

Employment

Introduction

Employment status is often indicative of the extent of functional ability in people with schizophrenia. Employment outcomes involve rates of employment and success in retaining employment, as well as patient characteristics, their environments, and interventions that influence employment rates. Competitive employment constitutes 'regular community jobs alongside nondisabled workers that pay a minimum wage or higher'. Low rates of competitive employment among people with schizophrenia places burden on social support and disability services, and on quality of life.

Employment rates may be improved by greater focus on patient education and opportunities for supported employment programs. These programs are centred around a competitive employment goal, rapid job search, integration of health and employment services, consumer preferences, patient choices influencing job eligibility, and personalised job support with ongoing benefits counselling.

This table summarises the evidence on rates and predictors of employment outcomes for people with schizophrenia. Please also see the Psychosocial Treatment – Vocational Therapies topic.

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-analysis¹. 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 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).



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Results

We found eight systematic reviews that met our inclusion criteria³⁻¹⁰.

- Reviews with moderate or moderate to high quality evidence show people with schizophrenia are less likely to attain employment and retain it after 3 months than people with other mental disorders. Rates of employment vary considerably, ranging from 4% to 60% in Europe, and from 13% to 80% in the developing world. Rates of employment after a first episode of psychosis range from 13% to 65%. Being employed is consistently related to reductions in outpatient psychiatric treatment and in improved self-esteem, and inconsistently associated with fewer psychiatric hospitalisations, less medication, better life satisfaction, and improved wellbeing.
- Reviews with moderate or moderate to low quality evidence suggest receiving public support or disability income, having negative symptoms such as social withdrawal, or being young, are related to lower rates of competitive employment. Other barriers to employment include illness stigmatisation, economic disincentives, low self-esteem, and poor cognitive functioning. Factors related to higher rates of employment include being married or being in a defacto relationship, receiving medical treatment, or having a work history.
- Moderate to low quality evidence suggests overall vocational interventions are beneficial for improving employment rates and work function in people with schizophrenia.

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Bond GR, Drake RE

Predictors of competitive employment among patients with schizophrenia

Current Opinion in Psychiatry 2008; 21(4): 362-369

[View review abstract online](#)

<p>Comparison</p>	<p>Characteristics of schizophrenia patients, their environment and the interventions administered that predict competitive employment outcomes in both supported employment (clinical samples) and community samples.</p>
<p>Summary of evidence</p>	<p>Moderate to low quality evidence (unclear sample size, unable to assess consistency or precision, direct) suggests absence of work experience, presence of comorbid medical conditions, cognitive impairment, psychiatric symptoms, the number of hospitalisations, and reduced social skills and self-efficacy significantly predict poorer employment outcomes. Good social support systems in developed countries predict better employment outcomes, and the receipt of disability services negatively influences employment rates. Supported employment is the strongest predictor of positive employment outcomes. Mental health treatment alone is insufficient for improving employment outcomes. Cognitive rehabilitation may be an effective therapeutic adjunct to supported employment.</p>
<p>Patient characteristics that predict employment</p>	
<p style="text-align: center;"><i>Demographics</i></p> <p>A positive work history (three studies) and higher levels of education (four studies) were reported to significantly predict increased employment rates (N, study design not reported). Age, gender and ethnicity have inconsistent predictive value for employment rates (five studies).</p> <p style="text-align: center;"><i>Criminal justice involvement</i></p> <p>Criminal justice involvement was examined as a predictor of competitive employment outcomes however no studies were reported that addressed this.</p> <p style="text-align: center;"><i>Physical comorbidity</i></p> <p>Two studies (N, study design not reported) suggested poorer competitive employment outcomes in individuals with co-morbid medical conditions.</p> <p style="text-align: center;"><i>Co-occurring substance use disorder</i></p> <p>No association was reported between substance use and employment outcomes (three studies).</p>	



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One study found substance use predicted poorer employment outcomes in recent-onset psychosis patients.

Cognitive factors

Six studies reported positive association of cognitive impairment with poorer employment outcomes. These correlations were stronger in the community samples than clinical patients in supported employment.

