# TECHNICAL COMMENTARY

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# Prevalence in war and terrorism exposed

## Introduction

Prevalence represents the overall proportion of individuals in a population who have the disorder of interest. It is different from incidence, which represents only the new cases that have developed over a particular time period. Point prevalence is the proportion of individuals in a population who have the disorder at a given point in time (e.g., at one-month post-trauma), while period prevalence is the proportion of individuals in a population who have the disorder over specific time periods (e.g., one to two months post-trauma). Lifetime prevalence is the proportion of individuals in a population who have ever had the disorder and lifetime morbid risk also includes those who had the disorder but were deceased at the time of the survey.

## Method

We have included only systematic reviews (systematic literature search, detailed methodology with inclusion/exclusion criteria) published in full text, in English, from the year 2010 that report results separately for people with PTSD. Reviews were identified by searching the databases MEDLINE, EMBASE, and PsycINFO. When multiple copies of reviews were found, only the most recent version was included. We prioritised reviews with pooled data for inclusion.

Review reporting assessment was guided by the Preferred Reporting Items for Systematic Reviews and Meta-Analyses (PRISMA) checklist that describes a preferred way to present a meta-analysis[1]. Reviews with less than 50% of items checked have been excluded from the library. Note that early reviews may have been guided by less stringent reporting checklists than the PRISMA, and that some reviews may have been limited by journal guidelines.

Evidence was graded using the Grading of Recommendations Assessment, Development and Evaluation (GRADE) Working Group approach where high quality evidence such as that gained from randomised controlled trials (RCTs) may be downgraded to moderate or low if review and study quality is limited, if there is inconsistency in results, indirect comparisons, imprecise or sparse data and high probability of reporting bias. It may also be downgraded if risks associated with the intervention or other matter under review are high. Conversely, low quality evidence such as that gained from observational studies may be upgraded if effect sizes are large or if there is a dose dependent response. We have also taken into account sample size and whether results are consistent, precise and direct with low associated risks (see end of table for an explanation of these terms)[2]. The resulting table represents an objective summary of the available evidence, although the conclusions are solely the opinion of staff of NeuRA (Neuroscience Research Australia).

## Results

We found six systematic reviews that met our inclusion criteria[3-8].

- Moderate quality evidence found the overall prevalence of PTSD in conflict settings was around 15.3%, and around 26% for up to 9 years post-conflict. Rates of PTSD were highest in women and in unemployed people. Rates were lowest in participants living with a partner.
- Moderate to high quality evidence found the prevalence of PTSD in war-affected refugees and citizens was around 31%. Rates were highest in samples exposed to recent conflict, to torture, to more potentially traumatic events, to political terror, and in people from Cambodia, Bosnia, Kosovo, and Africa.
- Moderate to low quality evidence finds the prevalence of PTSD in children exposed to the chronic Israeli-Palestinian conflict was between 21% and 44.6%. In children exposed to the Iranian war, prevalence was 19%. In children exposed to the World Trade



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Centre terrorist attack, prevalence was 17%. In children exposed to the second Lebanese war, prevalence was 14.9%. In children exposed to the first Gulf war, prevalence was 7.8%.

- Moderate quality evidence finds the prevalence of PTSD in direct victims of terrorist attacks after one year is between 33% and 39%. Indirect victims showed lower prevalence rates (community = 4%, rescue teams = 5-6%, family and friends = 3-13.8%).
- Moderate quality evidence found the prevalence of PTSD in New York city residents and workers after the 9/11 terrorist attacks ranged from 11.9% at 2 weeks to 19.1% by 5-6 years after the attacks.



