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Systematic Review

Psychosocial Interventions to Promote Recovery for Patient With Schizophrenia: A Systematic Review

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ABSTRACT

Introduction: Managing Cancer and Living Meaningfully (CALM) is a supportive-expressive psychotherapy designed to address such barriers and to facilitate communication of mortality-related concerns in patients facing advanced disease and their primary caregivers. The study was meant to review the benefits of the CALM psychotherapy on patients with advanced or metastatic cancer and caregivers.

Methods: This study was done through a systematic review with The Preferred Reporting Items for Systematic Reviews and Meta-Analysis (PRISMA) approach. It broadly used Scopus, Science Direct, and ProQuest database. The search utilized the Boolean phrases "cancer", "living meaningfully", and "psychotherapy" throughout the title, abstract, or keywords. The consideration criteria in the literature study were: an original article, the source from journals, article in English, and available in full text. We obtained 97 articles, and 11 were considered relevant for this systematic review.

Results: The findings from the results of this study are that CALM has several psychological benefits for patients with advanced cancer, including: can reduce anxiety and depression, relieve distress, promote psychological growth and well-being, and improve quality of life. Based on these findings, it can be concluded that the CALM psychotherapy has many benefits for patients with advanced cancer and their caregivers and can be used as additional therapy to improve the quality of life to face the end-of-life.

Conclusion: CALM may be a feasible intervention to benefit patients with advanced cancer. It may help them overcome obstacles in communication and alleviate death-related distress.

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INTRODUCTION

Breaking the word down, we see that 'psycho' refers to psychology - the study of human nature or the mind, its functions, and behavior - and 'social' refers to society - groups of people living together with shared laws and organizations. If we put these two ideas together, we can see that psychosocial means how humans interact with and relate to others around them. It focuses on relationships and how humans work in society. When a person is not interacting with society well, psychosocial intervention may be used to help guide the person back into a healthy state of being. That is the use of non-medicinal means to alter a person's behaviors and relationships with society in order to reduce the impact of the person's disorder or condition. The key to psychosocial intervention is that it does not use pharmaceutical assistance in the endeavor to change a person's behaviors toward a more healthy interaction with society. Recovery is a multidimensional concept and some research findings suggest that relevant indicators must consider at least two areas, namely clinical remission and social function. Recovery of patients with schizophrenia is defined as recovery as a meaningful

and valued life achievement and a return to normal function, that is with no symptoms based on objective criteria. This shows that functional outcomes should be a priority target for therapeutic interventions. A large amount of literature has studied the factors that can influence this functional outcome. Neurocognition is one of the first factors described. Other variables such as intrinsic motivation and metacognition have also been mentioned in several studies and can function as mediators between neurocognition and functional outcomes. To better explain the causal pathway, researchers have built sophisticated models with parameters such as functional capacity, social cognition, and symptoms to take into account the complexity of functions. Functional capacity is defined as the ability to perform tasks that are relevant to daily life in a structured environment that is guided by the examiner. This includes the ability to perform in the areas of housing, employment and social skills. Several works have shown that functional capacity is at least strongly correlated with real-world functional results as cognitive performance. Recent studies have revealed that the effects of cognitive impairment can be mediated by functional capacity. Social cognition is a multidimensional construct consisting of emotional processes, social perceptions and knowledge, thought theories and attribution biases (Lysaker, Keane, Poirier, & Lundin, 2020).

According to most studies, social cognition might also mediate the effects of neurocognitive disorders on real life functions. Symptoms have been associated with functional outcomes from the beginning with negative symptoms appearing to interfere more than positive ones. Both direct and indirect relationships between negative symptoms and real life functions have been reported. They seem to mediate the impact of variables such as neurocognition or functional capacity on real-world functioning. It seems that symptoms such as lack of motivation have the biggest impact. Most recent work confirms this finding and also refers to additional variables that are more connected to the patient's environment. Studies show that resilience, stigma, and involvement with mental health services mediate the relationship between symptoms, cognition, and real-world functioning. Other recent work shows that negative symptoms predict social deficits, but not with a decrease in daily activities and vocational outcomes that conflict with cognition and functional capacity. Some researchers suggest that various factors need to be assessed to establish an individual's "functional diagnosis". Some factors are inherent to patients (cognition, involvement with services, functional capacity, symptoms, resilience, and recovery processes), while others are related to their social context (internal stigma, social support, resources). Such assessments will help to determine individualized intervention plans and to determine life goals in collaboration with patients (Kuo, Lin, & King, 2010).