Clinical factors

Six studies (N, study design not reported) suggested positive prediction value for the presence of psychiatric symptoms, while one study associated remission with negative employment outcomes. Number of prior hospitalisations (three studies), and an extended period of hospitalisation (one study).

Three further studies suggest psychiatric illness characteristics may be a primary barrier to employment, as reported by either patients or clinicians.

Self-efficacy and patient motivation

Three studies (N, study design not reported) suggested a positive correlation between improved self-efficacy and improved employment outcomes.

Social skills and work performance

Better social skills predicted good employment outcomes in one study. Another study found assessments of work performance modestly predicted employment rates.

Environmental factors predicting employment

Societal and cultural influences

Better employment outcomes were reported for developed countries (two studies), particularly those with social service and disability systems (two further studies). Negative employment predictors include community and employer attitudes (three studies).

Local unemployment rate

Inconsistent evidence supports the influence of the local unemployment rate on employment outcomes for schizophrenia patients (four studies). Authors interpret these findings to suggest an effect only when the local rate exceeds 10% unemployment.

Access to supported employment

The extent of a lack of service access is not well documented. The authors extrapolate from national surveys that fewer than 5% of patients have access to potentially beneficial services.

Regulatory factors

Receipt of disability system benefits are significant negative predictors for employment outcomes, as a very small proportion of those receiving benefits express any desire to seek employment (seven studies).

Interventions



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Mental health treatment

Evidence has suggested that mental health treatment alone (in the absence of vocational services) may be insufficient for improving employment outcomes (two studies).

Vocational services

Supported employment strategy such as IPS was reported to significantly improve employment outcomes such as employment rate and duration (four RCTs).

Individual Placement and Support (IPS) process studies

These studies examined process variables of IPS that may improve its utility. Better employment outcomes were predicted by greater fidelity to the core principles of IPS (see Introduction; seven studies); a therapeutic alliance of employment agents with patients (two studies); patient involvement in job placement activities (three studies). Inconsistent association was reported for ongoing patient contact with employment agents (four studies).

Supported employment augmentations

Cognitive rehabilitation was reported to have the best employment outcomes as an adjunct to IPS (three RCTs).

Consistency	Unable to assess; no measure of consistency is reported.
Precision	Unable to assess; no measure of precision is reported.
Directness	Direct

Christensen T

The influence of neurocognitive dysfunctions on work capacity in schizophrenia patients: a systematic review of the literature

International Journal of Psychiatry in Clinical Practice 2007; 11(2): 89-101

[View review abstract online](#)

Comparison	Employment outcomes, cognitive performance and symptom severity in people with schizophrenia. Note: work capacity is the ability to obtain and maintain competitive work, as well as work behaviours and skills.
Summary of evidence	Moderate quality evidence (large sample, unable to assess consistency or precision, direct) suggests lower levels of work capacity is associated with poor cognitive functioning, including executive functioning, attention/vigilance, memory, language,



