TECHNICAL COMMENTARY

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POST-TRAUMATIC STRESS DISORDER LIBRARY

Prevalence in children and adolescents

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. This summary table presents the evidence for the prevalence of PTSD in children and adolescents.

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 ten systematic reviews that met our inclusion criteria[3-12].

- Moderate to high quality evidence finds the overall prevalence of PTSD in children after an injury is 20.52%. Rates were highest in girls, in older children and in children injured in hurricanes.
- Moderate quality evidence finds the prevalence of PTSD in adolescent males in juvenile detention or correctional centres is 8.6% and 18.2% in adolescent females in juvenile detention or correctional centres.
- Moderate quality evidence finds the overall prevalence of PTSD is 22.7% in child and adolescent refugees, with rates highest in those displaced less than two years and in those with an insecure visa status.
- Moderate quality evidence finds the prevalence of PTSD in children and adolescents after road traffic accidents is

Margarete Ainsworth Building, Barker Street, Randwick NSW 2031. Phone: 02 9399 1000. Email: info@neura.edu.au

19.95%. Prevalence was higher in females than in males and in studies located in the UK than in the US.

- Moderate quality evidence finds the prevalence of PTSD in children and adolescents in the child welfare system is 4%. Not all children in this sample were exposed to trauma.
- Moderate quality evidence finds the prevalence of PTSD in adolescent cancer survivors was between 3% and 13.8%, with rates higher in females than males.
- 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 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 to low quality evidence finds the prevalence of PTSD in bereaved children between 4 months and 2.6 years after the World Trade Centre attack was 29.6%. Prevalence in non-bereaved children after the attack was 2.9%.
- Moderate quality evidence finds the prevalence of PTSD in children exposed to earthquakes is between 2.5% and 60%. Being older, having higher education, being trapped, experiencing fear, injury, or bereavement, and witnessing injury/death during the earthquakes were related to greater risk of PTSD.
- Moderate quality evidence finds the prevalence of PTSD in children and adolescents after tsunamis it is between 6.0% and 70.7%, after hurricanes it is between 9.0% and 36.7%, after cyclones and tornadoes it is between 1.0% and 90.0%, after fires it is between 9.0% and 36.7%, after floods it is between 2.05% and 37.0%, and after ship sinking it is between 50.0% and 89.5%.

Margarete Ainsworth Building, Barker Street, Randwick NSW 2031. Phone: 02 9399 1000. Email: info@neura.edu.au

Beaudry G, Yu R, Langstrom N, Fazel FS

An Updated Systematic Review and Meta-regression Analysis: Mental Disorders Among Adolescents in Juvenile Detention and Correctional Facilities

Journal of the American Academy of Child and Adolescent Psychiatry 2021; 60(1): 46-60

View review abstract online

Comparison	**Prevalence of PTSD in adolescents in juvenile detention and correctional facilities.**
Summary of evidence	**Moderate quality evidence (large sample, inconsistent, appears imprecise, direct) finds the prevalence of PTSD in adolescent males in detention centres is 8.6% and 18.2% in adolescent females in detention centres.**
Prevalence in adolescents in detention	
Males: 20 studies, N = 14,260, prevalence = 8.6%, 95%CI 6.4% to 10.7%, I^2 = 92% Females: 11 studies, N = 1,876, prevalence = 18.2%, 95%CI 13.1% to 23.2%, I^2 = 78%	
Consistency in results‡	Inconsistent
Precision in results§	Appears imprecise
Directness of results‖	Direct

Blackmore R, Gray KM, Boyle JA, Fazel M, Ranasinha S, Fitzgerald G, Misso M, Gibson-Helm M

Systematic Review and Meta-Analysis: The Prevalence of Mental Illness in Child and Adolescent Refugees and Asylum Seekers

Journal of the American Academy of Child and Adolescent Psychiatry 2020; 59(6): 705-714

View review abstract online

Comparison	**Prevalence of PTSD in child and adolescent refugees and asylum seekers.**
Summary of evidence	**Moderate quality evidence (large sample, inconsistent, appears imprecise, direct) finds the overall prevalence of PTSD is 22.7%**

	in child and adolescent refugees, with prevalence highest in those displaced less than two years and in those with an insecure visa status.
Prevalence in child and adolescent refugees and asylum seekers	
7 studies, N = 681, prevalence = 22.71%, 95%CI 12.79% to 32.64%, I^2 = 91% Prevalence was higher for those displaced less than two years and for those with an insecure visa status. Conducting the diagnostic interview in the native language of the child or adolescent and current community residence gave lower prevalence rates.	
Consistency in results	Inconsistent
Precision in results	Appears imprecise
Directness of results	Direct