Then appropriate treatment targets neurocognition, social cognition, negative symptoms and functional capacity, and integrative interventions combining different therapies need to be institutionalized taking into account the specific needs of each patient. Rehabilitation or psychosocial interventions have been developed to complement psychotherapy and psychopharmacological treatments. Basically, drug treatment and supportive therapy do not have specific effects on cognitive impairment, insight, social skills, and interaction disorders, whereas rehabilitation tools primarily target this dimension. Psychosocial interventions also share common values with the recovery model by promoting an active position against disturbances, which encourages self-determination and empowerment. Many interventions can be used in the field of rehabilitation: case management, supported work (SE), cognitive remediation, psychoeducation, and cognitive behavioral therapy(Bowie et al., 2020).

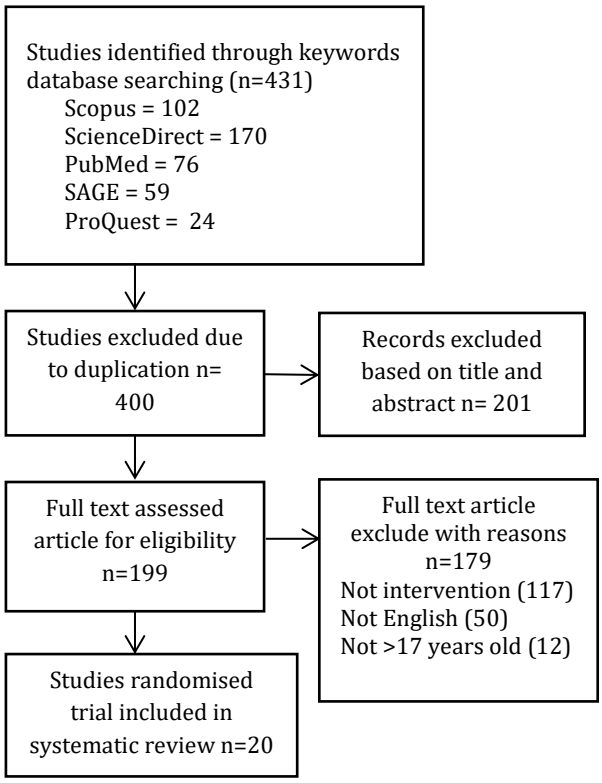

Figure 1. Flow diagram

In this review, we focus on rehabilitation interventions that specifically target the dimensions cited above. Thus, we studied the following three interventions: (1) cognitive improvement, (2) psychoeducation, and (3) cognitive-behavioral therapy. The purpose of compiling this review systematic is to explain interventions that can be used as a basis for providing interventions aimed at the recovery of patients with schizophrenia.

MATERIALS AND METHODS

Literature Search Strategy

Searching for articles in the compilation of the systematic review is done using the Scopus, ScienceDirect, PubMed, ProQuest, and SAGE databases. The specified time span is between 2016

and 2020 and only articles in English are selected. Keywords used in literature search are "RECOVERY" AND "INTERVENTION" AND "SCHIZOPHRENIA" AND "PSYCHOSOCIAL". A total of 431 articles were found in this search, but only 20 articles were used in the writing. The selected article is an article in English, published in the last five years, and refers to the recovery of patients with schizophrenia.

Study Design

The study design inclusion criterion in this Systematic Review is a Random Controlled Trial (RCT) design that is published using English. The population in this systematic review are all studies that describe patients who get recovery interventions with or without a control group, men and women > 17 years old with schizophrenia and seeing the effect of recovery intervention. Various types of recovery interventions affect cognitive remediation, psychoeducation, and cognitive-behavioral therapies (CBT). The main outcome of this systematic review is to look at the influence of recovery interventions in psychological, cognitive and social terms.