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	<p>psychomotor ability, visuospatial processing, IQ and emotional perception. The evidence also suggests that lower work capacity is associated with increased negative symptoms, but not global, positive or disorganised symptoms.</p>
<p>Cognitive performance</p>	
<p>21 studies (N = 1,411) assessed the relationship between work capacity and cognitive performance;</p> <p>2 studies (N = 166) reported that poor <i>general neurocognitive functioning</i> was associated with worse work behaviour and employment status, whereas 2 studies (N = 140) found no association between neurocognitive functioning and employment or social functioning.</p> <p>7 studies (N = 366) reported that poor <i>executive functioning</i> was associated with worse task orientation, social skills, full time employment, occupational functioning, work behaviour improvement, wages earned, contact with employment specialist, cooperativeness, work quality and general impression.</p> <p>7 studies (N = 389) reported that poor <i>attention/vigilance</i> was associated with worse employment status, less full time employment or unemployment, poorer occupational functioning, work behaviour improvement, work performance and work adjustment.</p> <p>5 studies (N = 365) reported that poor <i>verbal memory</i> was associated with worse work habits, occupational functioning, work performance, work behaviour, integrated employment status, less hours worked and wages earned. No association between <i>verbal memory</i> and personal presentation, social work skills and cooperativeness.</p> <p>1 study (N = 77) reported that poor <i>immediate and delayed memory</i> was associated with worse employment status. Poor <i>working memory</i> (1 study, N = 30) was associated with unemployment.</p> <p>5 studies (N = 348) reported that poor <i>verbal learning and language</i> was associated with worse work behaviour improvements, work performance, less hours worked, wages earned and contact with employment specialist.</p> <p>2 studies (N = 208) reported that poor <i>psychomotor functioning/speed</i> was associated with worse work performance and behaviour.</p> <p>2 studies (N = 128) reported that poor <i>visuospatial processing/ ability, visual recall and visual scanning</i> was associated with worse occupational activity and functioning.</p> <p>1 study (N = 53) reported that poor <i>WAIS non-verbal IQ</i> performance was associated with worse vocational functioning.</p> <p>1 study (N = 94) reported that poor <i>emotional perception</i> was associated with worse work functioning.</p>	
<p>Symptom severity</p>	
<p>14 studies (N = 884) assessed the relationship between work capacity and symptom severity in people with schizophrenia.</p> <p>2 studies (N = 128) reported that increased <i>global symptoms</i> were associated with worse</p>	

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occupational changes and vocational functioning. However, 5 studies (N = 290) reported no association between *global symptoms* and social skills at work, employment status, occupational functioning or work behaviour improvement.

6 studies (N = 354) reported that increased *negative symptoms* were associated with impaired work behaviour, vocational functioning, less hours worked, wages earned, social functioning and a long employment history. 1 study (N = 112) reported that *negative symptoms* was not associated with work behaviour.

3 studies (N = 270) reported that *positive symptoms* were not associated with employment history or work behaviour. 1 study (N = 30) reported that increased *psychotic symptoms* were associated with less hours of on-job support and contact with employment specialist.

1 study (N = 112) reported that *disorganised symptoms* were not associated with work behaviour.

Consistency	Unable to assess; no measure of consistency is reported.
Precision	Unable to assess; no measure of precision is reported.
Directness	Direct

Cohen A, Patel V, Thara R, Gureje O

Questioning an axiom: better prognosis for schizophrenia in the developing world?

Schizophrenia Bulletin 2008; 34(2): 229-44

[View review abstract online](#)

Comparison	Measuring employment rates in schizophrenia patients in low and middle income countries (as defined by the World Bank).
Summary of evidence	Moderate quality evidence (large sample, unable to assess consistency or precision, direct) suggests rates of employment in people with schizophrenia vary considerably in the developing world with rates ranging from 13 to 80%.
Unemployment rates in low and middle income countries	

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Data is quoted for percentage of people with a diagnosis of schizophrenia who are not working in any sense at baseline and follow up (if reported) as employment measures varied between full, part time and domestic work that is an influencing factor in many societies, particularly for women.

20 studies, N = 2,971

São Paulo, Brazil: 41.1% had no occupation at baseline

Sichuan, China: 22.4% had no work at baseline

Butajira, Ethiopia: 45.3% were unemployed at baseline

Chandigarh, India: 44% were not working at follow up (time not reported)

Multisite, India: 17.2% at 2 years, 17.8% at 5 years follow up were not working

Madras Longitudinal Study: men 47.5%, women 33.3% at 10 years, men 24%, women 75% at 20 years had poor occupation/housework function

Chennai, India: 49% were impaired in job/housework function at follow up (time not reported)

Rural Karnataka, India: 87% were not regularly employed at baseline

Bali, Indonesia: 41.3% were unemployed at 11 years follow up

Jamaica: 43% were not gainfully employed at follow up (time not reported)

Ilesa, Nigeria: 52.3% were not working at follow up (time not reported)

Lagos, Nigeria: 43.4% did not maintain employment at follow up (time not reported)

Abeokuta, Nigeria: 13% were totally incapacitated and 25% had significant work disruptions at follow up (time not reported)

Trinidad: 34.8% were unemployed at baseline

Sofia, Bulgaria: 41.6% were not employed or were not engaged in full time household work in previous 2 years

Agra, India: 9.8% were unemployed at baseline

Chandigarh (rural), India: 0% were engaged in some paid work or housework in the past 2 years

Chandigarh (urban), India: 8% were engaged in some paid work or housework in the past 2 years

Unable to calculate unemployment estimates for China or Cali, Colombia

There was considerable variation in the reported rates among many countries worldwide, possibly due to differences in social support, as well as the proportion engaged in household or domestic work.

