PREVALENCE AND RISK FACTORS ASSOCIATED WITH POST-TRAUMATIC STRESS DISORDER IN COLOMBIA

Felipe Botero-Rodríguez,[1] Carlos Javier Rincón Rodríguez,[2] María Nelcy Rodríguez,[3] Carlos Gómez-Restrepo[4]

ABSTRACT

Objective: Estimate the prevalence of Post-traumatic stress disorder (PTSD) in the Colombian population and associated risk factors by using the PCL modified scale. Methods: Information was gathered from the National Mental Health Survey, adults who suffered, witnessed or were near people who have had stressing events, were selected. The prevalence of PTSD was calculated with 95% confidence. The association between the studied variables and PTSD prevalence was evaluated by performing a Pearson chi-squared X^2 test. Results: Prevalence of PTSD was 2.9 (95% CI = [2.3 – 3.6]) for the Colombian population. This study found an association with some risk factors, which were divided into different categories: sociodemographic, childhood development, life course, and chronic diseases. Among these, absolute poverty, educational level, and self-reported support networks are factors with a greater association for PTSD development. Conclusion: PTSD has a greater prevalence in Colombia, compared to the literature found world-wide. These results raise the need for planning public health interventions for the prevention and time-efficient approach for the associated factors that develop this disorder.

Keywords: Post-traumatic stress disorder; Risk Factors; Mental health; Armed conflicts.

PREVALÊNCIA E FATORES DE RISCO ASSOCIADOS AO TRANSTORNO DE ESTRESSE PÓS-TRAUMÁTICO NA COLÔMBIA

Resumo

Objetivo: Estimar a prevalência do transtorno de estresse pós-traumático (TEPT) na população colombiana e os fatores de risco associados usando a escala modificada do PCL. Métodos: Foram coletadas informações da Pesquisa Nacional de Saúde Mental, e selecionados adultos que sofreram, testemunharam ou estavam perto de pessoas que tiveram eventos estressantes. A prevalência de TEPT foi calculada com 95% de confiança. A associação entre as variáveis estudadas e a prevalência de TEPT foi avaliada através do teste qui-quadrado (X^2) de Pearson. Resultados: A prevalência de TEPT para a população colombiana foi de 2,9 (IC 95% = [2,3 - 3,6]). Este estudo encontrou associação com alguns fatores de risco, os quais foram divididos em diferentes categorias: sociodemográficas, desenvolvimento infantil, curso de vida e doenças crônicas. Entre elas, a pobreza absoluta, o nível educacional e redes de apoio autorreferidas são fatores com maior associação para o desenvolvimento de TEPT. Conclusão: O TEPT tem uma prevalência maior na Colômbia, se comparada com a literatura encontrada em todo o mundo. Esses resultados levantam a necessidade de planejar intervenções de saúde pública para a prevenção e uma abordagem eficiente em tempo para os fatores associados que desenvolvem esse distúrbio.

Palavras-chave: Transtorno de estresse pós-traumático; Fatores de risco; Saúde mental; Conflitos armados.

[1] Postgraduate student. Departamento de Epidemiología Clínica y Bioestadística, Facultad de Medicina, Pontificia Universidad Javeriana, Bogotá, Colombia. Mail: felipe.botero@javeriana.edu.co

[2] Titular professor. Departamento de Epidemiología Clínica y Bioestadística, Facultad de Medicina, Pontificia Universidad Javeriana, Bogotá, Colombia. Mail: carlosrincon@javeriana.edu.co

[3] Titular professor. Departamento de Epidemiología Clínica y Bioestadística, Facultad de Medicina, Pontificia Universidad Javeriana, Bogotá, Colombia. Mail: nrodrigu@javeriana.edu.co

[4] Titular professor. Departamento de Epidemiología Clínica y Bioestadística, Departamento de Psiquiatría y Salud Mental, Facultad de Medicina, Pontificia Universidad Javeriana, Bogotá, Colombia. Mail: cgomez@javeriana.edu.co

INTRODUCTION

PTSD is characterized by discomfort and anxiety following a traumatic event. In this disorder, individuals re-experience such traumatic events during dreams or daily thoughts, adding intrusive phenomena, avoidant behaviors and hyper-alertness. The traumatic event normally corresponds to some insult done to the patient, which could be intentional or not. Additionally, to this experience, there may be other biological or psychological factors that could predispose an individual (1).