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*Charlson F, van Ommeren M, Flaxman A, Cornett J, Whiteford H, Saxena S*

**New WHO prevalence estimates of mental disorders in conflict settings: a systematic review and meta-analysis**

**The Lancet 2019; 394: 240-8**

View review abstract online

| | |
|---|---|
| **Comparison** | **Prevalence of PTSD in conflict settings.** |
| **Summary of evidence** | **Moderate quality evidence (large sample, appears inconsistent and imprecise, direct) finds the prevalence of PTSD in conflict settings is around 15.3%.** |
| **Prevalence in adolescents in conflict settings** | |
| 96 studies<br>Total prevalence = 15.3%, 95%UI 9.9% to 23.5%<br>Severe disorder prevalence = 2.0%, 95%UI 1.1% to 3.2%<br>Moderate disorder prevalence = 2.9%, 95%UI 1.7% to 4.4%<br>Mild disorder prevalence = 6.1%, 95%UI 3.5% to 9.1%<br>Disorder without functional impairment prevalence = 4.4%, 95%UI 2.7% to 6.5% | |
| **Consistency in results‡** | Appears inconsistent |
| **Precision in results§** | Appears imprecise |
| **Directness of results‖** | Direct |

*Lowell A, Suarez-Jimenez B, Helpman L, Zhu X, Durosky A, Hilburn A, Schneier F, Gross R, Neria Y*

**9/11-related PTSD among highly exposed populations: a systematic review 15 years after the attack**

**Psychological Medicine 2018; 48: 537-53**

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| | |
|---|---|
| **Comparison** | **Prevalence of PTSD in New York city residents and workers after the World Trade Centre terrorist attack.** |
| **Summary of evidence** | **Moderate quality evidence (large sample, direct) finds the prevalence of PTSD in New York city residents and workers** |

| | |
|---|---|
| | **ranged from 11.9% at 2 weeks after the attack to 19.1% by 5-6 years after the attack.** |
| **Prevalence in New York city residents and workers** | |
| 1 study of NY office workers and residents, N = 40,032, 2-3 year post-attack prevalence = 14.3%, 5-6 years post-attack prevalence = 19.1%<br>1 study of US residents, N = 1,906, 2 weeks post-attack prevalence = 11.9%, 1-year post-attack prevalence = 4.5%<br>1 study of NY residents, N = 2,323, 1-year post-attack prevalence = 4.7%, 2 year post-attack prevalence = 3.8% | |
| **Consistency in results** | No measure of consistency is reported. |
| **Precision in results** | No measure of precision is reported. |
| **Directness of results** | Direct |

*Morina N, Stam K, Pollet TV, Priebe S*

**Prevalence of depression and posttraumatic stress disorder in adult civilian survivors of war who stay in war-afflicted regions. A systematic review and meta-analysis of epidemiological studies**

**Journal of Affective Disorders 2018; 239: 328-38**

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| | |
|---|---|
| **Comparison** | **Prevalence of PTSD in civilians in war zones.** |
| **Summary of evidence** | **Moderate quality evidence (large sample, inconsistent, appears imprecise, direct) finds the prevalence of PTSD up to 9 years post-conflict is 26%. Rates of PTSD were highest in women, and in unemployed people. Rates were lowest in participants living with a partner.** |
| **Prevalence in civilians in war zones** | |
| 30 studies, N = 18,886, point prevalence 8.8 years post-conflict = 26%, 95%CI 23% to 31%, $I^2$ = 97%<br>Rates of PTSD were highest in women, and in unemployed people. Rates were lowest in participants living with a partner. | |
| **Consistency in results** | Inconsistent |
| **Precision in results** | Appears imprecise |

| Directness of results | Direct |
|---|---|

*Paz Garcia-Vera M, Sanz J, Gutierrez S*

**A Systematic Review of the Literature on Posttraumatic Stress Disorder in Victims of Terrorist Attacks**

**Psychological Reports 2016; 119: 328-59**

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| Comparison | Prevalence of PTSD in victims of terrorist attacks. |
|---|---|
| Summary of evidence | Moderate quality evidence (large sample, appears inconsistent and imprecise, direct) finds the prevalence of PTSD in direct victims of terrorist attacks after one year is between 33% and 39%. Indirect victims showed lower prevalence rates (community = 4%, rescue teams = 5-6%, family and friends = 3-13.8%). |
| **Prevalence in victims of terrorist attacks** | |
| 35 studies, N >20,000<br>Direct victims: 1-year post-attack prevalence = 33% to 39%<br>Indirect victims (community): 1-year post-attack prevalence = 4%<br>Indirect victims (rescue teams): 1-year post-attack prevalence = 5% to 6%<br>Indirect victims (family and friends): 1-year post-attack prevalence = 3% to 13.8% | |
| Consistency in results | Appears inconsistent |
| Precision in results | Appears imprecise |
| Directness of results | Direct |