Consistency	Unable to assess; no measure of consistency is reported.
Precision	Unable to assess; no measure of precision is reported.
Directness	Direct

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Cook JA, Razzano L

Vocational rehabilitation for persons with schizophrenia: recent research and implications for practice

Schizophrenia Bulletin 2000; 26(1): 87-103

[View review abstract online](#)

Comparison	Vocational interventions (control interventions not specified) for people with schizophrenia compared to other psychiatric disorders.
Summary of evidence	Moderate to low quality evidence (small to medium-sized samples, unable to assess consistency or precision, direct) suggests vocational interventions may be beneficial for improving employment rates and work function in people with schizophrenia. Symptom severity, social skills and cognitive impairment may be more important than diagnosis for predicting work function.
Attaining employment	
<p>One study (N = 90) of a supported employment program found that people with schizophrenia were significantly less likely to be employed at 12 months than people with other affective and personality disorders. Members of ethnic and racial minority groups were significantly less likely to be employed than Caucasians.</p> <p>One study (N = 89) of a structured job-finding interventions found that people with schizophrenia were less likely to obtain a job and more likely to withdraw from the intervention than those with any other psychiatric diagnosis.</p> <p>One study (N = 500) of state-funded vocational rehabilitation services found the proportion of those with psychotic disorders successfully placed in employment (46%) was significantly smaller than for severe bipolar or depressive disorders (63%).</p> <p>However, a five-site study (N = 241) of supported employment found people with schizophrenia were more likely to be employed compared to affective disorders, but this effect was lost when controlling for gender, ethnicity, education, social security income and hospitalisation.</p> <p>Four additional studies (total N unclear, > 422) also reported that people with schizophrenia were no less likely to be employed following vocational interventions than other psychiatric disorders.</p> <p>Two studies, N = 148, reported that between 48-57% of people with schizophrenia included in the study had obtained employment by 1-3 years follow vocational interventions.</p>	
Work functioning	



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One study (N not reported) reported significant functional improvement following work skills training in people with schizophrenia compared to controls.

Another study (N not reported) suggested people with schizophrenia worked more hours in a paid placement and stayed in the job longer than those in an unpaid placement.

Clinical outcomes

Across several psychiatric diagnoses, one study reported that greater symptom severity was associated with poorer work performance and decreased likelihood of paid employment over time.

Three studies (N > 247) reported an associated between prominent negative symptoms and poorer work function. Specifically, one further study (N = 41) reported that negative symptoms including affective flattening, avolition, and attentional impairment were more strongly associated with work dysfunction than other symptoms such as thought disturbance, hostile suspicion, activation.

One study (N not reported) found an associated between social skills deficit and significantly poorer vocational outcomes over 2 years.

One study (N = 46) reported on apparent levels of social skills during a staged interview, and suggested a significant effect on judgements of employability, such that lower perceived levels of communication skills were judged less employable.

One study (N not reported) suggested that people with schizophrenia spectrum disorders were rated as having lower social skills than those with non-psychiatric disabilities, in terms of understanding co-workers behaviour and how their behaviour affected co-workers.

One study, N = 89, reported that executive function skills (Wisconsin Card Sorting Test) were significantly related to task orientation skills such as working persistently. However, while higher WCST scores were associated with better work performance, lower WCST were not consistently associated with poor work performance.

One study, N = 40, found that better work function was associated with better complex visuo-spatial processing. Another study, N = 87, found that verbal memory impairments predicted work quality and performance habits.

