TECHNICAL COMMENTARY

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SCHIZOPHRENIA LIBRARY

Homelessness

Introduction

'Prevalence' estimates the number of individuals in a population who have a disease during a specific time period. Many studies have reported a high prevalence of various health problems, including mental health problems, among homeless people. This topic presents the available evidence on the prevalence of schizophrenia in homeless populations. However, the rate of schizophrenia in this population may be difficult to measure due to diversity between studies in the definitions of homelessness and the diagnostic criteria used.

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, CINAHL, Current Contents, PsycINFO and the Cochrane library. 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 rated as having 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 (RCT) 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, 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 three systematic reviews that met our inclusion criteria[3-5].

- Moderate quality evidence suggests overall prevalence rates of schizophrenia or related psychotic disorders in homeless populations in western countries is between 11 and 13%, with rates varying substantially across regions. Rates are higher for those who are homeless over the long term compared to the short term, and are higher for women than for men.

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Fazel S, Khosla V, Doll H, Geddes J

The prevalence of mental disorders among the homeless in western countries: systematic review and meta-regression analysis

PLoS Medicine 2008; 5(12): e225

View review abstract online

Comparison	**Prevalence of psychotic disorders in homeless populations in western countries.**
Summary of evidence	**Moderate quality evidence (large sample, inconsistent, unable to assess precision, direct) suggests overall prevalence rates of any psychotic disorder is around 13% in western countries.**

Non-affective psychosis

The pooled prevalence of non-affective psychotic disorders was 12.7%

28 studies, N ~ 5,684, 95%CI 10.2% to 15.2%, I^2 = 88.6%, *p* = 0.001

Subgroup analysis investigating prevalence rates in different regions;

Mainland Europe = 12%, 8 studies, 95%CI 7% to 16%, I^2 = 83.4%, *p* = 0.000

UK = 19%, 6 studies, 95%CI 9% to 29%, I^2 = 92.4%, *p* = 0.000

US = 9%, 10 studies, 95%CI 6% to 11%, I^2 = 86.7%, *p* = 0.000

Australia = 16%, 8 studies, 95%CI 10% to 22%, I^2 = 82.4%, *p* = 0.001

Studies where the interviewer was a mental health clinician had significantly higher prevalence rates of psychotic illness than studies using a lay interviewer (*b* = 0.08, *p* = 0.042).

Studies with lower survey response rates (< 85%) had a trend effect of lower prevalence rates than those with higher survey response rates (*b* = -0.06, *p* = 0.071).

Studies with a sample ≥ 200 had a trend effect of lower prevalence rates than those with a sample of < 200 (*b* = -0.08, *p* = 0.055).

In a meta-regression model including these three characteristics, only response rate remained a significant predictor, with lower response rates being associated with lower prevalence rates of psychotic illness (*b* = -0.08, *p* = 0.015).

Consistency in results‡	Inconsistent
Precision in results§	Unable to assess; no measure of precision is reported.
Directness of results‖	Direct

Folsom D, Jeste DV

Schizophrenia in homeless persons: a systematic review of the literature

Acta Psychiatrica Scandinavica 2002; 105(6): 404-413

View review abstract online

Comparison	**Prevalence of schizophrenia and related psychotic disorders in homeless populations.**
Summary of evidence	**Moderate quality evidence (large sample, inconsistent, unable to assess precision, direct) suggests the overall prevalence rate of schizophrenia or related psychotic disorder is around 11%. The rate is higher for those who are homeless over the long-term compared to the short-term and rates are higher for women than for men.**

Outcome: prevalence of schizophrenia

10 studies from the US, Australia, Brazil, France, Spain and Germany, with representative samples and standardised diagnostic tools, reported an average rate of 11% (range 4.4 to 16%) of homeless people having a diagnosis of schizophrenia or related psychotic disorder

Prevalence of schizophrenia in homeless people according to age;

In Los Angeles, 13% of 18 to 30 year olds

In New York, 21% of 17 to 29 year olds

In Los Angeles, 21% of 31 to 40 year olds

In New York, 13% of 30 to 40 year olds

In Los Angeles, 8% of 41 to 60 year olds

In New York, 14% of > 40 year olds

In Philadelphia, 4% of 18 to 30 year olds

In Philadelphia, 7% of 31 to 45 year olds

In Philadelphia, 9% of > 45 years olds

Prevalence of clinical-level psychotic symptoms in homeless people according to age;

In Los Angeles, 44% of 18 to 49 year olds

In Los Angeles, 25% of > 50 year olds

Prevalence of schizophrenia diagnosis or treatment in homeless people according to sex;

4/6 studies found women had higher rates of schizophrenia In Philadelphia, 11% of women received treatment for schizophrenia vs. 7% of men. In Baltimore, 17% of women were diagnosed with schizophrenia vs.12% of men. In Munich, 34% of women were diagnosed with schizophrenia vs. 12% of men. In Melbourne, 35% of women were diagnosed with schizophrenia vs. 8% of men. In St Louis, 4% of women were diagnosed with schizophrenia vs. 6% of men. In Madrid, there were similar rates of schizophrenia in women and men. *Differences in schizophrenia according to length of homelessness;* In Los Angeles, 18% of people who were classed as long-term homeless (time not specified) had a diagnosis of schizophrenia vs. 13% of cyclically homeless, and 2% of newly homeless. In New York, 27% of the chronically homeless had a diagnosis of psychosis compared with 14% in newly homeless. In Brazil, authors report that the duration of homelessness was longer in persons with schizophrenia than in the homeless sample as a whole. *Rates of treatment in homeless people;* In Paris, 68% of homeless people with schizophrenia received treatment in the previous year. In St Louis, 31% of the homeless persons with schizophrenia received treatment in the previous year, 24% reported seeking treatment but were unable to obtain it and 45% did not seek treatment. In Toronto, 82% received some psychiatric treatment over their lifetime. In Edinburgh, 75% received some psychiatric treatment over their lifetime. In London, 66% of homeless people with schizophrenia were not receiving current treatment.	
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

Saha S, Chant D, Welham J, McGrath J

A systematic review of the prevalence of schizophrenia

PLoS Medicine / Public Library of Science 2005; 2(5): e141

View review abstract online

Comparison	**Distribution rates of the prevalence of schizophrenia in**

	homeless populations.
Summary of evidence	**Moderate quality evidence (large population samples, unable to assess consistency or precision, direct) suggests the prevalence rate of schizophrenia in Sydney is around 30% of homeless people, and is around 13% of homeless people in Los Angeles.**
Prevalence of schizophrenia in homeless people	
N = unclear, population level data In Sydney, prevalence estimates 300 per 1,000 homeless people have schizophrenia. In Los Angles, prevalence estimates 131 per 1,000 homeless people have schizophrenia.	
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

Explanation of acronyms

b = correlation coefficient, I^2 = the percentage of the variability in effect estimates that is due to heterogeneity rather than sampling error (chance), N = number of participants, *p* = statistical probability of obtaining that result ($p < 0.05$ generally regarded as significant), Q = Q statistic (chi-square) for the test of heterogeneity, se = standard error, vs. = versus

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. 0.2 represents a small effect, 0.5 a medium effect, and 0.8 and over 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

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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 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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