Different instruments have been used for PTDS screening, among them are self-reported questionnaires or by an interviewer, and checklists according to medical criteria. The checklist for PTDS in its fifth version (PCL-5), is the one that has been applied the most. This scale searches for symptoms during the last month, it contains 20 questions related to intrusive thoughts, avoidant or hyper-alert attitudes, also it evaluates negative alterations in cognition and mood. The suggested cut-off point is of 33 for a positive screening. This questionnaire can be completed by both the interviewer and the patient, which is the suggested method (2).

Regarding the prevalence of PTSD reported by other countries, United StatesMexico estimated the prevalence of 3.5. While a lower prevalence has been estimated in Europe and most of Asia, Africa, and in certain regions from Latin America, in which this number may be less than 1% (3). However, the Pan American Health Organization (PAHO) estimates a prevalence of 2.5% throughout life and 1.2% for the last year in Latin America (4).

Some reported risk factors indicate the presence of poorly adaptive traits or poor coping mechanisms, which develop since childhood (5). Also, being a woman, secondary to the defensive mechanisms adopted, in some cases safe-blame thoughts (6). MacGregor et al. suggest an increased risk for women, with an OR = 1.99 (CI 95% = [1.34 – 2.96]) compared to men (7). Additionally, the presence of socioeconomic adversities, low social support, and greater religiosity may also increase the risk of developing PTSD, even, being separated, divorced or widowed (8). Another important factor is ethnicity, as Pole et al. described it to have a positive association with PTSD in Latinos, due to the predominance of magical thinking, which resulted in a resignation state for these people (6).

Other factors associated with an increased risk for PTSD are having a sedentary lifestyle. Also, other medical conditions such as poor pain modulation during postoperative care lead to an incidence increase of 22% for this disorder (9), or in chronic pain syndromes for which the

frequency increases by 10-50% (10). Delirium, acute myocardial infarction, acute respiratory failure and intensive care treatment increase incidence up to 25% (11). On the contrary, high cognitive and educational level are considered protective factors for PTSD (12, 13).

A risk factor that becomes important in Colombia is having been exposed to violence. According to the National Mental Health Survey (NMHS), conducted in 2015, between 10.4 – 10-7% of adults have suffered a traumatic event related to common crimes (7.9% with armed conflict, and 6.1 – 7.7% with domestic violence) (14).

People who were exposed to war events are at greater risk for mental disorders, including depression, anxiety, and stress. Regarding the direct exposure in combat, the nature of combat and the emotional stressor burden becomes important (15), attached to psychosocial circumstances such as the proximity to a war zone. So far, no population studies have been performed with national representativeness that estimates PTSD prevalence and describes possible specific risk factors (16).

Another important factor is biological diseases related to PTSD, such as increment in blood pressure levels and subsequent Arterial Hypertension, diabetes (17), other mental illnesses (16), and other entities associated with inflammation mechanisms diagnosis. These inflammation mechanisms could be related to emphysema, myocardial infarction, hypercholesterolemia, insulin resistance, angina, among others (17) which are associated with an increased risk for PTSD.

Taking into account Colombia´s conflict history and its great variability, this study seeks to estimate the prevalence of PTSD, as well as to explore possible risk factors associated with the development of this disorder, based on the NMHS 2015.

METHODS

This research was conducted based on information from the adult, non-institutionalized population collected in the NMHS in 2015. The NMHS was applied to a subsample of the master sample for population-based health studies designed by the Ministry of Health and Social Protection from Colombia. The results obtained, are represented in national and regional levels (5 regions were considered). This sample was probabilistic, multi-stage and stratified by sex and age (14).