Consistency	Unable to assess; no measure of consistency is reported.
Precision	Unable to assess; no measure of precision is reported.
Directness	Direct

Luciano A, Bond GR, Drake RE

Does employment alter the course and outcome of schizophrenia and other severe mental illnesses? A systematic review of longitudinal



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research

Schizophrenia Research 2014; 159: 312-321

[View review abstract online](#)

Comparison	Course and outcomes in employed people with schizophrenia vs. unemployed people with schizophrenia, as reported in prospective studies.
Summary of evidence	Moderate quality evidence (large samples, mostly inconsistent, unable to assess precision, direct) suggests employment is consistently associated with reductions in outpatient psychiatric treatment and improved self-esteem, and inconsistently associated with improved psychiatric symptoms, fewer psychiatric hospitalisations and less medication, better life satisfaction, and improved global wellbeing.

Outcomes

Overall there were 8 cohorts, with 6,844 participants

Employment was consistently associated with reductions in outpatient psychiatric treatment and improved self-esteem;

0/2 cohorts reported increased outpatient services, 0/2 cohorts reported no difference in outpatient services, and 2/2 cohorts reported decreased outpatient services in employed vs. unemployed patients.

0/2 cohorts reported lower self-esteem, 0/2 cohorts reported no difference in self-esteem, and 2/2 cohorts reported better self-esteem in employed vs. unemployed patients.

Employment was inconsistently associated with improved psychiatric symptoms, fewer psychiatric hospitalisation and less medication, better life satisfaction, and improved global wellbeing;

0/6 cohorts reported worse symptoms, 3/6 cohorts reported no difference in symptoms, and 3/6 cohorts reported improved symptoms.

0/6 cohorts reported more hospitalisations, 5/6 cohorts reported no difference in hospitalisations, and 1/6 cohorts reported fewer hospitalisations.

0/2 cohorts reported more psychiatric medication use, 1/2 cohorts reported no difference in psychiatric medication use, 1/2 cohorts reported less psychiatric medication use.

0/8 cohorts reported worse life satisfaction, 6/8 cohorts reported no difference in life satisfaction, and 2/8 cohorts reported better life satisfaction.

0/2 cohorts reported worse global function, 1/2 cohorts reported no difference in global function, and 1/2 cohorts reported better global function.

There were no differences between employed and unemployed patients for substance use, living

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situation, incarceration, disability insurance, or social function/support outcomes;

0/4 cohorts reported more substance use, 4/4 cohorts reported no difference in substance use, and 0/4 cohorts reported less substance use.

0/3 cohorts reported worse living situation, 3/3 cohorts reported no difference in living situation, and 0/3 cohorts reported better living situation.

0/2 cohorts reported more incarcerations, 2/2 cohorts reported no difference in incarceration, and 0/2 cohorts reported less incarcerations.

0/1 cohorts reported more disability insurance, 1/1 cohorts reported no difference in disability insurance, 0/1 cohorts reported less disability insurance.

0/4 cohorts reported less social function/support, 4/4 cohorts reported no difference in social function/support, and 0/4 cohorts reported more social function/support.

Consistency	Consistent for outpatient psychiatric treatment and self-esteem only.
Precision	No measure of precision is reported.
Directness	Direct

Marwaha S, Johnson S

Schizophrenia and employment - a review

Social Psychiatry & Psychiatric Epidemiology 2004; 39(5): 337-49

[View review abstract online](#)

Comparison	Employment outcomes, predictors and barriers for people with schizophrenia.
Summary of evidence	Moderate quality evidence (large sample, unable to assess consistency or precision, direct) suggests rates of employment in people with schizophrenia vary considerably worldwide, with rates ranging from 4% to 60% for chronic schizophrenia, and 13% to 65% for first-episode schizophrenia. Barriers to employment include stigmatisation of the illness, economic disincentives, self-esteem, and the availability of employment support from mental health services, in addition to the burden of the illness manifestation. Negative symptom severity and social function may predict employment rates.
Employment rates	



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26 studies reported employment rates in schizophrenia, total N > 33,817;

Employment rates varied widely worldwide, and may be influenced by factors including the welfare system and cultural expectations of each country, as well as the methods used to define schizophrenia and employment.