Data Extraction and Analysis

Data are extracted from each study that meets the requirements. The extracted data include the characteristics of the study, characteristics of recovery intervention, characteristics of the results and summary of results. Studies are grouped according to the effects of recovery intervention in psychological, cognitive and social terms.

Figure 1 summarizes the search results and the selection of studies following the PRISMA guidelines. The selection of journals based on the keywords used produces 431 articles; 400 articles were found after duplication screening and 201 eliminated due to irrelevant studies based on titles and abstracts. A total of 199 articles with full text was taken with 20 studies excluded because they did not meet the inclusion criteria as follows: not an intervention study (n = 117), not using English (n = 50), subject <17 years (n = 12). Thus, the 20 studies selected will form the systematic review

RESULTS

Population

The sample size of the 20 studies used is that the least systematic review is 23 people divided into two groups, namely the control and intervention groups, with the age range 18-51 years, and the sex of patient is female.

Characteristics of Intervention

There are several types of recovery interventions, including cognitive remediation, psychoeducation, and CBT

Size of Clinical Outcomes

Research reports the outcome measures used to measure recovery are Attention Reaction Conditioner (ARC), Personal and Social Performance scale (PSP), the Measure of Insight into Cognition-Self Report (MIC-SR), The NIMH MATRICS Consensus Cognitive Battery (MCCB), Scale for the Assessment of Negative Symptoms (SANS), Scale for the Assessment of Positive Symptoms (SAPS), Dynamic Social Cognition Battery (DSCB), Pittsburgh Sleep Quality Index (PSQI), Psychotic Symptoms Rating Scale (PSYRATS), Anxiety Sensitivity Index (ASI), Beck Depression Inventory (BDI), and Positive and Negative Syndrome Scale (PANSS).

Intervention Efficacy Analysis

For each RCT intervention, it was explained they evaluated the effect of recovery intervention on treatment separately. Some journals continue to follow-up for up to 12 months after the intervention so that they can assess the long-term influence of the intervention that has been done.

Effectiveness of Cognitive Remeditation

The main criteria used to assess the efficacy of psychoeducation are the level of recurrence, symptom reduction, medication adherence, knowledge about the disease, and function in the community. Most large-scale work on psychoeducation does not distinguish between information provided to families from that given to patients. Effects of cognitive remediation were significant interaction between the effect of PSI and performance on the different cognitive exercises (pb0.05). More precisely, when patients performed the session with PSI, they demonstrated better cognitive performances than with N-PSI in the ORM exercise that provides training in processing speed, alertness, and reaction time (the standard Attention Reaction Conditioner, or ARC) (pb0.01, corrected). PSI did not significantly affect other cognitive domains, such as target detection and spatial attention (Sandoval et al., 2019). Significant cognitive benefits for functioning were observed (Personal and Social Performance scale, PSP). Moreover, improvement of the MCCB total score mediated a positive effect on functional capacity (UCSD Performance-based Skills Assessment, UPSA), and mediated decreases in negative symptoms across both groups. CCRT improved social functioning and general cognitive functioning among community-dwelling patients with schizophrenia. These improvements persisted for six months after treatment. CCRT also led to improvements in functioning and symptom severity by modulating cognitive functioning (Pre-proof et al., 2020).Greater perceived competency was associated with shorter time to treatment completion (p= .0025). Intrinsic motivation measured at end-point t was associated

with cognitive change (p=.02)(Bowie et al., 2020). Conduct cognitive remediation program with the help of caregivers in patients' home settings and home-based cognitive remediation is as effective as the clinic-based cognitive remediation (Kumar et al., 2019). The combined intervention, CRT + MRIGE, showed greater improvements in the MCCB indices of Visual Learning, Working Memory, Reasoning and Problem Solving, and the neurocognitive composite score compared to CRT alone (Bonferroni adjusted p=0.004,p=0.005,p= 0.01, respectively), as did social cognition measures (Bonferroni adjusted p=0.006,p= 0.005, respectively) (Lindenmayer et al., 2018). Post hoc testing showed that, compared to the control group, the CBT-I group showed significant reductions in ISI and PSQI at both week 4 and week 8. For the PSYRATS, ASI, and BDI scores, the CBT-I and control groups showed significant time-group interactions, but post hoc testing revealed no significant group differences at either week 4 or week 8. Therefore, CBT-I was effective for reducing insomnia symptoms in patients with schizophrenia and the effect lasted for four weeks after the intervention (Hwang, Nam, & Lee, 2019)

