



PTSD DISEASE BURDEN: Patient, Humanistic, Clinical, and Economic Burden

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Module Overview: Disease Burden in Post-Traumatic Stress Disorder (PTSD)

Section 1:
Patient burden



- Four core symptom clusters
- Health-related quality of life
- Suicide

Section 2:
Humanistic burden



- Partners and families

Section 3:
Clinical burden



- Diagnostic and treatment challenges
- PTSD-related stigma
- Psychiatric comorbidities
- Medical comorbidities and mortality

Section 4:
Economic burden

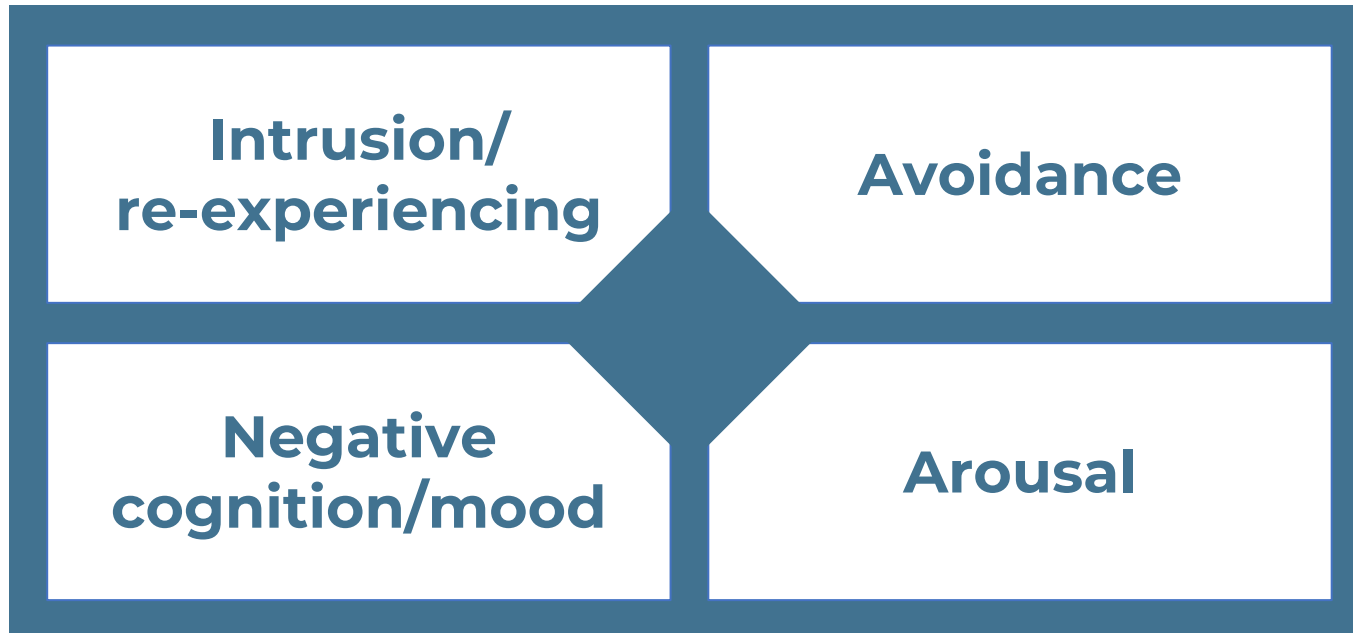


- Burden on healthcare systems and society
- Disability and reduced functionality

Section 5:
Summary



Four core symptom clusters



PTSD is associated with a high impact on the individual, with impaired function across a range of different domains, including marital, parental, occupational, and social functions

PTSD, post-traumatic stress disorder.