The study included adults who have suffered, witnessed or were close to someone who had suffered a stressful event. For the evaluation of reactions to stressful events, the PCL-C

(Posttraumatic Check List Civilian version) was used. In this scale, the same questions related to symptoms were maintained, with a cut-off point proposed by Brewin (18). The frequency was specified in the time frame by asking about symptoms presented during the last 12 months, with a frequency of: daily, 2-6 times a week, at least every week, 1-3 times a month, and less than one time for a month or without symptoms. Blevins et al. found a Cronchbach index $\alpha = 0.94$ and a reliability of 0.82 with 95% CI [0.71-0.89] for the PCL-5 test and retest (19).

The variables included in this study were divided into sociodemographic data and network support (including age, sex, housing area, economic status, region, educational level, family dysfunction, marital status, number of events, religion, and ease when asking for help from other people), life course (related to relationship with caregivers during infancy, family relationship, abuse, and socio-economic resources during childhood) and chronic diseases (related to kidney insufficiency, gastrointestinal disorders, mental illness, chronic pain, epilepsy, hypertension, diabetes, thyroid cancer, pulmonary, cardiac, autoimmune or osteodegenerative disorders, liver, cerebrovascular disease or other chronic conditions).

The prevalence estimation of PTSD with its corresponding 95% confidence interval was obtained. The association between each of the variables under study and PTSD prevalence were evaluated by using a Pearson chi-squared x2 test corrected by the survey's design by Rao and Scott's second-order method because this was a multi-staged sample (20).

RESULTS

From the 10,870 people who were interviewed, 4,316 (39.7%) adults said they had witnessed or been part of a traumatic event with an average age of 43 (SD: 16.4). 40.5% (n=1,746) of participants were men, while 59.6% (n=2,570) were women. The estimated prevalence for PTSD was 2.9% (95% CI = [2.3-3.6]), these individuals obtained a positive score by using the PCL-C questionnaire.

Regarding sociodemographic aspects (Table 1), it was found that households in poverty have a higher prevalence of PTSD symptoms. Similar results were obtained in urban areas comparing it with rural areas. It was also found that subjects with a higher educational level had a lower prevalence of PTSD. Additionally, family disfunction was evaluating, and it was found a proportional relationship between it and PTSD symptoms.

Table 1

Sociodemographic data			
	Prev. PTS %	(cases/n)	p value
Age			
18-44	3.1	(77/2320)	0.448
> 44	2.5	(62/1996)	
Poverty			
Homes with access	2.4	(17/823)	0.045
Households not vulnerable to MDP	2.3	(72/2252)	
Vulnerable Homes to MDP	5.0	(31/772)	
Households in a state of poverty	3.5	(19/469)	
Area			
Urban	3.1	(100/3385)	0.020
Rural	2.6	(39/931)	
Region			
Central	2.9	(35/953)	0.110
Atlantic	1.0	(5/657)	
Bogotá	2.9	(40/862)	
Eastern	4.3	(39/961)	
Pacific	3.1	(20/883)	
Sex			
Man	2.6	(44/1746)	0.360
Woman	3.2	(95/2570)	
Educational level			
None	3.9	(57/1460)	0.003
Secondary	3.1	(72/2104)	
Technical	1.2	(9/393)	
University	0.0	(1/312)	
Family dysfunction			
No dysfunction	2.5	(97/3471)	0.000
Mild dysfunction	1.5	(4/427)	
Moderate dysfunction	6.8	(16/245)	
Severe dysfunction	9.6	(22/173)	
Marital status			
Married - Free Union	3.9	(72/2346)	0.1314
Separate	3.1	(38/828)	
Single	1.2	(29/1142)	
Number of events			
1	2.6	(84/3032)	0.050
2	4.2	(32/728)	

