**Brief psychological interventions for schizophrenia: A systematic review and meta-analysis**

Blue Pike\*1, Leire Ambrosio2, Lyn Ellett3

1Recovery Service, Hampshire and Isle of Wight Healthcare NHS Foundation Trust, UK

2 School of Health and Life Sciences, University of Southampton, UK;

3School of Psychology, University of Southampton, UK.

\*Corresponding author

**Abstract**

Background

Although cognitive behavioural therapy for people diagnosed with schizophrenia (CBTp) is recommended in clinical guidelines internationally, rates of implementation are low. One consequence of this has been the development of brief individual psychological interventions, which are shorter than the recommended minimum 16 sessions for CBTp. This article is the first to systematically identify the brief interventions that exist for people diagnosed with schizophrenia and to determine their effectiveness using meta-analysis.

Methods

Five electronic databases (PsycINFO, MEDLINE, CINAHL, EMBASE and Web of Science) were searched for peer reviewed randomised controlled trials or experimental studies of brief individual psychological interventions delivered in community settings. Random effects meta-analysis was used to integrate effect sizes, due to the heterogeneity of included studies.

Results

Fourteen studies were identified (n=1,382) which measured thirty clinical outcomes and included six intervention types - brief CBT, memory training, digital motivation support, reasoning training, psychoeducation and virtual reality. Collectively, brief psychological interventions were found to be effective for psychotic symptoms (SMD -0.285, p<0.01), paranoia (SMD -0.277, p<0.05), data gathering (SMD 0.38, p<0.01), depression (SMD -0.906, p<0.05) and wellbeing (SMD 0.405, p<0.01). For intervention types, brief CBT was effective for psychotic symptoms (SMD -0.32, p<.001) and reasoning training was effective for data gathering (SMD 0.38, p<0.01).

Conclusions

Overall, the evidence suggests that brief psychological interventions are effective for several key difficulties associated with schizophrenia, providing an opportunity to improve both access to, and choice of, treatment for individuals diagnosed with schizophrenia.

**Key words**: Schizophrenia, brief intervention, CBT, systematic review, meta-analysis

**Introduction**

Worldwide, access to effective treatment for Schizophrenia is extremely limited with only 31.3% receiving specialist care for psychosis (WHO, 2022). Cognitive Behaviour Therapy for psychosis (CBTp) is one of the first line treatments for Schizophrenia recommended internationally in clinical guidelines, for example in England and Wales, Germany, Canada, Australia and New Zealand (NICE, 2014; Gaebel, Riesbeck and Wobrock, 2011; Dixon *et al*, 2010; Norman, Lecomte, Addington, & Anderson *et al*, 2017; Australian, 2005). In the UK, NICE (2014) recommends a minimum of 16 sessions of CBTp (NICE., 2014). A recent review in the Netherlands found implementation rates for CBTp of 19-24% with a third of these treatments provided by psychologists who were not trained in CBTp (van de Ven *et al*., 2025). However, rates of implementation for CBTp are still below recommended levels with wide variation in rates found (Ince, Haddock, & Tai 2016), with a review of international implementation rates for CBTp finding a pooled prevalence rate of 24% (Burgess-Barr *et al*, 2023).

There are a number of factors that contribute to poor access to CBTp, including constraints in service delivery due to increasing demand (Cantor, 2022) and a scarcity of trained therapists (O'Connor, 2018). Beyond the UK, other factors cited include lack of appropriate health insurance (Chamberlin, 2004) and limited access to health facilities (WHO, 2013). One consequence of this has been the development of more targeted treatments that require fewer sessions, referred to as ‘brief interventions’ (Sijbrandij, Kleiboer & Farooq, 2020). Brief CBT interventions have been shown to be effective for anxiety and depression (Wakefield, 2021) and are recommended by the National Institute for Health and Care Excellence (NICE, 2022) and there is emerging evidence that brief CBT interventions are also effective for people with psychosis (Hazell et al., 2016). Additionally, some studies have found using more discrete components of CBT has been effective for treating individual psychotic symptoms including persecutory delusions (Freeman *et al*, 2016), and auditory hallucinations (Craig et al, 2018).