In the UK overall, employment rates ranged from 4% to 60%. Studies prior to 1990 report a range around 20-30%, while studies from 1990 onwards report a range around 4-27%. Multiple studies from the same centre at different time-points suggest a decrease in employment rates over time.

European studies reported similar employment rates, ranging from 8% to 35%, with the majority reporting between 10% and 20%. In the USA, employment rates ranged from 3% to 42%.

Worldwide, overall higher rates were reported in developing countries such as India (53%).

In the UK, the employment rates in people with schizophrenia appear to have reduced significantly over time, while the employment rates in the general population have remained relatively consistent. This is likely to be a consequence of changed provisions for employment support and welfare payments (economic disincentives) in people with schizophrenia, as well as the job market becoming more competitive and less manualised over time.

11 studies reported employment rates in first-episode psychosis, total N = 8,723;

Employment rates in first-episode psychosis was inconsistent, influenced largely by the methods used to define a first episode and the time point at that employed status is assessed (pre-morbid or morbid employment). A large proportion of people presenting to psychiatric services for the first time appear to be already unemployed.

Worldwide, generally higher employment rates were reported for first-episode psychosis than for chronic schizophrenia, ranging from 13% to 65%, with the majority reporting between 40% and 50%. More recent studies show greater overlap with the rates for established schizophrenia.

Where follow-up data was reported, a substantial fall in employment rate was generally reported worldwide.

Barriers to employment

Barriers to employment are reported to include stigmatisation of the illness, economic disincentives, self-esteem, and the availability of employment support from mental health services, in addition to the burden of the illness manifestation.

Two studies reported stigma as the biggest barrier to people with schizophrenia finding and keeping work. One study (N = 200) reported that 50% of personnel directors indicated in a questionnaire that they were unlikely to employ someone who was currently unwell. This figure fell to 28% for people who had previously been unwell. Employers in larger businesses were more likely to employ someone with a mental illness.

3 studies report the loss, or feared loss, of welfare benefits as a significant barrier to employment. However, no studies have assessed whether this is based on actual experience or on people's fear



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of loss.

Self-esteem issues have been reported to include being ashamed of their work history, ability to cope with work, feeling well enough to work, and a belief that work may negatively affect mental health.

Predictors of employment

Demographic variables;

Three of five studies (N not reported) described an association between female gender and increased rates of employment.

Three studies (N not reported) found an association between being married and higher rate of employment.

One study also reported that owning property was strongly associated with employment rates in psychiatric illnesses.

Pre-morbid functioning;

One longitudinal study (N = 133) found that unemployment at baseline predicted for unemployment at 5 year follow up, but at 11 year follow up only frequency of social contact was associated with employment rate. Five studies (N not reported) have suggested that work history at illness onset predicts subsequent work performance; however one methodologically robust study found no association of premorbid function with employment, after adjusting for age at onset, marital status, and duration of untreated psychosis.

Psychotic symptoms;

One study reported an association between work history and the number of hospitalisations a person has had. Two follow-up studies showed lower symptom levels were associated with both work skills and employment rates at follow-up. However, one study reported an association between greater severity of positive symptoms and employment rate.

Three studies associated negative symptoms with unemployment in either cross-sectional or prospective assessments, while two further studies suggest this relationship is likely to be stronger than any effects of positive symptoms. This could be due to their effect on interview performance (1 study), task orientation, social skills and personal presentation (1 study) or motivation.

Social function;

Two studies found the jobs held by people with schizophrenia generally had low interpersonal interaction. Two studies reported an association between good social skills and employment rate, of which one study (N = 908) found a strong association between social integration and employment function, $r = 0.71$ (N not reported).

A 'positive attitude' or desire to work was predictive of future employment in two studies, N > 528. 3 additional studies reported that work adjustment skills also predict future employment.