1. Rodriguez P et al. *J Rehabil Res Dev.* 2012;49(5):649-665.

PTSD has a high impact on quality of life (1/3)

All aspects of life:



- PTSD can affect all aspects of a person's functioning and well-being¹
 - Emotional and physical detachment²
 - Lack of interest²
 - Less involvement with children²

Employment:



- **78%** of the civilian and **81%** of the military population with PTSD are unemployed in the US³
 - The likelihood of unemployment increases with symptom severity³⁻⁶
- It presents as^{7,8}:
 - Occupational impairment
 - Poor performance at work
 - Increased absenteeism
 - Reduced productivity
- Avoidance symptoms result in reluctance or refusal to take public transportation to and from work, which further exacerbates social isolation^{7,9}

PTSD, post-traumatic stress disorder; US, United States.

1. U.S. Department of Veterans Affairs. PTSD: National Center for PTSD. (2023). <https://www.ptsd.va.gov/professional/treat/essentials/epidemiology.asp>.
2. Ruscio AM et al. J Trauma Stress. 2002;15(5):351-357.
3. Zivin K et al. Psychiatr Serv. 2011;62(1):35-38.
4. Savoca E et al. J Ment Health Policy Econ. 2000;3(4):199-207.

5. Horn SR et al. Abstract presented at the American Psychiatric Association Annual Meeting; New York, NY, 2014.
6. Smith MW et al. Ment Health Serv Res. 2005;7(2):89-101.
7. Rodriguez P et al. J Rehabil Res Dev. 2012;49(5):649-665.
8. Dietch JR et al. J Occup Health Psychol. 2019;24(6):689-702.
9. Yehuda R et al. Nat Rev Dis Primers. 2015;1:15057.

PTSD has a high impact on quality of life (2/3)



PTSD-related hypervigilance is associated with¹:

- Impairment in friendship and socialization
- Irritability and feelings of detachment/estrangement
- Avoiding crowds
- Prematurely leaving social events
- Sitting in certain places (e.g., near an exit)
- Difficulty being present in public

Interpersonal:



Social impact of PTSD

- Symptoms make it difficult for individuals to interact with their friends and family¹
- Individuals struggle to adapt to societal norms and undermine social support networks, placing a substantial burden on interpersonal relationships^{2,3}

PTSD, post-traumatic stress disorder.

1. Rodríguez P et al. J Rehabil Res Dev. 2012;49(5):649-665.
2. Koven SG. Healthcare (Basel). 2018;6(3):94.
3. Yehuda R et al. Nat Rev Dis Primers. 2015;1:15057.

PTSD has a high impact on quality of life (3/3)



Homelessness and lack of resources:

- PTSD can often result in the loss of personal, social, and material resources¹
- In people who experience homelessness globally²:
 - ~27% have PTSD
 - One of the most common psychiatric disorders*
 - Increased risk of mortality from suicide, medical causes, and drug-related problems
- PTSD was a key predictor of relapse and increased days of homelessness in a US study of adolescents receiving treatment for substance abuse disorder³



Prolonged incarceration:

- Increased likelihood of prolonged incarceration among US prisoners⁴
- Experiencing ≥ 4 traumas was associated with elevated odds of arrest, and being jailed and imprisoned⁴

*Across 19 studies (n = 20,364).

PTSD, post-traumatic stress disorder; US, United States.

1. Yehuda R. Nat Rev Dis Primers. 2015;1:15057.

2. Ayano G et al. Psychiatr Q. 2020;91(4):949-963.

3. Davis JP et al. Psychol Addict Behavi. 2019;33(5):467-476.

4. Jäggi LJ et al. Soc Ment Health. 2016;6(3):187-206.

PTSD is associated with an increased risk of suicidal ideation, attempted suicide, and completed suicide

- Civilians who develop PTSD are at an increased risk (relative risk = 2.7) of attempted suicide compared to individuals who have never experienced a traumatic event^{1,2}
- In the US, PTSD is significantly associated with increased rates of suicide and attempted suicide^{3,*}
 - A cross-sectional analysis of 5.9 million US veterans reported that PTSD was associated with an increased odds of suicide^{4,†}

PTSD, post-traumatic stress disorder; US, United States.

