TECHNICAL COMMENTARY

Vocational rehabilitation

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Introduction

Unemployment is particularly high in people with schizophrenia and other severe mental illnesses, resulting from a combination of disability and discrimination.

Vocational rehabilitation is targeted towards improving employment rates in people with schizophrenia, both chronic and first-episode. There are many different strategies available that target competitive employment, which may also provide benefit for symptom severity, personal achievement, and ongoing health care costs. Two key approaches for vocational rehabilitation are prevocational training and supported employment.

Prevocational training is a form of psychosocial rehabilitation that aims to increase competency for employment, by providing community-based preparation before entering into the competitive workforce. Examples of prevocational training include “clubhouses”, transitional employment, work crews, and skills training. The “clubhouse” model is a historical concept that has been adapted to refer to a type of prevocational training. This model focuses on social support from a “job club” that develops work-necessary skills and administers transitional employment opportunities after a period of prevocational training. Transitional employment involves having access to a set period of employment in a local company. The club and the company have an arrangement where the company offers a number of positions which the job club guarantees to fill.

The second approach to vocational rehabilitation is supported employment, which aims to support participants in finding and maintaining a job, by placing participants in employment within the community (without preparation) and providing training on location as well as ongoing support. One form of supported employment is the Individual Placement and Support model (IPS), a manualised program that focuses on finding suitable competitive employment for prospective candidates, in addition to ongoing support and personalised benefits counselling. IPS can be integrated into ongoing mental health services, ensuring access to clinicians and case managers is continuous with vocational services.

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 prioritised 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

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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 one systematic review that met our inclusion criteria[3].

- Moderate quality evidence suggests vocational interventions, particularly supported employment, increase rates of competitive job placements.

Carmona VR, Gomez-Benito J, Huedo-Medina TB, Rojo JE

Employment outcomes for people with schizophrenia spectrum disorder: A meta-analysis of randomized controlled trials

International Journal of Occupational Medicine & Environmental Health 2017; 30: 345-66

View review abstract online

Comparison	**All vocational interventions including supported employment, job-related social skills training, neurocognitive rehabilitation and cognitive behavioural therapies or combinations of these vs. standard care that helps people access employment.**
Summary of evidence	**Moderate quality evidence (large samples, inconsistent, imprecise, direct) suggests vocational interventions, particularly supported employment, increases rates of competitive job placements.**

Job placement, tenure and wages earned

A medium-sized effect of more competitive job placements with vocational interventions;

19 RCTs, N = 2,687, RR = 2.31, 95%CI 1.85 to 2.88, $p < 0.001$, $I^2 = 60\%$, $p < 0.001$

Subgroup analysis found a similar benefit for supported employment, with consistent findings. Interventions not based on the supported employment approach showed a smaller, but significant effect size, also with consistent findings. There were no moderating effects of other study or sample variables.

There were no significant differences in the number of hours worked in competitive employment;

9 RCTs, N = 1,962, SMD = 0.88, 95%CI -0.25 to 2.01, $p = 0.12$

Subgroup analysis found a significant benefit of supported employment for more hours worked, with inconsistent findings. Lower study quality was associated with larger effect sizes.

Consistency in results	Inconsistent
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), IPS = Individual Placement and Support employment programs, N = number of participants, *p* = statistical probability of obtaining that result ($p < 0.05$ generally regarded as significant), RCT = randomised controlled trial, RR = relative risk, SMD = standardised mean difference, 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].

† Different effect measures are reported by different reviews.

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) which 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[4].

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).

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 very 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

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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[4];

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

§ 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[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 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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