Cognitive-behaviour Therapy (CBT) Effectiveness

The results of the CBT intervention show that patients with schizophrenia can learn various skills. It indicates that participants in the CBT + CR condition worked significantly more hours and had a more positive trajectory of improving global work performance and work quality across the study compared with the CBT alone and vocational support condition. Compared to the other conditions, CBT + CR also had a significant increase in overall neurocognition that continued to the 12-month follow-up, particularly in the domains of verbal learning and social cognition. In conclusion, CBT + CR may be an effective intervention to improve work functioning and neurocognition in persons with schizophrenia (Kukla, Bell, & Lysaker, 2018). At 21-month follow-up, CBT did not have a lasting effect on total symptoms of schizophrenia compared with treatment as usual; however, CBT produced statistically, though not clinically, significant improvements on total symptoms by the end of treatment. There was no indication that the addition of CBT to treatment as usual caused adverse effects. The results of this trial do not support a recommendation to routinely offer CBT to all people who meet the criteria for clozapine-resistant schizophrenia; however, a pragmatic individual trial might be indicated for some (Morrison et al., 2018). Therapy is important for those that receive CBT in the absence of antipsychotic medication. Secondly, using principal stratification, we examined the process variables that modified treatment effects. Findings revealed that those who received a longitudinal formulation in the first four sessions of CBT had poorer treatment effects than those who did not; however, this finding was not statistically significant (95% CI−37.244, 6.677, p = 0.173) (Spencer et al., 2018). The results revealed identical one-factor structures for both participant groups. For both groups, the BIQ total score was positively associated with performance on social cognitive and everyday functioning assessments. Further, control participants were rated more positively on all BIQ items and received higher BIQ total scores. In the schizophrenia sample, BIQ scores predicted performance on social functioning assessments while controlling for symptom severity (Lanser et al., 2018); the complete training plus pre- and post-treatment assessment data were available from sixteen participants. Clinical ratings of symptom severity were obtained at pre- and post-training. Retention rates were very high and training was rated as extremely satisfactory for the majority of participants. Participants exhibited a significant reduction in overall clinical symptoms, especially negative symptoms following 10 sessions of MASI-VR (Adery, Ichinose, Torregrossa, Wade, & Nichols, 2018). Clinical features, cognition and functioning were assessed at baseline, post-treatment and six months after finishing the intervention. A significant progressive improvement in neurocognition and functioning was globally shown with no differences observed between the experimental and control group at post-training or follow-up. All cognitive domains but Social Cognition improved between 0.5 and 1 S.D. through the study period (García-fernández et al., 2019). Following CRT + SST, participants demonstrated statistically significant improvement for MCCB reasoning and problem solving, MCCB verbal learning, and MASC total correct score. Improvements on UPSA total score approached significance (p= .07) (Mcclure et al., 2019).

Psychoeducation Effectiveness

A large significant improvement of knowledge was observed (p< 0.001; d= 0.77). By contrast, the analysis reported no significant effect of psychoeducation on insight (p= 0.86; d= 0.07). PANSS total scores were significantly decreased after treatment (p= 0.001; d= 0.66) (Dondé, Senn, Eche, Kallel, & Saoud, 2019). There was a significant group×time interaction effect on knowledge (F = 8.71; p<0.01; ηp2= 0.14) and self-stigma scores (F = 14.47; p<0.001; ηp2= 0.21), wherein the brief psychoeducation group showed a significant increase in knowledge and reduction in self-stigma with medium effect size through baseline to the third month follow-up as compared to the treatment as usual group. We also observed a significant main effect of time; irrespective of the group allocation, there was a significant increase in the knowledge through baseline to third month follow-up (F = 5.69; p = 0.02; p2= 0.09). No main or interaction effects of group and time were observed on burden (Amaresha, Vasu, Joseph, Mahavir, & Subbakrishna, 2018). One hundred and sixty (89%) patients completed at least