Two studies have reported associations between social contacts, employment and symptom severity. One additional report (N = 76) over 10 years found low association between marital status, housing, work and social contacts, but significant relationship between social function and



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employment. <i>Cognitive functioning;</i> One study (N = 38) suggests employed people with schizophrenia performed better on working memory, vigilance and executive function tests than those who were unemployed.	
Consistency	Unable to assess; no measure of consistency is reported.
Precision	Unable to assess; no measure of precision is reported.
Directness	Direct

Tsang H, Leung A, Chung R, Bell M, Cheung WM

Review on vocational predictors: a systematic review of predictors of vocational outcomes among individuals with schizophrenia: an update since 1998

Australian and New Zealand Journal of Psychiatry 2010; 44: 495-504

[View review abstract online](#)

Comparison	Factors that predict competitive employment in people with schizophrenia.
Summary of evidence	<p>Moderate quality evidence (large samples, unable to assess consistency, precise, direct) suggests a large effect of receiving public support or disability income and a small effect of having negative (but not positive) symptoms or being young on a decreased likelihood of competitive employment. This quality evidence also suggests a medium effect of being married or being in a defacto relationship and a weak effect of having a work history on having an increased likelihood of competitive employment.</p> <p>Moderate to low quality evidence (some imprecision) suggests a medium-sized effect of receiving medical treatment for an increased likelihood of competitive employment. Gender or having an ethnic background, showed no effects on competitive employment.</p>
Symptoms	



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<p><i>A small effect of having negative symptoms being related to less employment;</i> 3 observational studies, N = 2,664, OR = 0.91, 95%CI 0.88 to 0.94, $p < 0.05$</p> <p><i>No effect for positive symptoms;</i> 3 observational studies, N = 4,757, OR = 1.01, 95%CI 0.98 to 1.03, $p > 0.05$</p>	
<p>Demographic characteristics</p>	
<p><i>A small to medium-sized effect showed being married or cohabitating was related to increased employment;</i> 3 observational studies, N = 800, OR = 1.96, 95%CI 1.85 to 2.08, $p < 0.05$</p> <p><i>A small effect showed being younger was related to decreased employment;</i> 8 observational studies, N = 5,788, OR = 0.78, 95%CI 0.75 to 0.81, $p < 0.05$</p> <p><i>No effect for ethnicity;</i> 2 observational studies, N = 1,422, OR = 0.86, 95%CI 0.39 to 1.91, $p > 0.05$</p> <p><i>No effect for sex;</i> 3 observational studies, N = 1,531, OR = 0.75, 95%CI 0.51 to 1.10, $p > 0.05$</p>	
<p>Diagnosis, work and hospitalisation history</p>	
<p><i>A large effect showed being on a public support/disability income was related to less employment;</i> 2 observational studies, N = 1,931, OR = 0.29, 95%CI 0.26 to 0.32, $p < 0.05$</p> <p><i>A small effect showed having a work history was related to increased employment;</i> 5 observational studies, N = 2,148, OR = 1.06, 95%CI 1.02 to 1.11, $p < 0.05$</p> <p><i>A small effect showed having a medical history was related to increased employment;</i> 2 observational studies, N = 1,055, OR = 1.60, 95%CI 1.15 to 2.23, $p < 0.05$</p> <p><i>No effect for hospitalisation history;</i> 4 observational studies, N = 3,817, OR = 1.05, 95%CI 1.0 to 1.11, $p = 0.05$</p>	
Consistency	Results appear inconsistent.
Precision	Imprecise for gender, ethnicity and medical features, precise for all other measures.
Directness	Direct



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Wewiorski NJ, Fabian ES

Association between demographic and diagnostic factors and employment outcomes for people with psychiatric disabilities: A synthesis of recent research

Mental Health Services Research 2004; 6(1): 9-21

[View review abstract online](#)