3	4.8	(11/313)	
4 or more	2.8	(12/243)	
Although sometimes you would prefer not to ask for help. how often can you go to someone to discuss your problems or difficulties or ask for advice?			
Always	2.7	(30/1171)	0.960
Almost always	3.1	(30/644)	
Sometimes	2.9	(54/1875)	
Never	3.1	(25/4316)	
Although sometimes you would prefer not to ask for help. how often can you go to someone when you have an unforeseen expense, economic emergency, or other serious or catastrophic situation?			
Always	2.6	(28/1103)	0.700
Almost always	2.2	(1/31)	
Sometimes	3.2	(2/61)	
Never	3.1	(2/45)	
Importance of religion in your life			
Much	2.8	(99/3244)	0.310
Any	2.8	(16/548)	
Little	4.7	(19/372)	
None	1.5	(5/152)	

MDP: Multidimensional poverty

For the variables related to development in childhood and the life course (Table 2), it was evident that the individuals who had caregivers who expressed their affection and allowed them to play and have fun presented a lower prevalence for PTSD. It was also found that the death of one of the parents or some other close person, had bad relationships with their family members or rated their first years of life poorly, presented a higher prevalence for PTSD. Positive screening for PTSD was found between people who took care of their siblings or other relatives during childhood, as well as people who had many jobs or difficulties in childhood. Individuals who were homeless expressed a higher prevalence of developing PTSD symptoms. On the other hand, when individuals have had access to a balanced diet this study found it to be a protective factor for PTSD. When reviewing chronic diseases (Table 3), renal, gastrointestinal, mental or neurologic diseases, chronic pain and epilepsy showed a positive association for developing PTSD symptoms.

Table 2

Life course			
	Prev. PTS %	(cases/n)	P value
Were there adults who looked after you or were around you?			
Never	6.4	(8/183)	0.004
Almost never	7.6	(13/150)	
Sometimes	5.9	(17/304)	
Almost always	3.6	(20/545)	
Always	2.2	(81/3133)	
Did the adults around you express affection towards you?			
Never	9.3	(25/263)	0.000
Almost never	8.2	(18/237)	
Sometimes	3.4	(22/595)	
Almost always	3.3	(19/594)	
Always	1.9	(55/2626)	
Did the adults around you allow you to play and have fun?			
Never	9.7	(19/217)	0.000
Almost never	7.3	(16/216)	
Sometimes	4.8	(23/577)	
Almost always	2.8	(19/586)	
Always	2.0	(62/2720)	
Did any of your parents or anyone close to you died?			
Yes	3.8	(70/1800)	0.013
No	2.2	(69/2516)	
Did you generally have good relationships with your family members?			
Yes	2.6	(111/3888)	0.009
No	5.4	(26/426)	
Did you to take care of your siblings or other relatives while you were a child?			
Never	2.3	(67/2497)	0.029
Almost never	1.9	(12/345)	
Sometimes	3.3	(24/653)	
Almost always	4.4	(9/291)	
Always	5.4	(27/530)	
Did you go through a lot of jobs or difficulties?			
Never	1.5	(41/2189)	0.000
Almost never	2.6	(11/405)	
Sometimes	3.7	(29/876)	
Almost always	3.7	(20/365)	
Always	9.0	(38/481)	
Did the adults around you punish you too hard or mistreat you?			

Never	2.2	(51/2104)	0.100
Almost never	4.1	(23/575)	
Sometimes	2.8	(32/1051)	
Almost always	4.3	(15/299)	
Always	5.2	(18/287)	
Did you have to work to help your family?			
Never	2.4	(78/2914)	0.154
Almost never	4.7	(9/187)	
Sometimes	3.9	(21/519)	
Almost always	5.0	(11/240)	
Always	4.0	(20/456)	
Overall. was life in your first 12 years good?			
Yes	2.4	(94/3835)	0.000
No	7.6	(44/478)	
Did you ever live in the street or were you begging?			
Yes	9.9	(17/136)	0.000
No	2.6	(122/4180)	
At home, did you have something to eat?			
Never	2.1	(1/78)	0.000
Almost never	13.2	(4/60)	
Sometimes	5.1	(25/468)	
Almost always	5.9	(33/514)	
Always	2.0	(76/3196)	