A systematic review and meta-analysis of low intensity CBTp of 10 controlled trials with <16 sessions found a small-medium effect (*d*=-0.46), which was maintained at follow up (*d*=-0.40) for symptoms of psychosis (Hazell, Hayward, Cavanagh, & Strauss, 2016). The effect sizes found for brief CBTp were similar to those found in meta-analyses of standard CBTp, suggesting that brief interventions are beneficial for people diagnosed with schizophrenia (Hazell *et al*., 2016). However, this review was limited in its focus to brief CBT interventions only, and there is no current review summarising the full range of brief interventions available for people diagnosed with schizophrenia. Therefore, the aim of this study was to review the range and effectiveness of brief (<16 sessions) interventions for schizophrenia. The review focuses on community interventions as factors such as acuity and length of admission can impact the type and duration of interventions that are accessible for inpatients (Johnson *et al*, 2022; Duncan et al, 2021). The review addressed the following research questions: 1. What brief individual psychological interventions exist for people diagnosed with schizophrenia? 2. How effective are brief psychological interventions for reducing psychotic symptoms? 3. How effective are brief psychological interventions for improving secondary outcomes?

**Methods**

**Protocol and search strategy**

The protocol for this review was registered with PROSPERO on 24th November 2023 (PROSPERO registration CRD42023479319).

Five electronic databases were searched in December 2023, including PsycINFO, MEDLINE, CINAHL, EMBASE and Web of Science. The search terms Schizophrenia\* OR Schizophrenia (MeSH term) OR psychosis OR psychoses OR psychotic disorder OR schizophrenic disorder OR hallucination\* OR voice\* OR auditory hallucination\* OR delusion\* AND brief intervention\* OR short-term were used in abstract and title, and limitations were added for papers that included adults 18+ years, were peer reviewed and published in English language. Search results were exported from each database to Rayyan (https://www.rayyan.ai/) where duplicate records were removed.

**Inclusion and exclusion criteria**

Inclusion criteria: (1) randomised controlled trials (RCT) or randomised experimental studies, (2) studies that include populations of individuals with a schizophrenia spectrum diagnosis, (3) community treatment, (4) individual interventions with a duration of less than 16 sessions.

Exclusion criteria: (1) study focus is medication (2) focus is on caregivers or staff, (3) qualitative study or case study, (4) focus is on drug, smoking or alcohol use, (5) focus is on inpatient care (including forensic setting) or transfer to community, (6) book chapters/editorials and existing reviews, (7) secondary analysis of already published datasets, (8) group interventions.

**Study selection**

PRISMA guidelines informed the search strategy (Page *et al*, 2020), see Figure 1. Backwards citation searches were completed for included studies and further potential studies were assessed against the same inclusion and exclusion criteria, which did not result in any further studies being included in the review. An independent reviewer screened 10% of the search results, and any differences were resolved by discussion.

**Data extraction**

The main characteristics of each study were extracted and tabulated (see supplementary table 1). Three studies did not report effect sizes in their results. For independent samples of equal size, missing effect sizes were calculated using post-intervention means and standard deviation (SD) (Soper, 2024). When post manipulation means or SD were missing, this was requested by contacting the study authors.

**Risk of bias assessment**

Each study was assessed using the Revised Cochrane risk-of-bias tool for randomized trials (RoB 2), which includes 28 questions over 5 different domains (Sterne *et al*, 2019). The score range includes: low risk of bias; some concerns - where there are some concerns in at least one domain, but no domain with a high risk of bias; and high risk of bias – where there is a high risk of bias in at least one domain, or the study is judged to have some concerns for multiple domains in a way that substantially lowers confidence in the result.

Thirteen studies scored low risk of bias and one scored some concerns. An independent reviewer repeated the RoB assessment for all fourteen studies. This resulted in agreement in the overall risk of bias rating for each study, which is reported in supplementary table 1.

**Statistical analysis**

Statistical software MedCalc (https://www.medcalc.org/) was used to conduct all statistical analysis. A random effects meta-analysis was used to integrate effect sizes, due to the heterogeneity of included studies. Statistical heterogeneity was examined and quantified using the Q test and I2 statistic, with high heterogeneity indicated by a significant Q test result (<0.05) or an I2 score of over 50%. Publication bias was assessed through visual examination of funnel plots and the results of Egger's test, with results falling outside of the funnel plot or a significant Eggers result (<0.05) indicating the presence of publication bias.

