

Follow-up interventions and
measurement instruments for patients
suffering from psychotic disorders:
A literature review

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Background: Continuity of care and post-discharge follow-up visits can improve the quality of care and reduce the likelihood of relapse and re-hospitalization in patients with psychotic disorders. Purpose: This study aimed to analyze post-discharge follow-up interventions in patients with psychotic disorders, and to identify measurement instruments for intervention outcomes. Method: The literature review described here used a specific framework, where the follow-up interventions and the measurement instruments were analyzed systematically, to investigate fifteen studies identified through electronic databases such as Pubmed, Psychinfo, ProQuest, Cinahl, Medline, and Scopus. Results: The studies used interventions including psychoeducation, cognitive-behavioral therapy, cognitive behaviorally oriented service, optimal clinical management, relapse prevention plan, software suggested intervention, ambulatory outpatient care, community re-entry module, integrated treatment, and hospital-based community psychiatric service. Additionally these studies used thirty-eight measurement instruments to assess change in psychiatric patients or their relatives, based on psychological, social, and occupational factors as well as specific symptoms and symptom severity. The instruments also measured quality of life, insight, self-esteem, and cognitive function. Further, the studies examined therapeutic alliances and the experience of family members. The most commonly used instruments were the Global Assessment of Functioning and the Positive and Negative Syndrome Scale. Conclusion: The interventions reviewed here emphasize an individualized approach that targets education, illness management, coping strategies, social skills training and relapse prevention, and seeks to alter any harmful understanding of the illness. Although researchers can choose among numerous interventions, psychoeducation was the most appealing follow-up intervention for patients suffering from psychotic disorders. Importantly, evaluation instruments must be relevant to psychological symptoms, treatment, time and resources available, and what questions were being sought to answer. Approximately eleven of the thirty-eight instruments reviewed here showed weak or unclear reliability and validity. The most practical instrument for evaluating the outcome of an intervention for patients suffering from psychotic disorders was the Positive and Negative Syndrome Scale.				
Key words				
schizophrenia, psychoses, follow-up interventions, instrumentation, readmission.				

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INTRODUCTION

Follow-up or aftercare after discharge, and sufficient discharge planning, can minimize rehospitalization rates. Durbin et al. (2007) found that attending to stability of a clinical condition and preparing patients for discharge could protect against early readmission. Using advanced practice nurses (APNs) to link patients with an outpatient care provided prior to discharge, was an effective way, in increasing compliance with outpatient appointment (Kreyenbuhl, Nossel and Dixon 2009). Individuals who had been referred to community psychosocial support units after their most recent discharge, had about 20% lower odds of multiple readmissions than those referred to usual outpatient care (Silva, Bassani and Palazzo 2009). Premature discharge has not been associated with rehospitalization (Lyons et al. 1997), although it has been concluded that those discharged due to bed pressure and high patient turnover have an increased risk of rehospitalization (Heggerstad 2001; Niehaus et al. 2008).

Different measurement instruments have been used to assess the outcome of interventions. When implementing an intervention, the evaluation of the outcome is an extremely important process. In research settings this is done to gather information regarding the effectiveness of an intervention, and is a process in building up evidence based practice. In real settings this is often lacking (Hunsley and Mash 2008). When choosing a measurement instrument to measure psychological and/or social factors, countless instruments exist. Selecting an instrument has to be done in relation to what is being measured and what kind of resources is available. Is it more practical to use self-report measurements that are not as time consuming as longer interviews, or is it then a possibility to miss an important aspect of what is intended to analyze?