*Slone M, Mann S*

**Effects of War, Terrorism and Armed Conflict on Young Children: A Systematic Review**

**Child Psychiatry & Human Development 2016; 47: 950-65**

View review abstract online

| Comparison | Prevalence of PTSD or PTS symptoms in children exposed to war, conflict, or terrorism. |
|---|---|
| **Summary of evidence** | **Moderate to low quality evidence (unclear sample size, direct) finds the prevalence of PTSD in children exposed to chronic Israeli-Palestinian conflict is between 21% and 44.6%. In children exposed to the Iranian war, prevalence was 19%. In children exposed to the 9/11 World Trade Centre terrorist attack, prevalence was 17%. In children exposed to the second Lebanon war, prevalence was 14.9%. In children exposed to the first Gulf war, prevalence was 7.8%.** |
| **Prevalence in children exposed to war** | |
| 13 studies<br>Chronic exposure to Israeli-Palestinian conflict: 21% to 44.6%<br>Iranian war: 19%<br>9/11 World Trade Centre: 17%<br>Second Lebanon War: 14.9%<br>First Gulf War: 7.8% | |
| **Consistency in results** | Unable to assess; no measure of consistency is reported. |
| **Precision in results** | Unable to assess; no measure of precision is reported. |
| **Directness of results** | Direct |

*Steel Z, Chey T, Silove D, Marnane C, Bryant RA, van Ommeren M*

## Association of torture and other potentially traumatic events with mental health outcomes among populations exposed to mass conflict and displacement: a systematic review and meta-analysis

**Jama 2009; 302: 537-49**

View review abstract online

| Comparison | Prevalence of PTSD in war-affected citizens and refugees. |
|---|---|
| **Summary of evidence** | **Moderate to high quality evidence (large sample, inconsistent, appears precise, direct) finds the prevalence of PTSD in war-affected refugees and citizens is around 31%. Rates were highest in samples exposed to recent conflict, to torture, to more potentially traumatic events, to political terror, and in** |

| | **people from Cambodia, Bosnia, Kosovo, and Africa.** |
|---|---|
| **Prevalence in war-affected citizens and refugees** | |
| 145 studies, N = 64,332, prevalence = 30.6%, 95%CI 26.3% to 35.2%, $I^2$ = 99%<br>Rates of PTSD were higher in samples exposed to torture, in samples exposed to more potentially traumatic events, in samples exposed to political terror, in samples exposed to recent conflict, and in Cambodian, Bosnian, Kosovon, and African samples.<br>Rates of PTSD were also higher in smaller rather than larger samples, in studies using self-report rather than diagnostic interviews to assess PTSD, and in studies reporting point rather than period prevalence. | |
| **Consistency in results** | Inconsistent |
| **Precision in results** | Appears precise |
| **Directness of results** | Direct |

## Explanation of acronyms

CI = confidence interval, $I^2$ = the percentage of the variability in effect estimates that is due to heterogeneity rather than sampling error (chance), N = number of participants, UI = uncertainty interval



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## Explanation of technical terms

* Bias has the potential to affect reviews of both RCT and observational studies. Forms of bias include; reporting bias – selective reporting of results; publication bias - trials that are not formally published tend to show less effect than published trials, further if there are statistically significant differences between groups in a trial, these trial results tend to get published before those of trials without significant differences; language bias – only including English language reports; funding bias - source of funding for the primary research with selective reporting of results within primary studies; outcome variable selection bias; database bias - including reports from some databases and not others; citation bias - preferential citation of authors. Trials can also be subject to bias when evaluators are not blind to treatment condition and selection bias of participants if trial samples are small[9].

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† Different effect measures are reported by different reviews.