**Results**

**Summary of studies**

Fourteen studies met criteria for inclusion in the review (*n* =1,382), of which nine were randomised controlled trials (RCT), (*n* = 666), two were pragmatic randomised controlled trials (*n* = 523), one used a Solomon four-group design using randomisation (*n* = 80), one was a randomised experimental investigation (*n* = 34), and one was a feasibility RCT (*n* = 79). Twelve studies used a control group of treatment as usual (*n* = 1,223) and two studies used an active control, one of supportive counselling and one with a relaxation intervention (*n* = 159). Six intervention types were used across studies: (1) brief CBT (*k*=6), (2) memory training (*k*=2), (3) digital motivation support (*k*=2), (4) reasoning training module (*k*=2), (5) psychoeducation (*k*=1), and (6) virtual reality (*k*=1). Nine studies used face to face interventions, and five used other methods, including eight weeks of text messages following a single face to face session, using an app with an assigned motivation coach for 12 weeks, accessing a single brief computerised reasoning training module and using virtual reality.

**Summary of effect sizes**

In total, 30 clinical outcomes were measured across the 14 studies (see Table 1 for a summary of effect sizes). Large effect sizes were reported for insomnia (*k*=1); medium to large effect sizes were reported for psychological recovery (CHOICE) (*k*=3); small to large effect sizes were reported for psychotic symptoms (k=8); medium effect sizes were reported for social comparison (*k*=1), self-concept (*k*=1), defeatist beliefs (*k*=1), self-efficacy (*k*=1); small to medium effect sizes were reported for depression (*k*=6), delusions (*k*=5), paranoia (*k*=5), quality of life (*k*=3), motivation (*k*=2), negative symptoms (*k*=1); small effect sizes were reported for wellbeing (*k*=5), anxiety (*k*=3), functioning (*k*=2), data gathering (*k*=2), self-esteem (*k*=1), subjective goal attainment (*k*=1), future reward-value representations (*k*=1), effort-cost computations (*k*=1), neurocognition (*k*=1), worry (*k*=1), rumination (*k*=1), negative beliefs about self (*k*=1), suicidal ideation (*k*=1); and effect sizes were not reported for insight, hospitalisation (*k*=1), social functioning (*k*=1), self-stigma (*k*=1). Findings from individual studies, including outcome measures used, are listed in Supplementary Table 1.

**Meta-analysis findings**

Meta-analysis was used to assess the effectiveness of brief interventions by clinical outcome (Table 2), and by intervention type (Table 3). Separate analysis was conducted for studies using active controls. Meta analysis was conducted where at least two studies reported the required data (Valentine, Pigott & Rothstein, 2010). Inspection of funnel plots and the results of Egger’s test identified four analyses showing publication bias, these were for self-esteem, functioning, quality of life & memory training for depression. Trim and Fill analyses were not undertaken given only two studies were report for each of these outcomes and trim and fill is recommended only when at least 10 studies are reported (Mavridis & Salanti., 2014).

**Brief interventions by clinical outcome**

Table 2 shows the results from the meta-analyses of the cumulative effect of brief interventions by clinical outcome. Compared with treatment as usual, brief interventions were effective for psychotic symptoms, data gathering, paranoia, wellbeing and depression. Brief interventions were not effective for self-esteem, anxiety, delusions, or quality of life. Compared with active control conditions, brief interventions did not appear to be effective for psychotic symptoms, though caution is needed in interpreting this finding given the very small number of studies that have used an active control.

[Insert Table 2 Here]

[Insert Figures 2-5 Here]

**Brief interventions by intervention type**

Table 3 shows the results from the meta-analyses by intervention type. Brief CBT for psychotic symptoms was effective, reasoning training for data gathering was effective, and memory training for depression was not effective.