*Suicidal ideation: Adjusted odds ratio (OR) = 1.80; 95% confidence interval (CI) 1.37, 2.35³ Suicide attempts: Adjusted OR = 1.96; 95% CI 1.37, 2.80.³

†An increased risk for suicide in a cross-sectional analysis (OR = 1.34; 95% CI 1.21, 1.48)⁴

1. Nepon J et al. *Depress Anxiety*. 2010;27(9):791-798.
2. Wilcox HC et al. *Arch Gen Psychiatry*. 2009;66(3):305-311.
3. Cogle JR et al. *J Psychiatr Res*. 2009;43(9):825-829.
4. Conner KR et al. *J Affect Disord*. 2014;166:1-5.

PTSD symptoms can negatively affect the relationships between patients and their partners (1/2)

Studies suggest links between PTSD and intimate relationships¹



Timing of index trauma

- Impact on relationship quality was stronger among survivors who experienced traumatic events in the distant past compared to those who experienced more recent events²



Natural disasters

- Associated with poor relationship adjustment³



Interpersonal victimization

- Predicts family violence^{1,4}



Childhood sexual abuse

- Survivors of childhood sexual abuse predict problems with intimate relationships in adulthood and difficulties with intimacy and sexual dysfunction^{1,4-7}

PTSD, post-traumatic stress disorder.

1. Suomi A et al. Cochrane Database of Syst Rev. 2019;12:CD011257.
2. Lambert JE et al. J Fam Psychol. 2012;26(5):729-737.
3. Taft CT et al. J Fam Violence. 2009;24(6):389-396.

4. Krause E et al. J Trauma Stress. 2006;19(4): 507-516.
5. Cloitre M et al. J Trauma Stress. 1997;10(3):437-452.
6. Lamoureux BE et al. Psychol Trauma. 2012;4(6):605-613.
7. Davis JL et al. Aggress Violent Behav. 2000;5(3):291-328.

PTSD symptoms can negatively affect the relationships between patients and their partners (2/2)



In civilians with PTSD:

- Avoidance symptoms can contribute to¹:
 - Withdrawal from family members
 - Detachment from others
 - Strengthening feelings of uncertainty and loneliness
- Hyperarousal symptoms can create further difficulties with intimate relationships^{1,2}



Partners of individuals with PTSD:

- Assume greater responsibility for household tasks and the maintenance of relationships²



Partners of veterans with PTSD:

- Have an increased risk of^{3,4}:
 - Developing their own mental health issues
 - Reporting lower levels of happiness
 - Having reduced satisfaction in their lives
 - Experiencing higher demoralization

PTSD, post-traumatic stress disorder.

1. Rodriguez P et al. J Rehabil Res Dev. 2012;49(5):649-665.

2. Campbell SB. Clin Psychol Rev. 2018;65:152-162.

3. U.S. Department of Veterans Affairs. PTSD: National Center for PTSD. Effects of PTSD on Family, 2022. Available at: https://www.ptsd.va.gov/family/effect_families.asp (Accessed August 2022).

4. Jordan BK et al. J Consult Clin Psychol. 1992;60(6):916-926.

PTSD symptoms can negatively affect the families of individuals with PTSD

Individuals with PTSD

Nightmares, insomnia, and recurrent disturbing dreams¹⁻³

Hyperarousal symptoms in veterans with PTSD⁴

Emotional numbing, lack of emotional or physical intimacy, difficulty receiving and giving affection, increased isolation^{1,5}

Interpersonal victimization, hyperarousal and irritable or angry behavior⁶⁻⁹

Changes to cognition and mood¹

Partners and family

Makes cohabitation difficult¹

Emotionally dysregulated parent-child interactions, especially in stressful situations⁴

Physically present but emotionally absent¹

Feel like “walking on eggshells”^{8,9}

Feel emotionally “cut-off”¹

Emotional support is important, and negative family interactions may precipitate PTSD development by 1 year post-trauma¹⁰

PTSD, post-traumatic stress disorder.