THEORETICAL BACKGROUND

People diagnosed with psychotic disorders, like schizophrenia, often need admission to psychiatric hospital settings. These individuals have complex problems and are often in need of long and repeated hospitalization and a thorough aftercare. Schizophrenia results from a substantial disturbance in brain function and is nearly always chronic, severe and disabling (NIMH 2009). The symptoms in schizophrenia are divided into three categories, positive symptoms, negative symptoms and disorganization. Patients suffering from positive symptoms of schizophrenia, and other psychotic disorders, can experience hallucinations and delusions, while negative symptoms come in form of loss of initiative, sadness or flat emotions, loss in social, personal, and sexual interest and inappropriate emotions. Disorganization refers to disorganized thought, speech and behaviour (NIMH 2009; Royal Australian and New Zealand College of Psychiatrists Clinical Practice Guidelines Team for the Treatment of Schizophrenia and Related Disorders 2005).

Anti-psychotic medication is one of the main treatment for people with schizophrenia or other psychotic disorders. Psychopharmacological treatment in the last 20 years, following the 1990's development of new antipsychotic medications, the so called second generation or "atypical" antipsychotics, has seen immense progress. The first

generation of antipsychotic agents, introduced in the 1950s, had a radical impact on treatment for psychotic disorders, despite difficult side-effects like tardive dyskinesia and extrapyramidal symptoms. Also, the first generation antipsychotics mostly reduced positive symptoms but not so much the negative ones. The introduction of new antipsychotic agents changed this dramatically, with minimizing serious side-effects and reducing negative symptoms as well (NIMH 2009). Complementing psychosocial interventions to the antipsychotic medication treatment has shown a positive result (Royal Australian and New Zealand College of Psychiatrists Clinical Practice Guidelines Team for the Treatment of Schizophrenia and Related Disorders 2005).

In recent decades, there is increasing demand for shorter hospital stays and hospital beds are under pressure. Despite that, many of those hospitalized in psychiatric setting seem to do better with follow-up interventions and alternative care (Bartlett et al. 2001; Johnson et al. 2010). More focus is on moving treatment into the community, by increasing adequate aftercare and community psychiatric care.

Continuity in care is an important factor in the quality of care and can reduce symptoms and minimize rehospitalizations (Kreyenbuhl, Nossel and Dixon 2009; Batscha et al. 2011; Reynolds et al. 2004). Risk of suicide is increased in the first week or on the first day after discharge from hospital (Crawford 2004). Hunt et al. (2009) found out that 43% of suicides occurred within a month of discharge, whereas 47% occurred before the first follow-up appointment. Bridging the gap between discharge and first follow-up appointment could increase the continuity of care whereas lack of it can increase risk of relapse and suicide risk (Kan et al. 2007).

Rehospitalization rate for psychiatric patients is about 40-50% within 1 year of discharge (Bridge and Barbe 2004). There are many reasons for rehospitalization and preventing it is not always a possibility. Those with a serious mental illness, like schizophrenia, often need rehospitalization. Risk factors for rehospitalization include disengagement from care, not keeping outpatient appointment after discharge, young age, having greater number of previous admissions, having longer duration of hospital stay, having a longer course of illness, persistent substance misuse, having a history of childhood psychiatric problems, living in poverty and social difficulties, having impairment in self-care, having legal problems, being brought up in the care of the social welfare department, and living closer to the hospital. Having schizophrenia or other psychotic disorders increases the risk of rehospitalization (Kolbasovsky, Reich and Futterman 2007; Bobo et al. 2004; Bowersox, Saunders and Berger 2012; Boyer et al. 2000; Silva, Bassani and Palazzo 2009; Lyons et al. 1997; Kreyenbuhl, Nossel and Dixon 2009; Orlosky et al. 2007). Being married or living with others is a protective factor against rehospitalization (Behr et al. 2002). In the USA, the type of medical insurance can also be a factor (Kolbasovsky, Reich and Futterman 2007), as can neighbourhood environment (Stahler et al. 2009).

Lack of insight and noncompliance or partial compliance to treatment can trigger a relapse (Kozma and Weiden 2009; Marder 2003; Weiden et al. 2004), while compliance with outpatient appointment is related to lower rates of rehospitalization (Batscha et al. 2011).