Bronsard G, Alessandrini M, Fond G, Loundou A, Auquier P, Tordjman S, Boyer L

The prevalence of mental disorders among children and adolescents in the child welfare system a systematic review and meta-analysis

Medicine 2016; 95: e2622

View review abstract online

Comparison	**Prevalence of PTSD in children and adolescents in the welfare system.** **All studies were conducted in the US, UK, or Europe.**
Summary of evidence	**Moderate quality evidence (large sample, inconsistent, appears imprecise, direct) finds the prevalence of PTSD in children and adolescents in the welfare system is 4%.**
Prevalence in children and adolescents in the welfare system	
5 studies, N = 2,379, prevalence = 4%, 95%CI 2% to 6%, I^2 = 81%	
Consistency in results	Inconsistent
Precision in results	Appears imprecise
Directness of results	Direct

Prevalence in children and adolescents

Dai W, Liu A, Kaminga AC, Deng J, Lai Z, Wen SW

Prevalence of Posttraumatic Stress Disorder among Children and Adolescents following Road Traffic Accidents: A Meta-Analysis

Canadian Journal of Psychiatry 2018; 63: 798-808

View review abstract online

Comparison	**Prevalence of PTSD in children and adolescents after road traffic accidents.**
Summary of evidence	**Moderate quality evidence (large sample, inconsistent, appears imprecise, direct) finds the prevalence of PTSD in children and adolescents after road traffic accidents is 19.95%. Prevalence was higher in females than in males and in studies located in the UK than in the US.**
Prevalence in children and adolescents after road traffic accidents	
11 studies, N = 1,532, prevalence = 19.95%, 95%CI 13.63% to 27.09%, I^2 = 90% Prevalence was significantly higher in females than in males (34.45% vs. 22.21%) and in studies located in the UK than in the US (25.46% vs. 14.93%). There was a trend difference in prevalence according to type of road traffic accident, with automobile occupant or pedestrian rates being higher than bicycle accidents (30.37% or 30.43% vs. 19.65%). There were no significant differences according to time post-trauma (<3 months vs. >3 months), measure used to assess PTSD, or parental vs. other reporting of PTSD.	
Consistency in results	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

View review abstract online

Comparison	**Prevalence of PTSD in bereaved children vs. non-bereaved**

	children after the World Trade Centre terrorist attack.
Summary of evidence	**Moderate to low quality evidence (small sample, direct) finds the prevalence of PTSD in bereaved children between 4 months and 2.6 years after the World Trade Centre attack was 29.6%. Prevalence in non-bereaved children after the attack was 2.9%.**
Prevalence in bereaved vs. non-bereaved children	
1 study, N = 79, 4 months to 2.6 years post-attack prevalence in bereaved children = 29.6%, prevalence in non-bereaved children = 2.9%	
Consistency in results	No measure of consistency is reported.
Precision in results	No measure of precision is reported.
Directness of results	Direct

McDonnell GA, Salley CG, Barnett M, DeRosa AP, Werk RS, Hourani A, Hoekstra AB, Ford JS

Anxiety Among Adolescent Survivors of Pediatric Cancer

Journal of Adolescent Health 2017; 61: 409-23

View review abstract online

Comparison	**Prevalence of PTSD in adolescent survivors of cancer.**
Summary of evidence	**Moderate quality evidence (large sample, appears inconsistent and imprecise, direct) finds the prevalence of PTSD in adolescents after cancer is between 3% and 13.8%, with rates higher in females than males.**
Prevalence in adolescents after cancer	
4 studies, N = 379, prevalence ranged from 3% to 13.8% Rates were higher in females than males.	
Consistency in results	Appears inconsistent
Precision in results	Appears imprecise
Directness of results	Direct

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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 Chronic exposure to Israeli-Palestinian conflict: 21% to 44.6% Iranian war: 19% 9/11 World Trade Centre: 17% Second Lebanon War: 14.9% 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

Tang B, Deng Q, Glik D, Dong J, Zhang L

A Meta-Analysis of Risk Factors for Post-Traumatic Stress Disorder (PTSD) in Adults and Children after Earthquakes