two post-tests. Their mean age and duration of illness were 25e28 years (SD=6.1e7.8) and 2.1e2.5 years (SD=1.3e2.0; range 4-54 months), respectively. Compared with the two other groups, the mindfulness-based group exhibited a significantly greater improvement with moderate to large effect sizes (Cohen's d=.49e0.98) in functioning (p¼0.005), duration of psychiatric re-hospitalizations (p=0.007), psychotic symptoms (p¼0.008) and illness insight (p¼0.001) over the 18-month follow-up. Supplementary MRI findings indicated that the mindfulness-based intervention resulted in significant changes in gray matter volume and density in brain regions concerning attention and emotional regulation(Tong, Yu, Mcmaster, Yip, & Wong, 2019). The mean post-test score of the Beck Cognitive Insight Scale was 4.89 ± 6.05 in the experimental group, 1.68 ± 5.67 in the control group and the difference between the mean scores was statistically significant ($p < 0.05$). The mean post-test score of Medication Adherence Ratıng Scale was 1.76 ± 0.42 in the experimental group, 1.50 ± 0.50 in the control group and the difference between the mean scores was statistically significant ($p < 0.05$)(Çetin & Aylaz, 2018). The efficacy of medication subscale score, and the total DAI-10 score exhibited significant group × time interactions(Matsuda & Kohno, 2016).

The findings from the results of this study suggest that CALM has several psychological benefits for patients with advanced cancer, including: reducing anxiety and depression, relieving distress, promoting psychological growth and well-being, It may help patients with advanced cancer overcome obstacles in communication and alleviate death-related distress (Table 1).

DISCUSSION

A number of results show that cognitive improvement, psychoeducation, and CBT are efficient rehabilitation tools. Data in the literature on cognitive remediation are homogeneous and show that it is efficient in cognitive function and psychosocial function, specifically the ability to work. According to most studies, the impact of cognitive remediation on social functioning is more important, both when combined with other rehabilitation techniques and when therapy is based on learning strategies. Data on the effect of cognitive remediation on symptomatology are more heterogeneous. This may not have an effect on positive symptoms, and, in fact, severe positive symptoms can be obstacles to improvement during cognitive remediation sessions (Sandoval et al., 2019). Data on negative symptoms are more complex because they are influenced by cognitive remediation. The effectiveness of negative symptoms may be indirect, hypothetically caused by a reduction in defeated beliefs, avoidance behavior, and poor motivation, and, consequently, an increase in self-esteem (Pre-proof et al., 2020). Further studies should try to determine the effects of cognitive remediation, the active elements of the intervention, the factors that lead to positive responses and permanent benefits over time. It seems, however, that factors such as motivation, social cognition, and metacognition can play a key role in the success of this remediation technique (Saperstein, Lynch, Qian, & Medalia, 2020).

