TECHNICAL COMMENTARY

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Incidence in males vs. females

Introduction

The incidence of PTSD refers to how many new cases there are per population in a specified time-period after exposure to a specific event. It is different from prevalence, which represents how many overall cases exist. This topic presents the evidence on incidence rates in males vs. females.

Method

We have included only systematic reviews with detailed literature search, methodology, and inclusion/exclusion criteria that were published in full text, in English, from the year 2010. Reviews were identified by searching the databases MEDLINE, EMBASE, and PsycINFO. Reviews with pooled data are prioritized for inclusion. Reviews reporting fewer than 50% of items on the Preferred Reporting Items for Systematic Reviews and Meta-Analyses (PRISMA[1]) checklist have been excluded from the library. The evidence was graded guided by the Grading of Recommendations Assessment, Development and Evaluation (GRADE) Working Group approach[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 three systematic reviews that met our inclusion criteria[3-5].

- Moderate quality evidence found the incidence of PTSD in children and adolescents was higher in females than males (21% vs. 11%) after exposure to trauma, particularly in females exposed to interpersonal trauma (33%).
- Moderate quality evidence found the incidence of PTSD following exposure to earthquakes was higher in females than males (35% vs. 23%).
- Moderate to low quality evidence found the prevalence of PTSD in mothers ranged from 23% to 49.1% within 3 months post-loss of an infant, from 0.6% to 37% between 3 months and 12 months post-loss, and from 3.3% to 15.2% by 18 years post-loss. In fathers, prevalence of PTSD ranged from 5% to 8.4% between 7 weeks and 18 years post-loss.

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Alisic E, Zalta AK, van Wesel F, Larsen SE, Hafstad GS, Hassanpour K, Smid GE

Rates of post-traumatic stress disorder in trauma-exposed children and adolescents: meta-analysis

British Journal of Psychiatry 2014; 204: 335-40

View review abstract online

Comparison	**PTSD in children and adolescents at least one month after exposure to trauma.**
Summary of evidence	**Moderate quality evidence (large sample, inconsistent, direct) found the incidence of PTSD in children and adolescents was higher in females than males (21% vs. 11%) after exposure to trauma, particularly in females exposed to interpersonal trauma (33%).**
Any trauma	
The incidence of PTSD following exposure to any trauma was higher in females than males; 42 studies, N = 3,563 Males: 30 studies, incidence = 11.1%, 95%CI 7.0% to 17.1% Females: 31 studies, incidence = 20.8%, 95%CI 13.6% to 30.5% Males Interpersonal: incidence = 12 studies, incidence = 16.8%, 95%CI 8.8% to 29.6% Non-interpersonal: incidence = 18 studies, incidence = 8.4%, 95%CI 4.7% to 14.5% Females Interpersonal: incidence = 13 studies, incidence = 32.9%, 95%CI 19.8% to 49.3% Non-interpersonal: incidence = 18 studies, incidence = 13.3%, 95%CI 7.4% to 22.9% These differences were statistically significant.	
Consistency in results‡	Authors report data are inconsistent
Precision in results§	Appears imprecise
Directness of results‖	Direct

Christiansen DM

Posttraumatic stress disorder in parents following infant death: A

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systematic review **Clinical Psychology Review 2017; 51: 60-74** View review abstract online	
Comparison	**PTSD in parents following infant loss.**
Summary of evidence	**Moderate to low quality evidence (unclear sample size, appears inconsistent and imprecise, direct) found the prevalence of PTSD in mothers ranged from 23% to 49.1% within 3 months post-loss, from 0.6% to 37% between 3 months and 12 months post-loss, and from 3.3% to 15.2% by 18 years post-loss. In fathers, prevalence of PTSD ranged from 5% to 8.4% between 7 weeks and 18 years post-loss.**
PTSD in parents after infant loss	
Incidence of PTSD was higher in mothers than fathers following loss of an infant; Mothers <3 months post-loss: 5 studies, prevalence ranged from 23% to 49.1% 3-12 months post-loss: 6 studies, prevalence ranged from 0.6% to 37% Up to 18 years post-loss: 3 studies, prevalence ranged from 3.3% to 15.2% Fathers 7 weeks to 18 years post-loss: 2 studies, prevalence ranged from 5% to 8.4% There were no moderating effects from whether the death occurred prior to, during, or following birth and nor was gestational age consistently associated with PTSD severity.	
Consistency in results	Appears inconsistent
Precision in results	Appears imprecise
Directness of results	Direct

Dai W, Chen L, Lai Z, Li Y, Wang J, Liu A **The incidence of post-traumatic stress disorder among survivors after earthquakes: a systematic review and meta-analysis** **BMC Psychiatry 2016; 16: 188** View review abstract online	
Comparison	**PTSD after earthquakes.**

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Summary of evidence	**Moderate quality evidence (large sample, imprecise, direct) found the incidence of PTSD following exposure to earthquakes was higher in females than males (35% vs. 23%).**
Earthquakes	
The incidence of PTSD following exposure to earthquakes was higher in females than males; 46 studies, N = 76,101 Males: Incidence = 22.57%, 95%CI 16.53% to 29.23%, I^2 not reported Females: Incidence = 34.82%, 95%CI 26.85% to 43.24%, I^2 not reported	
Consistency in results	No measure of consistency was reported for this subgroup analysis.
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, vs. = versus

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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[6].

† 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[6].

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[7]. 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

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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[6];

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

§ 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[8].

‖ 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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