TECHNICAL COMMENTARY

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Adult life events

Introduction

Life events that occur during adulthood are defined as particularly significant experiences that result in substantial changes to personal circumstances. These changes may be positive or negative and can occur across all aspects of life, including health, education, employment, relationships, bereavement, housing, legal, and financial issues.

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 2000. 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 five systematic reviews that met our inclusion criteria[3-7].

- Moderate quality evidence suggests a medium-sized increase in recent adverse life events in people with psychosis compared to people without psychosis, measured between 3 months and 3.6 years prior to onset.
- Moderate quality evidence found a small association between increased rates of neighbourhood crime and increased rates of psychosis.
- Moderate to low quality evidence suggests a small increase in prevalence, and a medium to large increase in incidence of subclinical psychotic symptoms in people reporting prior stress and trauma exposure.
- Moderate quality evidence suggests a medium-sized increase in perceived stress, but not adverse events, in people at ultra high-risk for psychosis (with attenuated psychotic symptoms or brief and limited intermittent psychotic symptoms, genetic risk, and functional deterioration).

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Baranyi G, Di Marco MH, Russ TC, Dibben C, Pearce J

The impact of neighbourhood crime on mental health: A systematic review and meta-analysis.

Social Science and Medicine 2021; 282: 114106

View review abstract online

Comparison	**Association between rates of neighbourhood crime and rates of psychosis.**
Summary of evidence	**Moderate quality evidence (unclear sample, inconsistent, precise, direct) found a small association between increased neighbourhood crime and increased psychosis.**
Neighbourhood crime	
A small association was found between increased neighbourhood crime and increased psychosis; 8 studies, N not reported, r = 0.04, 95%CI 0.01 to 0.06, $p < 0.05$, Q$p < 0.01$	
Consistency in results‡	Inconsistent
Precision in results§	Precise
Directness of results‖	Direct

Beards S, Gayer-Anderson C, Borges S, Dewey ME, Fisher HL, Morgan C

Life Events and Psychosis: A Review and Meta-analysis

Schizophrenia Bulletin 2013; 39 (4): 740-747

View review abstract online

Comparison	**Recent adverse life events reported prior to onset of psychosis (3 months to 3.6 years prior) vs. controls.**
Summary of evidence	**Moderate quality evidence (large sample, inconsistent, imprecise, direct) suggests a medium-sized increase in recent adverse life events in people with psychosis.**

Adverse life events	
A medium-sized increased rates of recent adverse life events in people with psychosis; 13 studies, N = 19,856, OR = 3.19, 95%CI 2.15 to 4.75, I^2 = 87.27%, $p < 0.05$ Heterogeneity was not explained by year of publication, life events period, study quality or population studied.	
Consistency in results	Inconsistent
Precision in results	Imprecise
Directness of results	Direct

Fusar-Poli P, Tantardini M, De Simone S, Ramella-Cravaro V, Oliver D, Kingdon J, Kotlicka-Antczak M, Valmaggia L, Lee J, Millan MJ, Galderisi S, Balottin U, Ricca V, McGuire P

Deconstructing vulnerability for psychosis: Meta-analysis of environmental risk factors for psychosis in subjects at ultra high-risk

European Psychiatry 2017; 40: 65-75

View review abstract online

Comparison	**Adverse life events in people at ultra high-risk (UHR) for psychosis; attenuated psychotic symptoms, brief and limited intermittent psychotic symptoms, and genetic risk and functional deterioration.**
Summary of evidence	**Moderate quality evidence (medium-sized sample, imprecise, consistent and direct) suggests a medium-sized increase in perceived stress, but not adverse events, in people with ultra high-risk mental states.**

Adverse life events
A significant, medium-sized effect of increased perceived stress in people with UHR mental states; 5 studies, N = 416, OR = 4.71, 95%CI 1.99 to 11.17, $p < 0.001$, I^2 = 37%, p = 0.175 *However, there was no effect of adverse life events;* 2 studies, N = 209, OR = 1.25, 95%CI 0.72 to 2.17, p = 0.430, I^2 = 3%, p = 0.310 There was no evidence of publication bias.

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Consistency in results	Consistent
Precision in results	Imprecise
Directness of results	Direct

Kraan T, Velthorst E, Smit F, de Haan L, van der Gaag M

Trauma and recent life events in individuals at ultra-high risk for psychosis: Review and meta-analysis

Schizophrenia Research 2015; 161: 143-149

View review abstract online

Comparison	**Recent life events in people at ultra high-risk (UHR) for psychosis; Comprehensive Assessment of At Risk Mental State (CAARMS) or the Structured Interview for Prodromal Syndromes criteria (SIPS).**
Summary of evidence	**Moderate quality evidence (medium-sized sample, consistent, unable to assess precision, direct) suggests a medium-sized decreased rate of recent life events in people at ultra-high risk of psychosis compared to controls.**
Recent life events	
A significant, medium-sized effect of lower rates of recent life-events in people at ultra-high risk of psychosis compared to controls; 2 studies, N = 264, g = -0.53, $p < 0.02$, I^2 = 52.4%, $p > 0.05$	
Consistency in results	Consistent
Precision in results	Unable to assess; CIs not reported.
Directness of results	Direct

Linscott RJ, van Os J

An updated and conservative systematic review and meta-analysis of epidemiological evidence on psychotic experiences in children and adults: on the pathway from proneness to persistence to dimensional expression

across mental disorders	
Psychological Medicine 2013; 43: 1133-1149 View review abstract online	
Comparison	**Prevalence and incidence of subclinical psychotic symptoms in people exposed to stress and trauma.**
Summary of evidence	**Moderate to low quality evidence (unclear sample size, some inconsistency, imprecise, direct) suggests a small increase in prevalence, and a medium to large increase in incidence of subclinical psychotic symptoms in people reporting prior stress and trauma exposure.**
Stress or trauma	
Significant, small increase in prevalence and a medium-sized increase in incidence of subclinical psychotic symptoms in people previously exposed to stress or trauma; Prevalence: 11 studies, N not reported, OR = 2.57, 95%CI 1.89 to 3.51, $p < 0.05$, $I^2 = 80\%$, $p < 0.01$ Incidence: 2 studies, N not reported, OR = 4.77, 95%CI 2.15 to 19.2, $p < 0.05$, $I^2 = 0\%$, $p > 0.05$	
Consistency in results	Consistent for incidence only
Precision in results	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, OR = odds ratio, *p* = statistical probability of obtaining that result ($p < 0.05$ generally regarded as significant), Q = test for heterogeneity, *r* = correlation coefficient

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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[8].

† 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. 0.2 represents a small effect, 0.5 a moderate effect, and 0.8 and over represents a large treatment effect[8].

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, an 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. An 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[9]. 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.

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Correlation coefficients (eg, r) indicate the strength of association or relationship between variables. They are an 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 dependent 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 treatment 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 substantial heterogeneity and 75% to 100%: considerable heterogeneity. I^2 can be calculated from Q (chi-square) for the test of heterogeneity with the following formula;

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

§ 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, this criteria should be relaxed[10].

‖ 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 so is 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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