Table 3

Chronic diseases			
	Prev. PTS % (casos/n)		P value
Kidney disease			
Yes	10.3	(14/149)	0.000
No	2.7	(125/4167)	
Gastrointestinal disturbances			
Yes	5.1	(55/966)	0.0004
No	2.3	(84/3350)	
Mental or nerve disorder			
Yes	8.2	(18/167)	0.0006
No	2.7	(121/4149)	
Chronic pain			
Yes	5.8	(18/289)	0.0197
No	2.7	(121/4027)	

Epilepsy or seizures			
Yes	10.9	(4/30)	0.0176
No	2.7	(135/4285)	
Arterial hypertension			
Yes	3.7	(37/840)	0.2850
No	2.8	(102/3476)	
High sugar or diabetes			
Yes	1.9	(9/265)	0.4470
No	3.0	(130/4051)	
Cancer			
Yes	1.2	(2/75)	0.2680
No	2.9	(137/4241)	
Hyper hypothyroidism			
Yes	1.1	(4/204)	0.0563
No	3.0	(135/4114)	
Lung disease			
Yes	5.1	(13/226)	0.1529
No	2.8	(126/4089)	
Heart disease			
Yes	3.2	(12/190)	0.8024
No	2.9	(127/4126)	
Autoimmune or osteodegenerative diseases			
Yes	4.5	(21/366)	0.1495
No	2.8	(118/3950)	
Liver damage			
Yes	2.2	(3/65)	0.7054
No	2.9	(136/4251)	
Stroke			
Yes	0.0	(0/37)	0.4633
No	2.9	(139/4316)	
Another chronic disease			
Yes	9.2	(7/120)	0.0027
No	2.7	(132/4193)	

DISCUSSION

Colombia, like other Latin American countries, has lived a long-armed conflict history, associated with sociodemographic inequality. There are also large differences in access to

opportunities, possession control and enjoyment of resources or fundamental rights such as education, health among others (21).

Prevalence of PTSD symptoms was estimated at 2.9% in the surveyed population, like Mexican studies which estimated a world and life-prevalence of 1.9% and 3.3% (4). Having in mind that these numbers were estimated throughout life, lower results were expected. PAHO estimates a prevalence of 1.2% every year in Latin America (4), and APA estimates it between 0.5-1% (3). On the contrary, Pole et al. described a higher risk for developing PTSD in Latinos, due to the predominance of magical thinking (believing in destiny or will of a supreme being) resulting in a resignation state for this population (6).

The prevalence found in this study was higher than the one reported in the literature. This could be due to the tool that was used for screening. However, with the details that were introduced to the PCL, and having into account that Colombia has many violent territories, the results are reliable and close to reality. On the other hand, this continuous violence can cause another entity called historical trauma (HT) which shares a lot of symptoms with PTSD and could also have been detected with the PCL questionnaire. HT is characterized by presenting collective tension or stress, and its main difference with PTSD is that HT is presented in populations and not at individual levels (22).

HT presents a transgenerational succession, which can occur interpersonally or socially. The first takes place when there is abuse, and the second when transmitting stories from an individual. Therefore, the screening tool used for this study contemplates the option of responding positively if someone close had suffered a violent event (22). Another aspect in which PTSD and HT can be confused could be when there is a family history of PTSD, especially in mothers or caregivers. The risk for PTSD increases considerably (OR = 12.22, 95% CI = [2.75-54.28]) (5). There is another possibility that explains the high prevalence found in this study, which could be the fact that there are also cases of HT of transgenerational succession, and not PTSD by itself.

This study found a higher prevalence of PTSD in women than in men, as it can also be found in the literature. This could be related to women's exposure to traumatic events, their way of dealing with these problems, related to self-blame thoughts from an emotional perspective. On the contrary for men, a decisive attitude towards problems has been related, which acts as a protective factor for them (6).