Prevalence refers to how many existing cases there are at a particular point in time. Incidence refers to how many new cases there are per population in a specified time period. Incidence is usually reported as the number of new cases per 100,000 people per year. Alternatively some studies present the number of new cases that have accumulated over several years against a person-years denominator. This denominator is the sum of individual units of time that the persons in the population are at risk of becoming a case. It takes into account the size of the underlying population sample and its age structure over the duration of observation.

Reliability and validity refers to how accurate the instrument is. Sensitivity is the proportion of actual positives that are correctly identified (100% sensitivity = correct identification of all actual positives) and specificity is the proportion of negatives that are correctly identified (100% specificity = not identifying anyone as positive if they are truly not).

Weighted mean difference scores refer to mean differences between treatment and comparison groups after treatment (or occasionally pre to post treatment) and in a randomised trial there is an assumption that both groups are comparable on this measure prior to treatment. Standardised mean differences are divided by the pooled standard deviation (or the standard deviation of one group when groups are homogenous) that allows results from different scales to be combined and compared. Each study's mean difference is then given a weighting depending on the size of the sample and the variability in the data. Less than 0.4 represents a small effect, around 0.5 a medium effect, and over 0.8 represents a large effect[9].

Odds ratio (OR) or relative risk (RR) refers to the probability of a reduction (< 1) or an increase (> 1) in a particular outcome in a treatment group, or a group exposed to a risk factor, relative to the comparison group. For example, a RR of 0.75 translates to a reduction in risk of an outcome of 25% relative to those not receiving the treatment or not exposed to the risk factor. Conversely, a RR of 1.25 translates to an increased risk of 25% relative to those not receiving treatment or not having been exposed to a risk factor. A RR or OR of 1.00 means there is no difference between groups. A medium effect is considered if RR > 2 or < 0.5 and a large effect if RR > 5 or < 0.2[10]. lnOR stands for logarithmic OR where a lnOR of 0 shows no difference between groups. Hazard ratios measure the effect of an explanatory variable on the hazard or risk of an event.

Correlation coefficients (eg, r) indicate the strength of association or relationship



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between variables. They can provide an indirect indication of prediction, but do not confirm causality due to possible and often unforseen confounding variables. An r of 0.10 represents a weak association, 0.25 a medium association and 0.40 and over represents a strong association. Unstandardised (*b*) regression coefficients indicate the average change in the dependent variable associated with a 1 unit change in the independent variable, statistically controlling for the other independent variables. Standardised regression coefficients represent the change being in units of standard deviations to allow comparison across different scales.

‡ Inconsistency refers to differing estimates of effect across studies (i.e. heterogeneity or variability in results) that is not explained by subgroup analyses and therefore reduces confidence in the effect estimate. $I^2$ is the percentage of the variability in effect estimates that is due to heterogeneity rather than sampling error (chance) - 0% to 40%: heterogeneity might not be important, 30% to 60%: may represent moderate heterogeneity, 50% to 90%: may represent considerable heterogeneity and over this is considerable heterogeneity. $I^2$ can be calculated from Q (chi-square) for the test of heterogeneity with the following formula[9];

$$I^2 = \left(\frac{Q - df}{Q}\right) \times 100\%$$

§ Imprecision refers to wide confidence intervals indicating a lack of confidence in the effect estimate. Based on GRADE recommendations, a result for continuous data (standardised mean differences, not weighted mean differences) is considered imprecise if the upper or lower confidence limit crosses an effect size of 0.5 in either direction, and for binary and correlation data, an effect size of 0.25. GRADE also recommends downgrading the evidence when sample size is smaller than 300 (for binary data) and 400 (for continuous data), although for some topics, these criteria should be relaxed[11].

‖ Indirectness of comparison occurs when a comparison of intervention A versus B is not available but A was compared with C and B was compared with C that allows indirect comparisons of the magnitude of effect of A versus B. Indirectness of population, comparator and/or outcome can also occur when the available evidence regarding a particular population, intervention, comparator, or outcome is not available and is therefore inferred from available evidence. These inferred treatment effect sizes are of lower quality than those gained from head-to-head comparisons of A and B.



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