International Journal of Environmental Research and Public Health 2017; 14: 1537

View review abstract online

Comparison	**Prevalence of PTSD in children after an earthquake.**
Summary of evidence	**Moderate quality evidence (large sample size, appears inconsistent and imprecise, direct) finds the prevalence of PTSD in children exposed to earthquake is between 2.5% and 60%. Being older, having higher education, being trapped, experiencing fear, injury, or bereavement, and witnessing injury/death during the earthquakes were related to greater risk of PTSD.**
Prevalence in children after an earthquake	
15 studies, N = 22,931 Prevalence of PTSD ranged from 2.50% to 60.00% Authors report that the significant predictors of PTSD were being older age, higher education level, being trapped, experiencing fear, injury, or bereavement, and witnessing injury/death during the earthquakes.	
Consistency in results	Appears inconsistent
Precision in results	Appears imprecise
Directness of results	Direct

Yu H, Nie C, Zhou Y, Wang X, Wang H, Shi X

Epidemiological Characteristics and Risk Factors of Posttraumatic Stress Disorder in Chinese Children After Exposure to an Injury

Disaster Medicine and Public Health Preparedness 2019; Oct: 1-8

View review abstract online

Comparison	**Prevalence of PTSD in children after an injury.**
Summary of evidence	**Moderate to high quality evidence (large sample size, inconsistent, appears precise, direct) finds the overall prevalence after an injury is 20.52%. Rates were highest in girls, in older children and in children injured in hurricanes.**
Prevalence in children after an injury	
47 studies, N = 65 298, prevalence = 20.52%, 95%CI 17% to 23%, I^2 = 99.7% Prevalence was higher in girls than in boys (24.61% vs 19.36%), in older than younger children (senior high school = 51.82%, junior high school = 37.12%, primary school = 14.02%), and in	

children of ethnic minority than in Han Chinese children (35.38% vs. 13.50%). Prevalence of PTSD in children was 57.5% after hurricanes, 23.6% after an earthquake, 8.9% after mudslides, and 2.3% after floods.	
Consistency in results	Inconsistent
Precision in results	Appears precise
Directness of results	Direct

Wang CW, Chan CL, Ho RT

Prevalence and trajectory of psychopathology among child and adolescent survivors of disasters: a systematic review of epidemiological studies across 1987-2011

Social Psychiatry and Psychiatric Epidemiology 2013; 48: 1697-720

View review abstract online

Comparison	**Prevalence of PTSD in children and adolescents after a disaster.**
Summary of evidence	**Moderate quality evidence (large sample, inconsistent, imprecise, direct) finds the prevalence of PTSD after earthquakes is between 2.5% and 95.0%, after tsunamis it is between 6.0% and 70.7%, after hurricanes it is between 9.0% and 36.7%, after cyclones and tornadoes it is between 1.0% and 90.0%, after fires it is between 9.0% and 36.7%, after floods it is between 2.05% and 37.0%, after ship sinking it is between 50.0% and 89.5%, and after the 9/11 attack it is between 2.3% and 35.0%.**
Prevalence in children and adolescents after a disaster	
Overall N ~ 16,500 Earthquakes: 35 studies, prevalence of PTSD ranged from 2.5% to 95.0% Tsunamis: 11 studies, prevalence of PTSD ranged from 6.0% to 70.7% Hurricanes: 15 studies, prevalence of PTSD ranged from 9.0% to 36.7% Cyclones and tornadoes: 7 studies, prevalence of PTSD ranged from 1.0% to 90.0% Fires: 6 studies, prevalence of PTSD ranged from 9.0% to 36.7% Floods: 5 studies, prevalence of PTSD ranged from 2.05% to 37.0% Ship sinking: 3 studies, prevalence of PTSD ranged from 50.0% to 89.5%	

Margarete Ainsworth Building, Barker Street, Randwick NSW 2031. Phone: 02 9399 1000. Email: info@neura.edu.au

Prevalence in children and adolescents

9/11 attack: 2 studies, prevalence of PTSD ranged from 2.3% to 35.0%	
Consistency in results	Appears inconsistent
Precision in results	Appears imprecise
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

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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[13].

† 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[13].

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[14]. 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[13];

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

§ 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[15].

‖ 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.

Margarete Ainsworth Building, Barker Street, Randwick NSW 2031. Phone: 02 9399 1000. Email: info@neura.edu.au

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Margarete Ainsworth Building, Barker Street, Randwick NSW 2031. Phone: 02 9399 1000. Email: info@neura.edu.au