[Insert Table 3 Here]

**Discussion**

This study is the first to systematically identify the brief (<16 sessions) psychological interventions that exist for people diagnosed with schizophrenia and to determine their effectiveness using meta-analysis. The review identified fourteen studies, of which 12 compared the brief intervention to treatment as usual and two used an active control. 30 clinical outcomes were reported on across studies and six different types of brief intervention were identified which included brief CBT, memory training, digital motivation support, reasoning training, psychoeducation, and virtual reality. The findings by clinical outcome suggest that brief interventions are effective for psychotic symptoms, paranoia, depression, data-gathering and well-being. There was no evidence that brief interventions were effective in relation to self-esteem, anxiety, delusions and quality of life in individuals with schizophrenia. There was no evidence that brief interventions were more effective for psychotic symptoms when compared with active controls, though it is too early to draw any definitive conclusions with only two studies published to date. Meta-analyses by intervention type showed that brief CBT was effective for psychotic symptoms and reasoning training was effective for data gathering with no evidence for the effectiveness of memory training for depression. Overall, the evidence in relation to the use of brief interventions for people diagnosed with schizophrenia is encouraging, but caution is warranted in the interpretation of findings from the review given the small number of studies published to date.

The review found small to medium effect sizes for brief CBTp, which supports the findings of Hazell *et al* (2016) and is similar to those found for standard CBTp (Jauhar *et al*, 2014). The findings of this review add to the literature by showing that other types of brief psychological interventions beyond CBT might also be helpful for people diagnosed with schizophrenia. Shorter treatments may be more acceptable for individuals who do not want or who are not ready to engage in longer and/or more intensive therapy (Blenkiron, 1999). Brief interventions also have the potential to result in cost reductions via reduced therapist time, though this would need to be established in future research. Also noteworthy is that two studies included in this review used brief CBT delivered by assistant psychologists (Hayward *et al*, 2021) and community psychiatric nurses (Turkington, Kingdon & Turner, 2002), and both provided evidence for effectiveness. This suggests that training other professionals to deliver brief CBT to target discreet problems related to schizophrenia could improve accessibility to psychological treatments for this clinical group. The interventions included in this review ranged from a single session to twelve sessions, with two having a single session supported by digital contact (Luther et al, 2020; Schlosser et al, 2018). As with intervention type and target problem, delivery mode and length also need to align with patient preferences, with interventions of shorter duration being selected to suit patient needs (for example cognitive impairment affecting memory and attention), and clinical indication (i.e. a discreet issue where there is an evidence base for the efficacy of the intervention). Furthermore, patient preferences for therapy targets need to be considered, as these may differ to clinician priorities (Loizou, Fowler, & Hayward., 2024).

There are several limitations of the review. Three studies did not provide adequate data to be included in meta-analyses, and whilst study authors were contacted to seek this, data was not provided. Caution is warranted in the interpretation of findings from the review, given the small number of studies included in the meta-analyses (Myung, 2023) and the degree of heterogeneity evident. The studies included in the review were predominantly randomised controlled trials, and it is not clear whether the findings will generalise to routine clinical practice. The effectiveness of other approaches that did not fit the remit for this review, such as Hearing Voices Groups, were not considered. Additionally, the majority of studies used treatment as usual as the control condition, making it difficult to separate the effect of intervention versus non-specific therapy effects.

The review highlights a number of areas for future research. Although the evidence base for brief interventions is promising, more studies are needed to be able to draw definitive conclusions regarding their effectiveness and potential cost effectiveness. Future studies also need to determine mediators and moderators of brief interventions to determine which types of interventions work best for different groups, including individuals from diverse and underserved communities. Additionally, qualitative research could explore service users’ experience of brief interventions. The effectiveness of brief interventions available for inpatients with psychosis also warrants attention.

Overall, the evidence to date suggests that brief interventions are effective for reducing psychotic symptoms, paranoia and depression, and improving well-being in individuals with schizophrenia. In relation to intervention types, brief CBT was effective for psychotic symptoms and reasoning training was effective for data gathering. Overall, the evidence suggests that brief psychological interventions are effective for several key difficulties associated with schizophrenia, providing an opportunity to improve both access to, and choice of, treatment for individuals with schizophrenia.

**Financial Support**

This work was supported by an NIHR ARC Wessex / CRN Research Initiation Internship Award.