Psychoeducation for families and patients has proven to be effective in preventing relapses, re-admissions, and also in increasing drug compliance. Interventions with the highest level of evidence appear to be those that involve relatives. Actually, psychoeducation for patients shows its effectiveness, but with a lower level of evidence compared to patient and family psychoeducation. It is important for patient and family psychoeducation not only to send information, but also to provide practical skills such as real problem solving techniques (Dondé et al., 2019). Although methodological reduction limits the psychosocial rehabilitation to a single intervention, it appears that interventions that combine psychoeducation, cognitive and behavioral techniques, and homework strategies are more effective in increasing medication adherence than unidimensional approaches. Future research should focus on developing new types of programs, such as psychoeducation led by peers. It seems important for participants to receive information from and exchange with peers. Conversely, giving too much information about a disease can cause a defensive reaction (uncertainty still remains about the efficiency of psychoeducation in areas such as global functioning, awareness of disorders, need for care, and quality of life, especially in the long term (2 years). Other parameters need to be clarified by better designed studies, such as the minimum effective "dose" of psychoeducation and the specificity of the psychoeducation format according to patient status Social skills training produces conflicting results with lack of consistency caused by methodological problems in several studies including small samples, sampling bias, and lack of flushing for treatment allocation; however, there are some methodological problems with the Cochrane review, and many other studies have come to the same conclusion that social skills training has proven to be efficient in social skills, psychosocial functions and negative symptoms(Amaresha et al., 2018). With further results, existing reviews and meta-analyses do not consistently support the positive effects of social skills training on outcomes such as relapse rates, psychotic symptoms, and quality of life. It also seems important to note that transferring the skills learned during therapy sessions to daily life is not always easy, which is why generalization techniques (home-based training) are very important. They give patients the opportunity to practice skills in natural situations. Social skills training has proven to be very efficient when linked to cognitive remediation or SE, which is why the three rehabilitation interventions are often combined.

In addition to allowing patients to practice newly acquired skills in daily life, it gives them appropriate feedback and provides social reinforcement. Data in the literature on CT are quite homogeneous, showing that CT is efficient in reducing positive symptoms (Spencer et al., 2018). Cognitive therapy can be used as an adjunct to chemotherapy in patients in remission or in patients with active symptoms and may also be effective in reducing negative symptoms. However, further controlled trials with negative symptoms as a primary outcome measure are needed. The quality and effectiveness of cognitive therapy is partly determined by the training and supervision of the therapist. Additional studies on CT and minimal doses are still needed. Some work seems to indicate the effectiveness of low intensity CBT, but low and high intensity CBT must be compared in future studies. It also seems important to consider for future research that patients do not always need their symptoms to be eradicated, and such observations are common in the literature about recovery from psychosis or schizophrenia. Recovery means being able to live with symptoms, that is, being able to overcome the "sound". Thus, although CT analysis only focuses on reducing important psychotic symptoms, further research should focus on secondary outcomes such as pressure reduction or self-determined recovery (Morrison et al., 2018). We must also concentrate on changing the way people relate to their thoughts and feelings, as did the third wave. In this review, we are primarily interested in the effects of technique on psychosocial functioning. The techniques that lead to the most powerful improvements in psychosocial functioning are cognitive improvement and social skills training. With both techniques, improvement in social functioning is highly dependent on general characteristics, which consist in supporting practice with rehabilitation activities or opportunities to reflect on how to apply skills in daily life. These programs also often require personal contact with a therapist. It is likely that, by providing these elements, the program facilitates the consolidation of learning by making new cognitive or social skills accessible in everyday life. Programs that use supported practices and other methods to maximize the transfer of skills learned by therapy to everyday life and those involving therapists may be more likely to have an impact on functioning(Adery et al., 2018).

Regarding patient or family psychoeducation, the effect on psychosocial functioning seems limited, but that does not mean that the interventions have no effect on functioning, but rather that functioning assessments are rarely reported in works about psychoeducation intervention and, when they are, functioning is not a priority outcome. Further research should investigate the effect of psychoeducation on functioning as a primary outcome measure. Since psychoeducation seems to be effective on variables influencing real-world functioning (engagement in service and internalized stigma), interpreting results on functioning were rather difficult because psychosocial functioning assessment is very heterogeneous in the literature. Most of the works reviewed here included studies using different scales. It seems that future research on psychosocial interventions could focus more on functional outcomes. Another important issue is how to assess real- world functioning: it would be useful to find a common set of criteria that would enable its assessment. All these interventions are always delivered within the framework of rehabilitation and are not intended to be standalone treatments. Several programs combining interventions proved to be efficient, such as CBT and skills training, SE and skills training, cognitive remediation and social skills training, or social cognitive training and CBT and skills training. The impact of psychosocial interventions on functional outcomes seems to be improved by combining elements from each therapeutic approach. Clinical experience has shown the relevance of combining techniques based on patient issues and the stage of the disease. These techniques seem to be complementary: on the one hand, psychoeducation and CBT allow patients to gain knowledge about their illness and play an active role in the recovery process, while, on the other, social skills training and cognitive remediation may enhance adaptive skills. Nevertheless, further research is needed to identify the synergistic effects of combined interventions and the active ingredients of successful therapeutic modalities.