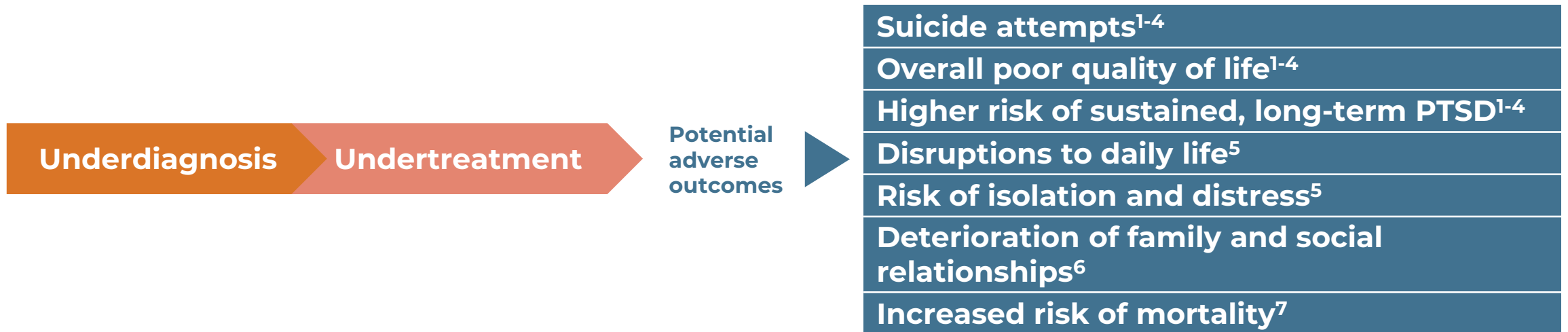
1. Larsen SE. 2023. PTSD and the Family. www.ptsd.va.gov/professional/treat/specific/ptsd_family.asp.
2. Schoenfeld FB. J Rehabil Res Dev. 2012;49(5):729-752.

3. Lies J et al. BJPsych Advances. 2019;25(3):196-206.
4. Gewirtz AH et al. J Consult Clin Psychol. 2010;78(5):599-610.
5. Yehuda R et al. Nat Rev Dis Primers. 2015;1:15057.
6. Suomi A et al. Cochrane Database Syst Rev. 2019;12:CD011257.

7. Krause ED et al. J Trauma Stress. 2006;19(4):507-516.
8. McGaw VE et al. J Child Fam Stud. 2019;28(11):2942-2952.
9. Fredman SJ et al. J Anxiety Disord. 2014;28(4):372-381.
10. Nguyen AW et al. Soc Psychiatry Psychiatr Epidemiol. 2016;51(8):1149-1157.

Underdiagnosis and undertreatment prolong suffering and add to overall burden

PTSD is underdiagnosed in both the US civilian and military populations¹⁻⁴



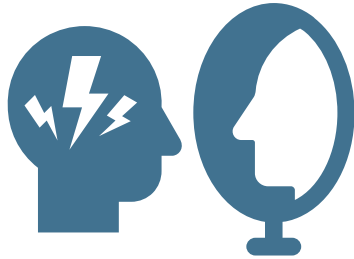
Early diagnosis and intervention are necessary for effective treatment and to minimize the long-term outcomes associated with PTSD⁸

PTSD, post-traumatic stress disorder; US, United States.

1. Gagnon-Sanschagrin P et al. BMC Psychiatry. 2022;22(1):630.
2. Wimalawansa S. Res J Med. 2013;1:1-12.
3. Goenjian AK et al. Am. JPsychiatry. 2005;162(12):2302-2308.
4. Priebe S et al. Croat. Med. J. 2009;50(5):465-475.

5. Ellis J et al. Continuum (Behavioral Neurology and Psychiatry). 2018;24(3):873-892.
6. Smith BA. Healthcare (Basel). 2018;6(30):80.
7. Cooper J et al. Aust Fam Physician. 2014;43(11):754-757.
8. Mann SK et al. 2013. www.ncbi.nlm.nih.gov/books/NBK559129/.