**Conflict of Interest**

The authors Blue Pike, Leire Ambrosio and Lyn Ellett declare none.

**References**

Andrews, G., Cuijpers, P., Craske, M. G., McEvoy, P., & Titov, N. (2010). Computer therapy for the anxiety and depressive disorders is effective, acceptable and practical health care: a meta-analysis. *PloS one, 5*(10), e13196.

Australian, R. (2005). Royal Australian and New Zealand College of Psychiatrists clinical practice guidelines for the treatment of schizophrenia and related disorders. *Australian & New Zealand Journal of Psychiatry, 39.*

Berry, K., & Haddock, G. (2008). The implementation of the NICE guidelines for schizophrenia: Barriers to the implementation of psychological interventions and recommendations for the future. *Psychology and Psychotherapy: Theory, Research and Practice, 81,* 419–436.

Bighelli, I., Salanti, G., Huhn, M., Schneider‐Thoma, J., Krause, M., Reitmeir, C., ... & Leucht, S. (2018). Psychological interventions to reduce positive symptoms in schizophrenia: Systematic review and network meta‐analysis. *World psychiatry, 17*(3), 316-329.

Blenkiron, P. (1999). Who is suitable for cognitive behavioural therapy? *Journal of the Royal Society of Medicine, 92*(5), 222-229.

Burgess-Barr, S., Nicholas, E., Venus, B., Singh, N., Nethercott, A., Taylor, G., & Jacobsen, P. (2023). International rates of receipt of psychological therapy for psychosis and schizophrenia: systematic review and meta-analysis. *International Journal of Mental Health Systems, 17*(1), 8.

Cantor, M. (2022). *‘We’re in a trauma together’: Americans need therapy – but psychologists are booked*. Retrieved from: ‘We’re in a trauma together’: Americans need therapy – but psychologists are booked | Mental health | The Guardian

Craig, T. K., Rus-Calafell, M., Ward, T., Leff, J. P., Huckvale, M., Howarth, E., ... & Garety, P. A. (2018). AVATAR therapy for auditory verbal hallucinations in people with psychosis: a single-blind, randomised controlled trial. *The Lancet Psychiatry, 5*(1), 31-40.

Dixon, L. B., Dickerson, F., Bellack, A. S., Bennett, M., Dickinson, D., Goldberg, R. W., ... & Kreyenbuhl, J. (2010). The 2009 schizophrenia PORT psychosocial treatment recommendations and summary statements. *Schizophrenia bulletin, 36*(1), 48-70.

Duncan, F., Baskin, C., McGrath, M., Coker, J. F., Lee, C., Dykxhoorn, J., ... & Oliver, E. J. (2021). Community interventions for improving adult mental health: mapping local policy and practice in England. BMC public health, 21, 1-14.

Farrand, P., & Woodford, J. (2013). Impact of support on the effectiveness of written cognitive behavioural self-help: a systematic review and meta-analysis of randomised controlled trials. *Clinical Psychology Review, 33*(1), 182-195.

Foster, C., Startup, H., Potts, L., & Freeman, D. (2010). A randomised controlled trial of a worry intervention for individuals with persistent persecutory delusions. *Journal of Behavior Therapy and Experimental Psychiatry, 41*(1), 45-51.

Freeman, D. (2011). Improving cognitive treatments for delusions. *Schizophrenia research, 132*(2-3), 135-139.

Freeman, D., Bradley, J., Antley, A., Bourke, E., DeWeever, N., Evans, N., ... & Clark, D. M. (2016). Virtual reality in the treatment of persecutory delusions: randomised controlled experimental study testing how to reduce delusional conviction. *The British Journal of Psychiatry, 209*(1), 62-67.

Freeman, D., Dunn, G., Startup, H., Pugh, K., Cordwell, J., Mander, H., ... & Kingdon, D. (2015). Effects of cognitive behaviour therapy for worry on persecutory delusions in patients with psychosis (WIT): a parallel, single-blind, randomised controlled trial with a mediation analysis. *The Lancet Psychiatry, 2*(4), 305-313.

