptoms of anxiety vary with age and cognitive and emotional development of the individual[2], so the changes that take place during adolescence and the associated presence of symptoms may affect this result.

It therefore follows that adolescents are displaying and maintaining mental and somatic symptoms of anxiety from early ages, which is alarming since the presence of these can lead to dysfunction and inadaptation problems in the life of the adolescent, thus, triggering physical and mental health problems that could potentially cause risky behavior. It is recommended that further studies addressing the variables of anxiety be carried out, and symptoms be evaluated with frequency measures of up to six months to establish a clear diagnosis of this issue.

Therefore, the purpose of this study was to identify the issues related to the symptoms of anxiety to target interventions for the care of the adolescents, and contribute to improve their quality of life. One limitation of this study was the lack of studies found and the differences regarding medication. However, the results obtained contributed to knowledge generation, which in turn lead to nursing interventions sustained by scientific evidence that contribute to overall better care for this population.

REFERENCES

1. Cárdenas EM, Feria M, Palacios L, De la Peña F. Guía Clínica para los trastornos de Ansiedad en Niños y Adolescentes. Instituto Nacional de Psiquiatría. (Serie: Guías Clínicas para la Atención de Trastornos Mentales). 2010. México. [Citado 18 febrero 2018]; Available at: http:// inprf-cd.gob.mx/guiasclinicas/trastornos_de_ an-siedad. pdf

2. Mardomingo MJ. Trastornos de ansiedad en el adolescente. Pediatr Integral. 2005 [Citado 18 febrero 2018]; 9(2): 125-134. Available at: https://faros.hsj-dbcn.org/adjuntos/336.1-Trastornos_ansiedad_adolescente(1).pdf

3. Gorosabel J. Estudio de los síntomas somáticos aso-ciados a los trastornos depresivos y de ansiedad en una población de atención primaria. [Doctoral Thesis]. España: Universidad Autónoma de Madrid; 2013 [Cited May 23, 2018]; Available at: https://repositorio.uam. es/ bitstream/handle/10486/14125/66216_gorosabel%20 rebolleda%20jesus.pdf?sequence=1

4. Asociación Americana de Psiquiatría [APA]. Guía de consulta de los criterios diagnósticos de DSM 5. 2013. Arlington, V.A., Asociación Americana de Psiquiatría. [Cited March 24, 2018]; Available at: http://www. psicoaragon. es/wp-content/uploads/2017/06/DSM-5. pdf

5. Bendini S. ¿Qué es la ansiedad? Salud Mental. 2013; 14(2): 113-121.

6. Martínez M. M.C., García F. J. M., Cándido J.I. Relaciones entre ansiedad escolar, ansiedad rasgo, ansiedad estado y depresión en una muestra de adolescentes españoles. International Journal of Psychology and Psychological Therapy. 2013 [Cited April 9, 2018]; 1(13): 47-64. Available at: https://www.ijpsy.com/volumen13/ num1/346/ relaciones-entre-ansiedad-escolar-ansie-dad-ES.pdf

7. Secretaría de Salud. Guía de Práctica Clínica Diagnóstico y Tratamiento de los Trastornos de Ansiedad en el Adulto. 2010 [Cited April 9, 2018]; México. Available at http://www.cenetec.salud.gob.mx/descargas/gpc/CatalogoMaestro/392_IMSS_10_Ansiedad/EyR_IMSS_392_10. pdf

8. Shorter E. A historical dictionary of psychiatry. Oxford University Press. 2005. New York. 338 p.

9. Orgilés M, Méndez X, Espada JP, Carballo JL, Piqueras JA. Síntomas de trastornos de ansiedad en niños y adolescentes: diferencias en función de la edad y el sexo en una muestra comunitaria. Rev Psiquiatr Salud Ment (Barc.). 2012 [Cited May 8, 2018]; (2): 115-120. Available at: file:///C:/Users/150005990/Downloads/ S1888989112000237_S300_es.pdf

10. Benjet C, Borges G, Medina-Mora ME, Méndez E, Fleiz C, Rojas E, Cruz A. Diferencias de sexo en la prevalencia y severidad de trastornos psiquiátricos en adolescentes de la Ciudad de México. Salud Mental. 2009 [Cited May 9, 2018]; 32(2): 155-163. Available at: http://www. redalyc. org/pdf/582/58212275008.pdf

11. Jiménez-López LM, Jurado CS. Ansiedad social con-sumo riesgoso de alcohol en adolescentes mexicanos. Journal of Behavior, Health & Social Issues. 2014 [Cited May 14, 2018]; 1(6): 37-50. Available at: http://www. scielo.org.mx/pdf/jbhsi/v6n1/v6n1a3.pdf

12. Ramírez-Osorio P, Hernández-Mendoza E. Resiliencia familiar, depresión y ansiedad en adolescentes en situación de pobreza. Rev Enferm Inst Mex Seguro Soc. 2012 [Cited May 25, 2018]; 20(2): 63-70. Available at: http:// www.medigraphic.com/pdfs/enfermeriaimss/eim-2012/ eim122b.pdf

13. Secretaría de Salud. Intervenciones de enfermería para la detección oportuna y control de los trastornos de ansiedad en niños y adolescentes. Resumen de Evidencias y Recomendaciones: Guía de Práctica clínica de enfermería. México: CENETEC; 2017. [Cited May 26, 2018].

Available at http://www.cenetec.salud.gob.mx/contenidos/gpc/catalogoMaestroGPC.html#

14. Fuentes CRM, Simón SMJ, Garrido AM, Serrano PMD, Larrañaga RME, Yubero JS. Síntomas psicosomáticos como expresión del deterioro de la calidad de vida relacionada con la salud en adolescentes. Aten Primaria. 2017 [Cited May 26, 2018]; 1-7. Available at: https://doi.org/10.1016/j.aprim.2017.06.009

15. Secretaría de Salud. Ley general de salud en materia de investigación. México. SS; 2015 [Cited May 26, 2018]. Available at: www.salud.gob.mx/unidades/cdi/nom/compi/rlgsmis.ht