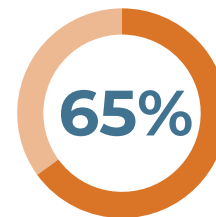
PTSD-related stigma has a negative impact on patient outcomes and adds to clinical burden



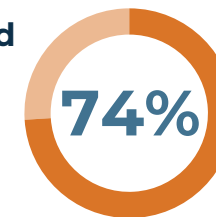
- Self-stigma may be common among individuals with PTSD¹⁻³
 - May be a significant barrier to treatment seeking and engagement
 - Associated with greater symptom burden



- Individuals with PTSD may avoid treatment due to^{4,5}:
 - Perceived shame
 - Fear of being negatively judged or discriminated against



believe they would be seen as weak for seeking treatment⁴



believe they should be able to cope with the problem alone⁴

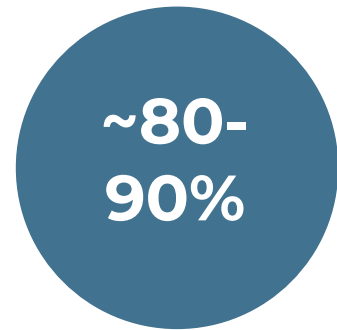
PTSD, post-traumatic stress disorder.

1. Benfer N et al. Psychiatr Serv (Washington, D.C.). 2023;appips20220397.
2. Bonfils KA et al. Psychiatry Res. 2018;265:7-12.

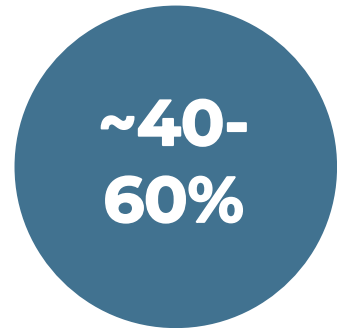
3. Hoge CW et al. NEJM. 2004;351(1):13-22.
4. Kantor V et al. Clin Psychol Rev. 2017;52:52-68.
5. Kazlauskas E. Global Health Action. 2017;10(1):1322399.

Psychiatric comorbidities in individuals with PTSD

- As demonstrated by National Surveys data¹⁻³:



meet criteria for at least 1 other psychiatric disorder^{1,2}



have 3 or more other psychiatric diagnoses³

- Most common comorbidities:

Affective disorders (depression)⁴

- ~50% individuals with PTSD had comorbid major depressive disorder^{2,3,*}
 - Greater cognitive and functional impairment^{1,5,6}

Anxiety disorders⁴

- Individuals with PTSD have 2.4 -7.1 higher odds of having an anxiety disorder, with the majority comprising phobias (simple, social, agoraphobia) and generalized anxiety disorder⁴

Substance use disorder⁴

*Meta-analytic findings (57 studies); N = 6670 participants. PTSD, post-traumatic stress disorder.

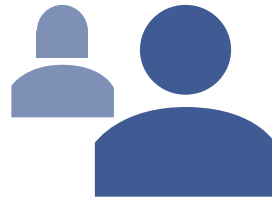
1. Flory JD et al. Dialogues Clin Neurosci. 2015;17(2):141-150.
2. Rytwinski NK et al. J Trauma Stress. 2013;26(3):299-309.

3. Kessler RC et al. Arch Gen Psychiatry. 1995;52(12):1048-1060.
4. Brady KT et al. J Clin Psychiatry. 2000;61(suppl 7):22-32.
5. Nijdam MJ et al. Eur. J. Psychotraumatol. 2013;4:19979.
6. Dutra SJ et al. Chronic Stress (Thousand Oaks). 2018;2:2470547018812400.