Freeman, D., Taylor, K. M., Molodynski, A., & Waite, F. (2019). Treatable clinical intervention targets for patients with schizophrenia. *Schizophrenia Research, 211*, 44-50.

Gaebel, W., Riesbeck, M., & Wobrock, T. (2011). Schizophrenia guidelines across the world: a selective review and comparison*. International Review of Psychiatry, 23*(4), 379-387.

Gan, D. Z., McGillivray, L., Han, J., Christensen, H., & Torok, M. (2021). Effect of engagement with digital interventions on mental health outcomes: a systematic review and meta-analysis. *Frontiers in Digital Health, 3,* 764079.

Hazell, C. M., Hayward, M., Cavanagh, K., & Strauss, C. (2016). A systematic review and meta-analysis of low intensity CBT for psychosis. *Clinical Psychology Review, 45*, 183-192.

Ince, P., Haddock, G., & Tai, S. (2016). A systematic review of the implementation of recommended psychological interventions for schizophrenia: rates, barriers, and improvement strategies. *Psychology and Psychotherapy: Theory, Research and Practice, 89*(3), 324-350.

Jauhar, S., McKenna, P. J., Radua, J., Fung, E., Salvador, R., & Laws, K. R. (2014). Cognitive–behavioural therapy for the symptoms of schizophrenia: systematic review and meta-analysis with examination of potential bias. *The British Journal of Psychiatry, 204*(1), 20-29.

Johnson, S., Dalton‐Locke, C., Baker, J., Hanlon, C., Salisbury, T. T., Fossey, M., ... & Lloyd‐Evans, B. (2022). Acute psychiatric care: approaches to increasing the range of services and improving access and quality of care. World Psychiatry, 21(2), 220-236.

Kazdin, A. E. (2017). Addressing the treatment gap: A key challenge for extending evidence-based psychosocial interventions. *Behaviour Research and Therapy, 88,* 7-18.

Kingdon, D. G., & Turkington, D. (2022). *Cognitive-behavioral therapy of schizophrenia.* Psychology Press.

Liu, Y., Yang, X., Gillespie, A., Guo, Z., Ma, Y., Chen, R., & Li, Z. (2019). Targeting relapse prevention and positive symptom in first-episode schizophrenia using brief cognitive behavioral therapy: a pilot randomized controlled study. *Psychiatry Research, 272,* 275-283.

Loizou, S., Fowler, D., & Hayward, M. (2024). Exploring service users’ and practitioners’ priorities regarding outcomes of cognitive behavioural therapy for distressing voices: a thematic analysis. *Psychosis, 16*(4), 339-351.

Mavridis, D., & Salanti, G. (2014). Exploring and accounting for publication bias in mental health: a brief overview of methods. *BMJ Ment Health*, *17*(1), 11-15.

Schizophrenia Commission. *The Abandoned Illness: A Report by the Schizophrenia Commission [Internet]. 2012. London: Rethink Mental Illness.*

Myung, S. K. (2023). How to review and assess a systematic review and meta-analysis article: a methodological study (secondary publication). *Journal of Educational Evaluation for Health Professions, 20.*

NICE. (2014). *Psychosis and schizophrenia in adults: prevention and management*. NICE.

National Institute for Health and Care Excellence (Great Britain). (2022). *Depression in adults: treatment and management.* National Institute for Health and Care Excellence (NICE).

Norman, R., Lecomte, T., Addington, D., & Anderson, E. (2017). Canadian treatment guidelines on psychosocial treatment of schizophrenia in adults. *The Canadian Journal of Psychiatry, 62*(9), 617-623.

O'Connor, M., Morgan, K. E., Bailey-Straebler, S., Fairburn, C. G., & Cooper, Z. (2018). Increasing the availability of psychological treatments: a multinational study of a scalable method for training therapists*. Journal of Medical Internet Research, 20*(6), e10386.

Page, M. J., McKenzie, J. E., Bossuyt, P. M., Boutron, I., Hoffmann, T. C., Mulrow, C. D., ... & Moher, D. (2021). The PRISMA 2020 statement: an updated guideline for reporting systematic reviews. *bmj*, 372.