This study's sample showed that the youngest group (18-44 years of age) had a greater prevalence of PTSD. Similar Mendoza et al. findings, who explained a higher prevalence of this disorder in young people, related to their contact with stressful events. Although in this study such results were not statistically significant, this could be due to small sample size. A relationship between the development of PTSD and the presence of poverty or family dysfunction was found, and this is consistent with other authors (8). Likewise, a higher prevalence in urban areas was detected. According to Gaffey at al., who obtained a similar result in a cohort study, the subjects who lived in this area, due to lower social support had a greater incidence for stressful events (23).

The educational level has a negative correlation if a person has a higher education level, he or she has a lower risk of developing PTSD; this result was also found in Gale et al. study. This describes an inversely proportional relationship between people with lower results in intelligence tests during their childhood and the risk of presenting some psychopathology in their adulthood. This could be possibly associated with their lower chances of managing stress (12). Ramchand et al. found a higher prevalence of PTSD in Afghanistan's military population in individuals who had lower education levels. These authors found that subjects with a higher level of education had more psychological tools for dealing with stressful events, as well as greater awareness of occurring facts (13).

There is a positive relationship between having a caregiver and affection during childhood, which was considered as a protective factor for PTSD. This was also an expected result according to Kaufman-Shriqui et al. who state that a child's ability to cope with stressors depends on the caregiver, as does the ability to feel safe again after trauma. This highlights the importance of a mother or caregiver during the first years of life (5). On the other hand, people who had to take care of their siblings or other relatives during childhood, people who had many jobs or difficulties during childhood, and individuals who suffered physical abuse or severe punishments, had a higher prevalence of PTSD. Zhang et al. assigned this fact due to a poor consolidation of coping mechanisms, finding a positive association between child abuse and a higher incidence of PTSD during adulthood (24).

The literature states that chronic pain (fibromyalgia or chronic regional pain syndrome) or acute postoperative pain, as a relevant factor in the development of PTSD. There is an increase of up to 50% for chronic pain, while an increase of 22% for postoperative pain (9,10). This

inclination is consistent with the findings of this sample's study, where there is a clear relationship between chronic pain and the prevalence of this disorder. This study also found that chronic diseases are associated with this disorder, however, due to the type of study, it is not possible to identify the chronological order of these entities.

Crespo et al. found a relationship between cancer and PTSD. They point this relationship due to the magnitude of the diagnosis, both main and the associated comorbidities, as well as the stage when diagnosed. Besides, it influences the type of treatment, the duration, and the effectiveness of it. The influence of both beliefs, fears, and expectation are also reflected int a PTSD diagnosis (25).

This study identifies an important relationship between risk factors and the presence of symptoms that correspond to PTSD. Due to this relationship, there is a need to provide mental health care to the population, and at the same time, treat the comorbidities and risk factors already present. This therapy will improve the prognosis and decrease the burden of disease. The identified risk factors include socioeconomic differences, abuse, educational level, chronic diseases. Additionally, there are other factors that, despite not being preventable, can be approached to reduce the possibility of developing PTSD and the disease burden. Considering the post-conflict context and the social changes secondary to it, this is a topic that should continue to be evaluated. Additionally, it is necessary to perform studies with longitudinal follow-ups that allow the determination of relationships between PTSD and differentiate it from HT.

A strength of this study is that the survey sample has national and regional representativeness. Therefore, it can be considered the obtained prevalence and risk factors are a correct approach and are related to PTSD. Such risk factors could bring to the development of new interventions promoting mental health, strengthening resilience and quality of life of people. Additionally, Latin American countries have a similar context, so these findings could apply for the whole region.

The limitations of this study are mainly related to those of a cross-sectional one, the researchers cannot identify temporality or causality. Also, the tool for determining prevalence was made for screening, and not for diagnosis or differentiate between PTSD and HT. Finally, NMHS may have a memory bias, in the sense that those who had PTSD could remember clearly if they witnessed a stressful event or presented a risk factor asked in the questionnaire.

CONCLUSIONS

There is evidence of a higher prevalence of PTSD in Colombia compared to the one reported in the literature. Additionally, the relationship between sociodemographic, life and health development factors with PTSD is highlighted. These results raise the need for planning public health interventions for prevention, with an efficient approach to the associated factors in the region.

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