Substance use disorder is common in individuals with PTSD

~46%

Estimated prevalence¹⁻⁴



More common among men than women⁵



Veterans with PTSD have increased risk of substance use disorders (lifetime drug abuse or dependence, OR 3.52, $p < 0.001$)⁶

PTSD, post-traumatic stress disorder

1. Leeies M. *Depress Anxiety*. 2010;27(8):731-736.
2. McCauley JL. *Clin Psychol*. 2012;19(3): 10.1111/cpsp.12006.
3. Lortye SA. *BMC Psychiatry*. 2021;21(1):442.

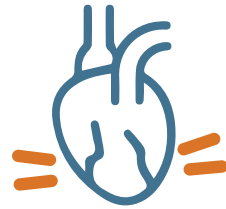
4. Pietrzak RH. *Psychosom Med*. 2011;73(8):697-707.
5. American Psychiatric Association. 2013. *Diagnostic and Statistical Manual of Mental Disorders, Fifth Edition, DSM-5™*. American Psychiatric Publishing.
6. Wisco BE. *J Clin Psychiatry*. 2014;75(12):1338-1346.

Increased risk of medical comorbidities and mortality in PTSD



Sleep dysfunction

- 70-87% reported sleep disturbance¹



Cardiovascular disease

- A positive screening for PTSD was significantly associated with newly self-reported coronary heart disease among current and former US military personnel²
- Female survivors of the 9/11 attacks with PTSD had an elevated risk of heart disease hospitalization²



Dementia

- 1.55 times higher risk of being diagnosed with dementia³
- 73% increased risk in healthcare members aged >60 years^{4,*}



Mortality

- Increased risk of⁵⁻⁹:
 - All-cause
 - Cardiovascular
 - External-cause mortality

PTSD, post-traumatic stress disorder; US, United States.

*Meta-analysis (n = 905,896; 5 studies).

