TECHNICAL COMMENTARY

NeuRA
Discover. Conquer. Cure.
POST-TRAUMATIC STRESS DISORDER LIBRARY

Family and social factors

Introduction

Personal characteristics, such as family factors, can influence one's degree of risk for developing PTSD. How such personal characteristics may affect the development of PTSD would be influenced by other personal characteristics as well as differences in the trauma experience itself. This summary table presents the effects of family factors on the risk of PTSD following trauma exposure.

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 four systematic reviews that met our inclusion criteria[3-6]

- Moderate to low quality found small increases in rates of PTSD following earthquakes in adults with low vs. high SES, low vs. high employment, and low vs. high social support.
- Moderate to low quality evidence found a small increase in PTSD symptoms following a burn injury in unmarried vs. married patients.
- Moderate to high quality evidence found less social support was associated with more PTSD symptoms following childbirth. There were no associations between PTSD following childbirth and socio-economic or marital status.
- Moderate to high quality evidence found significant associations between more PTSD symptoms in children and adolescents following any trauma and poor family functioning, low social support, low SES, and pre- and post-trauma parental psychological problems.

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

To donate, phone 1800 888 019 or visit www.neura.edu.au

Family and social factors

Ayers S, Bond R, Bertullies S, Wijma K

The aetiology of post-traumatic stress following childbirth: a meta-analysis and theoretical framework

Psychological Medicine 2016; 46: 1121-34

View review abstract online

Comparison	**The effects of family factors on risk of PTSD following childbirth.**
Summary of evidence	**Moderate to high quality evidence (large samples, inconsistent, precise, direct) found less social support was associated with more PTSD symptoms.**
Childbirth	
A small effect showed less social support was associated with more PTSD symptoms; Social support: 16 studies, N = 6,125, *r* = -0.19, 95%CI -0.21 to -0.16, Q*p* < 0.05 *There were no effects of SES or marital status;* SES: 6 studies, N = 2,737, *r* = -0.01, 95%CI -0.05 to 0.03, Q*p* < 0.05 Marital status: 2 studies, N = 1,762, *r* = 0.04, 95%CI -0.01 to 0.08, Q*p* < 0.05	
Consistency in results‡	Inconsistent
Precision in results§	Precise
Directness of results‖	Direct

Giannoni-Pastor A, Eiroa-Orosa FJ, Fidel Kinori SG, Arguello JM, Casas M

Prevalence and Predictors of Posttraumatic Stress Symptomatology Among Burn Survivors: A Systematic Review and Meta-Analysis

Journal of Burn Care and Research 2016; 37: e79-89

View review abstract online

Comparison	**The effects of family factors on PTSD symptoms following a burn injury.**
Summary of evidence	**Moderate to low quality evidence (small sample, direct) found A small effect of increased PTSD symptoms following a burn injury in unmarried patients.**

NeuRA Discover. Conquer. Cure.
POST-TRAUMATIC STRESS DISORDER LIBRARY

Family and social factors

Burn injury	
A small effect of increased PTSD symptoms following a burn injury in unmarried patients; 1 study, N = 82, *r* = 0.28	
Consistency in results	No measure of consistency is reported.
Precision in results	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	**The effects of family factors on PTSD symptoms following earthquakes.**
Summary of evidence	**Moderate to low quality evidence (unclear sample size, inconsistent, imprecise, direct) found small effects of increased rates of PTSD in adults with low SES, low social support, and low employment following earthquakes.**
Earthquakes	
Small effect of increased rates of PTSD in adults with low SES; 16 studies, N not reported, OR = 1.74, 95%CI 1.24 to 2.45, I^2 = 89% *Small effect of increased rates of PTSD in adults with low social support;* 14 studies, N not reported, OR = 0.81, 95%CI 0.74 to 0.89, I^2 = 95% *Small effect of increased rates of PTSD in adults with low employment;* 14 studies, N not reported, OR = 2.07, 95%CI 1.49 to 2.88, I^2 = 86% There were no moderating effects of marital or religious status.	
Consistency in results	Inconsistent.
Precision in results	Mostly imprecise
Directness of results	Direct