CONCLUSION

The interventions used in recovery in patients with schizophrenia have different effects on each type. In this case, the resulting output can affect the needs of each patient. Cognitive remediation has an impact on social functioning and decreased symptoms, CBT has an impact on psychological conditions and social abilities while psychoeducation can have an impact on medication adherence and daily skills training.

CONFLICT OF INTEREST

The authors declare that they have no conflict of interest.

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REFERENCES

Adery, L. H., Ichinose, M., Torregrossa, L. J., Wade, J., & Nichols, H. (2018). The acceptability and feasibility of a novel virtual reality based social skills training game for schizophrenia : Preliminary findings. *Psychiatry Research*, *270*(March), 496–502. https://doi.org/10.1016/j.psychres.2018.10.014

Amaresha, A. C., Vasu, S., Joseph, B., Mahavir, S., & Subbakrishna, D. K. (2018). Short term e ff ects of brief need based psychoeducation on knowledge , self- stigma , and burden among siblings of persons with schizophrenia : A prospective controlled trial. *Asian Journal of Psychiatry*, *32*(October 2017), 59–66. https://doi.org/10.1016/j.ajp.2017.11.030

Bowie, C. R., Bell, M. D., Fiszdon, J. M., Johannesen, J. K., Lindenmayer, J., Mcgurk, S. R., … Wykes, T. (2020). *Cognitive remediation for schizophrenia : An expert working group white paper on core techniques*. *215*, 49–53. https://doi.org/10.1016/j.schres.2019.10.047

Çetin, N., & Aylaz, R. (2018). Archives of Psychiatric Nursing The e ff ect of mindfulness-based psychoeducation on insight and medication adherence of schizophrenia patients. *Archives of Psychiatric Nursing*, *32*(5), 737–744. https://doi.org/10.1016/j.apnu.2018.04.011

Dondé, C., Senn, M., Eche, J., Kallel, L., & Saoud, M. (2019). Well-informed but not aware : The P . A . C . T . ® psychoeducation program for schizophrenia improves knowledge about , but not insight into , the illness. *Asian Journal of Psychiatry*, *46*(August), 15–18. https://doi.org/10.1016/j.ajp.2019.09.034

García-fernández, L., Cabot-ivorra, N., Rodríguez-garcía, V., Medicine, C., Hernández, U. M., Al-shafra, E. M., … Juan, S. (2019). Computerized cognitive remediation therapy , REHACOM , in first episode of schizophrenia : A randomized controlled trial. *Psychiatry Research*, *281*(April), 112563. https://doi.org/10.1016/j.psychres.2019.112563

Hwang, D., Nam, M., & Lee, Y. G. (2019). The e ff ect of cognitive behavioral therapy for insomnia in schizophrenia patients with sleep Disturbance : A non-randomized , assessor-blind trial. *Psychiatry Research*, *274*(June 2018), 182–188. https://doi.org/10.1016/j.psychres.2019.02.002

Kukla, M., Bell, M. D., & Lysaker, P. H. (2018). A randomized controlled trial examining a cognitive behavioral therapy intervention enhanced with cognitive remediation to improve work and neurocognition outcomes among persons with schizophrenia spectrum disorders. *Schizophrenia Research*, *197*, 400–406. https://doi.org/10.1016/j.schres.2018.01.012

Kumar, D., Ashwini, K., Hegde, S., Prasanna, L., Joseph, B., Bose, A., … Varambally, S. (2019). Caregiver assisted home-based cognitive remediation for individuals diagnosed with schizophrenia : A pilot study. *Asian Journal of Psychiatry*, *42*(304), 87–93. https://doi.org/10.1016/j.ajp.2019.03.010

Kuo, J., Lin, S., & King, L. (2010). *Functional Recovery in Schizophrenia*. *24*(2), 87–98.