Popay, J., Roberts, H., Sowden, A., Petticrew, M., Arai, L., Rodgers, M., ... & Duffy, S. (2006). *Guidance on the conduct of narrative synthesis in systematic reviews. A product from the ESRC methods programme Version, 1*(1), b92.

Richards, D., & Whyte, M. (2011). National programme student materials to support the delivery of training for psychological wellbeing practitioners delivering low intensity interventions. *London: Rethink Mental Illness.*

Roth, A. D., & Pilling, S. (2013). *A competence framework for psychological interventions with people with psychosis and bipolar disorder.* Retrieved from: https://www.ucl.ac.uk/pals/sites/pals/files/migrated-files/Psychosis\_Background\_Doc.pdf

Sijbrandij, M., Kleiboer, A., & Farooq, S. (2020). low-intensity interventions for psychiatric disorders. *Frontiers in Psychiatry, 11,* 619871.

Soper, D. (2006). *Free Statistics Calculators*: Version 4.0. retrieved from: <https://www.danielsoper.com/statcalc/calculator.aspx?id=48>

Higgins, J. P., Sterne, J. A., Savovic, J., Page, M. J., Hróbjartsson, A., Boutron, I., ... & Eldridge, S. (2016). A revised tool for assessing risk of bias in randomized trials. *Cochrane database of systematic reviews, 10*(Suppl 1), 29-31.

Thomas, N. (2015). What's really wrong with cognitive behavioral therapy for psychosis?. *Frontiers in psychology, 6,* 323.

Thomas, N., Hayward, M., Peters, E., Van Der Gaag, M., Bentall, R. P., Jenner, J., ... & McCarthy-Jones, S. (2014). Psychological therapies for auditory hallucinations (voices): current status and key directions for future research. *Schizophrenia Bulletin, 40*(Suppl\_4), S202-S212.

Valentine, J. C., Pigott, T. D., & Rothstein, H. R. (2010). How many studies do you need? A primer on statistical power for meta-analysis. *Journal of Educational and Behavioral Statistics, 35*(2), 215-247.

van de Ven, M. P., van den Berg, D., Schuurmans, H., van der Vleugel, B. M., van Zelst, C. J., & Staring, A. B. (2025). The availability of Cognitive Behaviour Therapy for psychosis (CBTp) inThe Netherlands. *Psychosis, 1-11.*

Veling, W., Lestestuiver, B., Jongma, M., Hoenders, H. R., & van Driel, C. (2021). Virtual reality relaxation for patients with a psychiatric disorder: crossover randomized controlled trial. *Journal of Medical Internet Research, 23*(1), e17233.

Wakefield, S., Kellett, S., Simmonds‐Buckley, M., Stockton, D., Bradbury, A., & Delgadillo, J. (2021). Improving Access to Psychological Therapies (IAPT) in the United Kingdom: A systematic review and meta‐analysis of 10‐years of practice‐based evidence. *British Journal of Clinical Psychology, 60*(1), 1-37.

Waller, H., Garety, P. A., Jolley, S., Fornells-Ambrojo, M., Kuipers, E., Onwumere, J., & Craig, T. (2013). Low intensity cognitive behavioural therapy for psychosis: a pilot study. *Journal of Behavior Therapy and Experimental Psychiatry, 44*(1), 98-104.

World Health Organization (2022). *Schizophrenia*. Retrieved from: <https://www.who.int/news-room/fact-sheets/detail/schizophrenia>

Zhou, L., & Parmanto, B. (2019). Reaching people with disabilities in underserved areas through digital interventions: Systematic review. *Journal of Medical Internet Research, 21*(10), e12981.

**Figure 1**



Figure 1. PRISMA flowchart of search results.