Comparison	Employment outcomes for people with schizophrenia living in the USA compared to patients diagnosed with other mental disorders.
Summary of evidence	Moderate quality evidence (medium-sized samples, consistent, unable to assess precision, direct) suggests a diagnosis of schizophrenia, compared to other mental disorders, was not related to overall employment status, however people with schizophrenia were less likely than people with other mental disorders to attain employment and retain it after 3 months.
Employment outcomes	
<p><i>A small effect showed that patients with a diagnosis of schizophrenia were less likely to attain new employment;</i></p> <p style="text-align: center;">2 studies, N = 299, $d = -0.165$, 95%CI -0.280 to -0.051, $Q = 6.056$, $p < 0.05$</p> <p><i>A small effect showed that patients with a diagnosis of schizophrenia were less likely to retain employment 3 months after placement;</i></p> <p style="text-align: center;">2 studies, N = 131, $d = -0.212$, 95%CI -0.387 to -0.036, $Q = -2.734$, $p > 0.05$</p> <p><i>A diagnosis of schizophrenia did not affect current employment status;</i></p> <p style="text-align: center;">3 studies, N = 1,389, $d = -0.05$, 95%CI -0.10 to -0.005, $Q = 2.979$, $p > 0.05$</p>	
Consistency	Consistent for employment status and retention. Inconsistent for attaining employment, authors state this reflects differences in the magnitude of the effect, rather than the direction of the effect.
Precision	No measure of precision is reported.
Directness	Direct



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Explanation of acronyms

CI = Confidence Interval, d = Cohen's d and g = Hedges' g = standardised mean differences (see below for interpretation of effect size), IPS = Individual Placement and Support employment programs, N = number of participants, OR = Odds Ratio, p = statistical probability of obtaining that result ($p < 0.05$ generally regarded as significant), Q = Q statistic (chi-square) for the test of heterogeneity, SSI = supplemental security income, SSDI = Social Security Disability Insurance, WAIS = Wechsler Adult Intelligence Scale

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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[†].

† 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) 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^{††}.

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 large effect if $RR > 5$ or < 0.2 ^{††}. InOR stands for logarithmic OR where a InOR 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 unforeseen 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 formula¹¹;

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

§ 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 relaxed¹³.

|| 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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References

1. Moher D, Liberati A, Tetzlaff J, Altman DG, PRISMA Group (2009): Preferred reporting items for systematic reviews and meta-analyses: the PRISMA statement. *British Medical Journal* 151: 264-9.
2. GRADE Working Group (2004): Grading quality of evidence and strength of recommendations. *British Medical Journal* 328: 1490.
3. Bond GR, Drake RE (2008): Predictors of competitive employment among patients with schizophrenia. *Current Opinion in Psychiatry* 21: 362-9.
4. Cohen A, Patel V, Thara R, Gureje O (2008): Questioning an axiom: better prognosis for schizophrenia in the developing world? *Schizophrenia Bulletin* 34: 229-44.
5. Wewiorski NJ, Fabian ES (2004): Association between demographic and diagnostic factors and employment outcomes for people with psychiatric disabilities: A synthesis of recent research. *Mental Health Services Research* 6: 9-21.
6. Cook JA, Razzano L (2000): Vocational rehabilitation for persons with schizophrenia: recent research and implications for practice. *Schizophrenia Bulletin* 26: 87-103.
7. Marwaha S, Johnson S (2004): Schizophrenia and employment - a review. *Social Psychiatry & Psychiatric Epidemiology* 39: 337-49.
8. Tsang HWH, Leung AY, Chung RCK, Bell M, Cheung W-M (2010): Review on vocational predictors: a systematic review of predictors of vocational outcomes among individuals with schizophrenia: an update since 1998. *Australian & New Zealand Journal of Psychiatry* 44: 495-504.
9. Christensen TO (2007): The influence of neurocognitive dysfunctions on work capacity in schizophrenia patients: A systematic review of the literature. *International Journal of Psychiatry in Clinical Practice* 11: 89-101.
10. Luciano A, Bond GR, Drake RE (2014): Does employment alter the course and outcome of schizophrenia and other severe mental illnesses? A systematic review of longitudinal research. *Schizophrenia Research* 159: 312-21.
11. Cochrane Collaboration (2008): Cochrane Handbook for Systematic Reviews of Interventions. Accessed 24/06/2011.
12. Rosenthal JA (1996): Qualitative Descriptors of Strength of Association and Effect Size. *Journal of Social Service Research* 21: 37-59.
13. GRADEpro (2008): [Computer program]. Jan Brozek, Andrew Oxman, Holger Schünemann. *Version 3.2 for Windows*.