Lanser, I., Browne, J., Pinkham, A. E., Harvey, P. D., Jarskog, L. F., & Penn, D. L. (2018). Evaluating social skill in individuals with schizophrenia with the brief impression questionnaire (BIQ). *Psychiatry Research*, *269*(February), 38–44. https://doi.org/10.1016/j.psychres.2018.08.047

Lindenmayer, J., Khan, A., Mcgurk, S. R., Kirstie, M., Kulsa, C., Ljuri, I., … Parker, B. (2018). Does social cognition training augment response to computer-assisted cognitive remediation for schizophrenia ? *Schizophrenia Research*, *201*, 180–186. https://doi.org/10.1016/j.schres.2018.06.012

Lysaker, P. H., Keane, J. E., Poirier, S., & Lundin, N. B. (2020). Schizophrenia Research : Cognition Schizophrenia , recovery and the self : An introduction to the special issue on metacognition. *Schizophrenia Research: Cognition*, *19*(November 2019), 100167. https://doi.org/10.1016/j.scog.2019.100167

Matsuda, M., & Kohno, A. (2016). Archives of Psychiatric Nursing Effects of the Nursing Psychoeducation Program on the Acceptance of Medication and Condition-Speci fi c Knowledge of Patients with Schizophrenia. *Archives of Psychiatric Nursing*, *30*(5), 581–586. https://doi.org/10.1016/j.apnu.2016.03.008

Mcclure, M. M., Gra, F. S., Triebwasser, J., Perez-rodriguez, M. M., Rosell, D. R., Szeszko, P. R., … Hazlett, E. A. (2019). *Psychiatry Research : Neuroimaging Neuroimaging predictors of response to cognitive remediation and social skills training : A pilot study in veterans with schizophrenia*. *293*(April 2018), 2018–2020. https://doi.org/10.1016/j.pscychresns.2019.110988

Morrison, A. P., Pyle, M., Gumley, A., Schwannauer, M., Turkington, D., Maclennan, G., … Barnes, T. R. E. (2018). *Cognitive behavioural therapy in clozapine-resistant schizophrenia (FOCUS): an assessor-blinded , randomised controlled trial*. 633–643. https://doi.org/10.1016/S2215-0366(18)30184-6

Pre-proof, J., Tan, Y., Yang, F., Wang, Z., Xue, F., & Xiao, C. (2020). Improving social functioning in community-dwelling patients with schizophrenia: a randomized controlled computer cognitive remediation therapy trial with six months follow-up. *Psychiatry Research*, 112913. https://doi.org/10.1016/j.psychres.2020.112913

Sandoval, L. R., López, B., Stone, W. S., Guimond, S., Torres, C., Sheynberg, D., … Keshavan, M. S. (2019). *Effects of peer social interaction on performance during computerized cognitive remediation therapy in patients with early course schizophrenia : A pilot study*. *203*, 17–23. https://doi.org/10.1016/j.schres.2017.08.049

Saperstein, A. M., Lynch, D. A., Qian, M., & Medalia, A. (2020). How does awareness of cognitive impairment impact motivation and treatment outcomes during cognitive remediation for schizophrenia ? *Schizophrenia Research*, (xxxx),

10–15. https://doi.org/10.1016/j.schres.2020.02.014

Spencer, H. M., Mcmenamin, M., Emsley, R., Turkington, D., Dunn, G., Morrison, A. P., … Dudley, R. (2018). Cognitive Behavioral Therapy for antipsychotic-free schizophrenia spectrum disorders : Does therapy dose in fl uence outcome ? *Schizophrenia Research*, *202*, 385–386. https://doi.org/10.1016/j.schres.2018.07.016

Tong, W., Yu, H., Mcmaster, T. W., Yip, A. L. K., & Wong, J. C. L. (2019). Effectiveness of a mindfulness-based psychoeducation group programme for early-stage schizophrenia : An 18-month randomised controlled trial. *Schizophrenia Research*, *212*, 140–149. https://doi.org/10.1016/j.schres.2019.07.053