**Table 1.** Summary of effect sizes for clinical outcomes.

|  |  |
| --- | --- |
| Outcome (number of studies) | Effect size range |
| Psychotic symptoms (9) | -0.02, 0.91 |
| Depression (6) | 0.43, 0.68 |
| Delusions (4) | -0.1, 0.49 |
| Wellbeing (4) | -0.13, 1.16 |
| Paranoia (4) | 0.01, 0.59  |
| Anxiety (3) | -0.21, 0.28  |
| Quality of life (3) | 0, 0.5 |
| Psychological recovery (CHOICE) (3) | 0.5, 0.87 |
| Functioning (2) | 0.09, -0.25 |
| Motivation (2) | -0.14, 0.64 |
| Insight (2) | not reported |
| Data gathering (2) | 0.21, 0.41 |
| Self-esteem | 0.16 |
| Subjective goal attainment | 1.05 |
| Future reward-value representations | -0.27 |
| Effort-cost computations | -0.11 |
| Negative symptoms | -0.14, -0.66 |
| Neurocognition  | -0.1 |
| Hospitalisation | Data not reported |
| Social functioning |  Data not reported |
| Worry | 0.47 |
| Rumination | 0.32 |
| Self-stigma | Data not reported |
| Negative beliefs about self | 0.24 |
| Social comparison | 0.88 |
| Self-concept | 0.62 |
| Insomnia | 1.9 |
| Defeatist beliefs | 0.59 |
| Self-efficacy | 0.64 |
| Suicidal ideation | 0 |

**Table 2.** Meta-analysis results by clinical outcome.

|  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| Clinical outcome | SMD | SE  | 95% CI | t | P  | Q test  | I2 | Eggers test |  |  |
| Depression | -0.906 | 0.408 | -1.711, -0.102 | -2.219 | 0.027 | 25.9309\*\* | 88.43% | -4.4207 |  |  |
| Self-esteem | 0.169 | 0.477 | -0.775, 1.114 | 0.355 | 0.723 | 5.2879\* | 81.09% | 5.7396\*\* |  |  |
| Psychotic symptoms | -0.285 | 0.09 | -0.462, -0.108 | -3.166 | 0.002 | 1.4704 | 0.00% | -0.2751 |  |  |
| Data gathering | 0.38 | 0.121 | 0.141, 0.619 | 3.13 | 0.002 | 0.8558 | 0.00% | -0.7373 |  |  |
| Anxiety | -0.157 | 0.202 | -0.555, 0.241 | -0.777 | 0.438 | 3.2245 | 37.97% | 3.5798 |  |  |
| Functioning | 0.201 | 0.159 | -0.113, 0.516 | 1.266 | 0.208 | 0.3071 | 0.00% | -2.8454\*\* |  |  |
| Delusions | -0.146 | 0.132 | -0.407, 0.114 | -1.106 | 0.269 | 4.0008 | 25.01% | -0.03029 |  |  |
| Paranoia | -0.277 | 0.11 | -0.492, -0.0612 | -2.526 | 0.012 | 0.7779 | 0.00% | 1.2344 |  |  |
| Wellbeing | 0.405 | 0.14 | 0.130, 0.680 | 2.898 | 0.004 | 4.3019 | 30.26% | 1.3716 |  |  |
| Quality of life | 0.157 | 0.192 | -0.224, 0.538 | 0.818 | 0.415 | 0.7581 | 0.00% | 19.8017\*\* |  |  |
| Active control |
| Psychotic symptoms | -0.077 | 0.153 | -0.380, 0.226 | -0.503 | 0.601 | 0.6072 | 0.00% | 3.5636 |  |  |

**Note: \*p<.05, \*\*p<.001**

**Table 3.** Table 3. Meta analysis results by intervention type.

|  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
| Intervention type and clinical outcome | SMD | SE  | 95% CI | t | P  | Q test  | I2 | Eggers test |
| Brief CBT for psychotic symptoms | -0.315 | 0.117 | -0.546, -0.0850 | -2.694 | 0.007 | 0.7468 | 0.00% | -0.08767 |
| Reasoning training for data gathering (delusions) | 0.38 | 0.121 | 0.141, 0.619 | 3.13 | 0.002 | 0.8558 | 0.00% | -0.7373 |
| Memory training for depression  | -1.16 | 0.848 | -2.834, 0.515 | -1.367 | 0.173 | 24.5469\*\* | 95.93% | -21.6467\*\* |

**Note:** \*\*p<.0001

**Figure 2.** Forest plot for Psychotic Symptoms



**Figure 3.** Forest plot for paranoia



**Figure 4.** Forest plot for depression



**Figure 5.** Forest plot for Well-Being