1. Maher MJ et al. CNS Drugs. 2006;20(7):567-590.

2. Jordan HT et al. J. Am. Heart Assoc. 2013;2(5): e000431.

3. Günak MM et al. Br J Psychiatry. 2020;217(7):600-608.

4. Flatt JD et al. Alzheimer's Dement. 2018;14(1):28-34.

5. Boehmer TK et al. Arch Intern Med. 2004;164(17):1908-1916.

6. Boscarino JA. Compr Psychiatry. 2006;47(6):503-514.

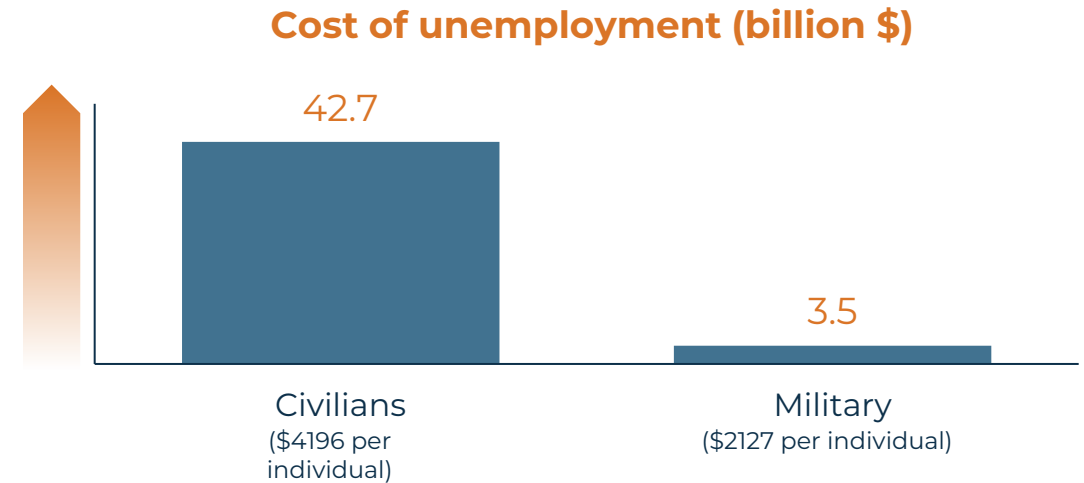
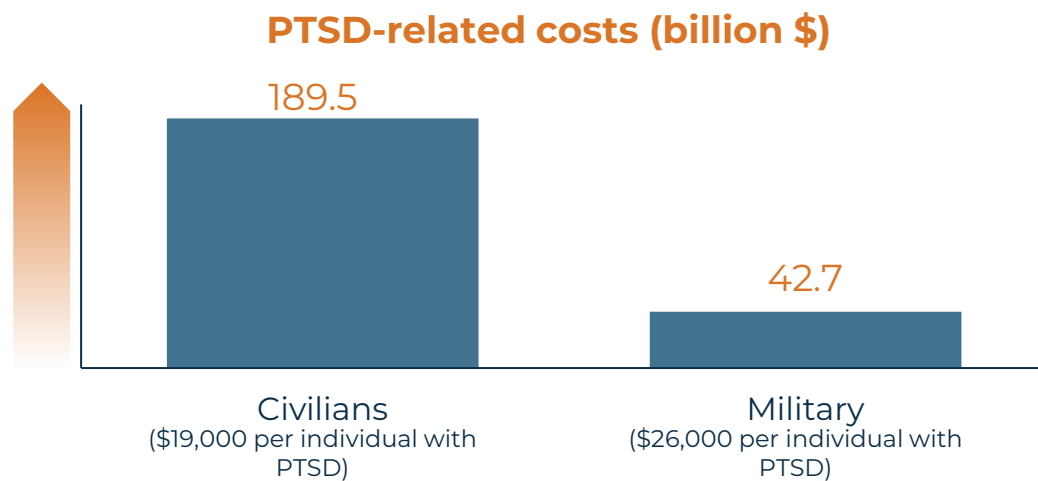
7. Boscarino JA. Ann Epidemiol. 2006;16(4):248-256.

8. Boscarino JA. Psychosom Med. 2008;70(6):668-676.

9. Lohr JB. Am J Geriatr Psychiatry. 2015;23(7):709-725.

PTSD symptoms are associated with increased economic burden on the healthcare system and society (1/2)

- In 2018, the total economic burden of PTSD in the US was estimated at \$232.2 billion (\$20,000 per individual)¹
- In 2018, PTSD-related costs for the US civilian population were almost five times the cost for the military population¹
- Higher proportions of individuals living below the poverty line report PTSD symptoms compared to



PTSD, post-traumatic stress disorder; US, United States.

1. Davis LL et al. J Clin Psychiatry. 2022;83(3):21m14116.
2. Rodriguez P et al. J Rehabil Res Dev. 2012;49(5):649-665.
3. Parto JA et al. J Nerv Ment Dis. 2011;199(7):436-439.

PTSD symptoms are associated with increased economic burden on the healthcare system and society (2/2)



Non-medical direct costs

~\$36 billion are spent on^{1,*}:

- Disability
- Substance use disorder
- Homelessness
- Research and training
- Psychotherapy (for uninsured civilian patients)



Medical costs

- **\$2500 to \$4000** per patient per year is the average excess medical cost associated with PTSD in the US^{2,3}
- PTSD has been shown to incur higher costs than CHD and some psychiatric disorders, including anxiety and depression¹



Untreated patients

- The overall cost in untreated patients is substantial⁴
- Result in much higher lifetime costs⁴

*For uninsured civilian patients.

CHD, coronary heart disease; PTSD, post-traumatic stress disorder; US, United States.