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

To donate, phone 1800 888 019 or visit www.neura.edu.au

TECHNICAL COMMENTARY

NeuRA Discover. Conquer. Cure.
POST-TRAUMATIC STRESS DISORDER LIBRARY

Family and social factors

Trickey D, Siddaway AP, Meiser-Stedman R, Serpell L, Field AP

A meta-analysis of risk factors for post-traumatic stress disorder in children and adolescents

Clinical Psychology Review 2012; 32: 122-38

View review abstract online

Comparison	**The effects of family factors on PTSD symptoms following any trauma in children and adolescents.**
Summary of evidence	**Moderate to high quality evidence (unclear sample size, consistent, precise, direct) found significant associations between more PTSD symptoms in children and adolescents exposed to any trauma and poor family functioning, low social support, low SES, and pre- and post-trauma parental psychological problems.**
Any trauma exposure	
Significant associations were found between more PTSD symptoms and the following risk factors (in descending order of effect); Poor family functioning: 7 studies, N not reported, r = 0.49, 95%CI 0.15 to 0.77, $p < 0.001$, Qp > 0.05 Low social support: 4 studies, N not reported, r = 0.33, 95%CI 0.13 to 0.53, $p < 0.001$, Qp > 0.05 Post-trauma parental psychological problems: 25 studies, N not reported, r = 0.29, 95%CI 0.22 to 0.36, $p < 0.001$, Qp > 0.05 Low SES: 7 studies, N not reported, r = 0.16, 95%CI 0.05 to 0.28, $p < 0.01$, Qp > 0.05 Pre-trauma parent psychological problem: 4 studies, N not reported, r = 0.12, 95%CI 0.02 to 0.22, $p < 0.05$, Qp > 0.05	
Consistency in results	Consistent
Precision in results	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, OR = odds ratio, p = statistical probability of obtaining that result, r = correlation coefficient, SES = socioeconomic status, vs. = versus

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

To donate, phone 1800 888 019 or visit www.neura.edu.au

Family and social factors

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[7].

† 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[7].

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[8]. 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 between variables. They can provide an indirect indication of prediction, but do not

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

To donate, phone 1800 888 019 or visit www.neura.edu.au

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[7];

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

§ 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[9].

‖ 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

To donate, phone 1800 888 019 or visit www.neura.edu.au

Family and social factors

References

1. Moher D, Liberati A, Tetzlaff J, Altman DG, PRISMAGroup (2009): Preferred reporting items for systematic reviews and meta-analyses: the PRISMA statement. *British Medical Journal* 151: 264-9.
2. GRADEWorkingGroup (2004): Grading quality of evidence and strength of recommendations. *British Medical Journal* 328: 1490.
3. Ayers S, Bond R, Bertullies S, Wijma K (2016): The aetiology of post-traumatic stress following childbirth: a meta-analysis and theoretical framework. *Psychological Medicine* 46: 1121-34.
4. Giannoni-Pastor A, Eiroa-Orosa FJ, Fidel Kinori SG, Arguello JM, Casas M (2016): Prevalence and Predictors of Posttraumatic Stress Symptomatology Among Burn Survivors: A Systematic Review and Meta-Analysis. *Journal of Burn Care and Research* 37: e79-89.
5. Tang B, Deng Q, Glik D, Dong J, Zhang L (2017): 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* 14: 1537.
6. Trickey D, Siddaway AP, Meiser-Stedman R, Serpell L, Field AP (2012): A meta-analysis of risk factors for post-traumatic stress disorder in children and adolescents. *Clinical Psychology Review* 32: 122-38.
7. CochraneCollaboration (2008): Cochrane Handbook for Systematic Reviews of Interventions. Accessed 24/06/2011.
8. Rosenthal JA (1996): Qualitative Descriptors of Strength of Association and Effect Size. *Journal of Social Service Research* 21: 37-59.
9. GRADEpro (2008): [Computer program]. Jan Brozek, Andrew Oxman, Holger Schünemann. *Version 32 for Windows*