# TECHNICAL COMMENTARY

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SCHIZOPHRENIA LIBRARY

# Incidence in refugees

## Introduction

The incidence of schizophrenia refers to how many new cases there are per population in a specified time period. It is different from prevalence, which refers to how many existing cases there are at a particular point in time. 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 developing schizophrenia. It takes into account the size of the underlying population sample and its age structure over the duration of observation.

Differences in the incidence of a disorder can provide clues to its possible causes. For example, a population register with information gained from consensus data helps to identify all adults who were born within a certain time period (an age cohort) and where they were born. Cross linking this information with a mental health register can be used to identify those who received treatment for schizophrenia over particular times. This can provide information regarding the incidence of schizophrenia within different groups.

An immigrant is a person who makes a conscious choice to leave their country to seek a better life elsewhere. They are free to return home at any time if things don't work out as they had hoped. In contrast, refugees are forced to flee their country, often suddenly, leaving behind their homes, most or all of their belongings, family members and friends. Many have experienced significant trauma and the journey to safety is fraught with hazard. They cannot return unless the situation that forced them to leave improves. Studies of immigrants have found an increased risk of schizophrenia (both first and second generation), but refugees are at particularly high risk due to the added stress of having to leave their country due to war or persecution.

## 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 2000 that report results separately for people with a diagnosis of schizophrenia, schizoaffective disorder, schizophreniform disorder or first episode schizophrenia. Reviews were identified by searching the databases MEDLINE, EMBASE, and PsycINFO. Hand searching reference lists of identified reviews was also conducted. When multiple copies of reviews were found, only the most recent version was included. Reviews with pooled data are given priority 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. The PRISMA flow diagram is a suggested way of providing information about studies included and excluded with reasons for exclusion. Where no flow diagram has been presented by individual reviews, but identified studies have been described in the text, reviews have been checked for this item. 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



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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, there is a dose dependent response or if results are reasonably 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 one systematic review that met our inclusion criteria[3].

- Moderate quality evidence suggests small to medium-sized effects of increased incidence of psychotic disorders in refugee groups after migration (up to 10 years) compared to the native-born population and compared to non-refugee immigrants. This risk was highest in men and in refugees from the Middle East.



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*Dapunt J, Kluge U, Heinz A*

## Risk of psychosis in refugees: a literature review

**Translational Psychiatry 2017; 7: e1149**

View review abstract online

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|---|---|
| **Comparison** | **Risk of schizophrenia or other non-affective psychotic disorders in refugees vs. native-born populations and non-refugee immigrants.** |
| **Summary of evidence** | **Moderate quality evidence (large samples, unable to assess consistency, some imprecision, direct) suggests small to medium-sized effects of increased incidence of psychotic disorders in refugee groups after migration (up to 10 years) compared to the native-born population and compared to non-refugee immigrants. This risk was highest in men and in refugees from the Middle East.** |

**Non-affective psychosis in refugees**

1 Swedish cohort study, N = 1,337,790

The incidence rate in refugees was 126.4 per 100 000 person years compared to 80.4 in non-refugee immigrant groups and 38.5 in the Swedish-born population.

*A significant, small to medium-sized effect of higher incidence of non-affective psychoses in the refugee group at follow-up (8.9 million person-years) compared to the Swedish-born population;*

Adjusted for age and sex: HR = 3.61, 95%CI 2.87 to 4.53, $p < 0.05$

Adjusted for disposable income and population density: HR = 2.90, 95%CI 2.31 to 3.64, $p < 0.05$

*A significant, small effect of higher incidence of non-affective psychoses in the refugee group at follow-up (8.9 million person-years) compared to non-refugee immigrants;*

Adjusted for age and sex: HR = 1.58, 95%CI 1.26 to 1.99, $p < 0.05$

Adjusted for disposable income and population density: HR = 1.66, 95%CI 1.32 to 2.09, $p < 0.05$

The risk was higher in men than in women, and higher in refugees from the Middle East than other regions.

1 Canadian cohort study, N = 4,284,694

The incidence rate in refugees was 72.8 per 100 000 person years compared to 51.7 in non-refugee immigrant groups and 55.6 in the general population.

*A significant, small effect of higher incidence of psychotic disorders in the refugee group at follow-*



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| *up (10 years) compared to non-refugee immigrants;*<br>IRR: 1.27, 95%CI 1.04 to 1.56, $p < 0.05$<br>*The effect was not significant when compared to the general population;*<br>IRR = 1.24, 95%CI 0.86 to 1.81, $p > 0.05$<br>The risk was higher in men than in women.<br>1 Danish cohort study, N = 145,695<br>*A significant, small effect of higher incidence of psychotic disorders in the refugee group at follow-up (8 years) compared to Danish-born people;*<br>RR: 2.03, 95%CI 1.72 to 2.40, $p < 0.05$<br>The risk was higher in men than in women, and higher in refugees from the Middle East than other regions. | |
| **Consistency in results** | Unable to assess; no measure of consistency is reported. |
| **Precision in results** | Precise, apart from HRs. |
| **Directness of results** | Direct |

## Explanation of acronyms

CI = confidence interval, HR = hazard ratio, IRR = incidence rate ratio, *p* = statistical probability of obtaining that result ($p < 0.05$ generally regarded as significant), RR = relative risk, 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[4].

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† Different effect measures are reported by different reviews.

Reliability and validity refers to how accurate the instrument is. Sensitivity is the proportion of actual positives that are correctly identified - 100% sensitivity = predict all people who are at high risk as developing psychosis and specificity is the proportion of negatives that are correctly identified - 100% specificity = not predicting anyone as being at high risk 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. Standardized 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 effect[4].

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[5]. 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 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 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 treatment effect across trials (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 be 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;

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

§ 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[6].

‖ 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 sized are of lower quality than those gained from head-to-head comparisons of A and B.

## References

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