1. Davis LL et al. J Clin Psychiatry. 2022;83(3):21m14116.

2. Cohen GH et al. Lancet Planet Health. 2019;3(2):e93–e101.

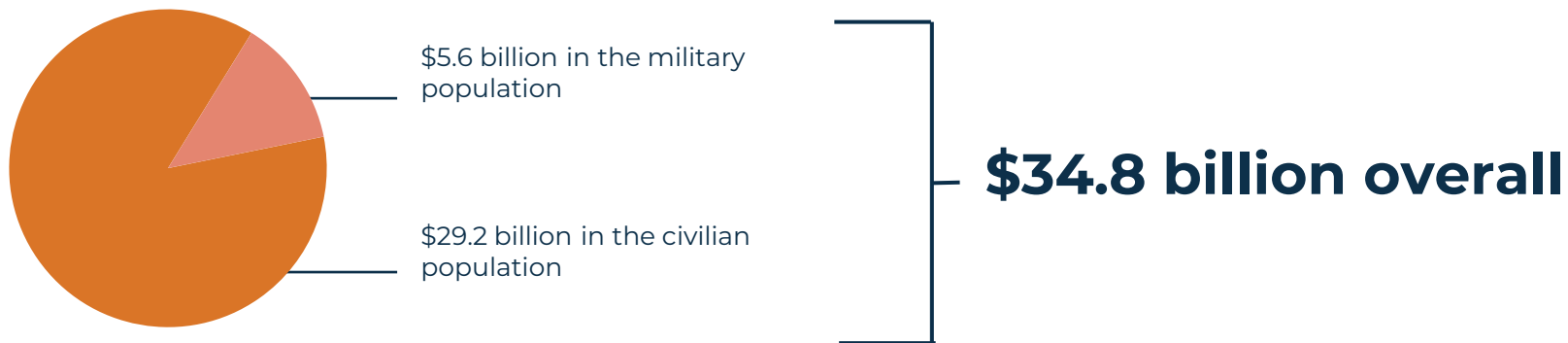
3. Marciniak MD et al. Depress Anxiety. 2005;21(4):178-184.

4. Gagnon-Sanschagrin P et al. BMC Psychiatry. 2022;22(1):630.

PTSD symptoms impact productivity

Loss of productivity in the US

- An individual with PTSD¹:
 - Will experience work impairment ≈1 day per week
 - Will experience ≈20 years of active symptoms
- Excess costs of productivity loss at work due to PTSD was estimated at²:



PTSD, Post-traumatic stress disorder.

1. Guess KF. *The Nurse Practitioner*. 2006;31(3):26-33. 2. Davis LL et al. *J Clin Psychiatry*. 2022;83(3):21m14116

Summary

PTSD symptoms are associated with a high impact on the individual, with impaired function across marital, parental, occupational, and social function domains¹

Psychiatric comorbidities are common among individuals with PTSD and add to overall patient burden²⁻⁴

Increased risk of medical comorbidities and mortality was reported in individuals with PTSD^{5,6}

PTSD is associated with increased economic burden and reduced productivity in the US general population^{7,8}

PTSD, Post-traumatic stress disorder; US, United States.

1. Rodriguez P et al. J Rehabil Res Dev. 2012;49(5):649-665.
2. Flory JD et al. Dialogues Clin Neurosci. 2015;17(2):141-150.
3. Rytwinski NK et al. J Trauma Stress. 2013;26(3):299-309.
4. Brady KT et al. J Clin Psychiatry. 2000; 61(suppl 7):22-32.

5. Jordan HT et al. J Am Heart Assoc. 2013;2(5): e000431.
6. Günak MM et al. Br J Psychiatry. 2020;217(7):600-608.
7. Davis LL et al. J Clin Psychiatry. 2022;83(3):21m14116.
8. Guess KF. The Nurse Practitioner. 2006;31(3):26-33.

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Questions





Closing



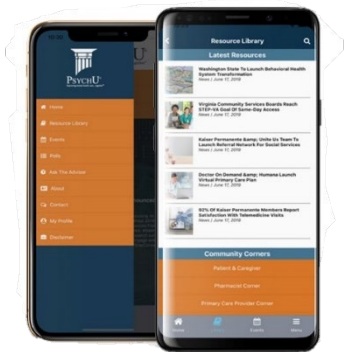
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