Follow-up is a way to secure continuity of service provided after discharge from hospital or similar settings. Follow-up can be provided in ambulatory outpatient care settings, in home-care settings and in day hospitals (Frederick, Caldwell and Rubio 2002; Kampman et al. 2003; Marshall et al. 2003). It can also be provided by special teams who service certain patient groups and in form of peer-support. It can start before or right after the patient is discharged from a hospital (Bridge and Barbe 2004; Reynolds et al. 2004). Several ways have been used to conduct follow-up.

Case manager organizes and coordinates all service from several disciplines that covers the patient's care plan, with a multidisciplinary team. This is almost always a part of aftercare after discharge (Zwarenstein et al. 2011).

Psychoeducation is an intervention that is intended to give information to the patient as well as being therapeutic. The sessions usually cover the same subject areas for every patient and are mostly informative, both about the disease and the treatment (Bridge and Barbe 2004). It is assumed that if the patient has adequate knowledge of their illness, it will be easier to live with the disease. Psychoeducation has been used in an effective way as a therapy in bipolar disorder, depression, schizophrenia, etc. (Bridge and Barbe 2004; Bäuml et al. 2007; Rabowsky et al. 2012; Eker and Harkin 2012).

Cognitive-behavioral therapy (CBT) is a psychotherapy based on Aron Beck's theory. It is a structured approach that is based on the theory that the individual's affect and behavior is affected by the way the individual structures the world. The therapist and the client work together in identifying and solving problems by focusing on changing thinking, behavior, and emotional response (Beck 1979). CBT has been used for patients with mental illness and shows consistent efficacy (Butler et al. 2006).

Relapse prevention is a treatment that has been used in several ways, it is therefore difficult to measure how it works and if it is effective. In one study the implementation was done with education, active monitoring for prodromal symptoms, clinical intervention within 24-48 hours after prodromal symptoms were detected, support groups or individual sessions that focused on increasing coping strategies and family psychoeducation (Herz et al. 2000). Another study used two primary care visits with a depression specialist and three telephone visits over a one-year period. This was done to improve adherence to antidepressant medication, identify prodromal symptoms, monitor symptoms, and establish a written relapse prevention plan (Katon et al. 2001).

Insufficient discharge planning during hospital stay can explain why psychiatric patients do not keep their outpatient follow-up appointment. It can also explain rehospitalization (Boyer et al. 2000; Puschner et al. 2008). Discharge planning is an important factor when treating patients with psychiatric problems.

Several ways can be selected when choosing a follow-up program. Many of them address the problem in similar ways and overlap. In addition to those follow-up programs that have been addressed here other exist, including telephone follow-up, medication management, peer support, hospital based home care service, etc.

It is difficult to pin point which follow-up program is the most effective, but it is essential to select a program that fits the individual, or the group. Therefore it is

important to investigate how the follow-up programs are measured. This can be done with questionnaires like the GAF (Global Assessment of Functioning) (Jones et al. 1995), quality of life instruments (Reine et al. 2005) and the PANSS (Positive and Negative Syndrome Scale) (Kay, Fiszbein and Opfer 1987). Rehospitalization rates and relapse rates are also used as a measurement.

Rehospitalization is expensive and the cost of relapse can be as much as four times higher than for non-relapse cases (Almond et al. 2004). Many of these rehospitalizations are avoidable. Therefore it is essential to analyse the reasons for relapse and what can be effective in reducing it. It is also essential to find the most effective way to measure interventions that can delay or prevent relapse and rehospitalization.

It is a public health matter to offer a satisfying mental health service, but at the same time consider the cost-effectiveness of the service provided. If the utilization of follow-up programs can prevent relapse and reduce rehospitalization then it should be a public health matter to prioritize follow-up programs.

How is it possible to select the most effective follow-up program and how do we measure it? This is a complex question with no easy answer. Different studies use different interventions and measurements.

Several studies show that follow-up after psychiatric hospitalization reduces the risk of relapse and rehospitalization. By gathering these results one can gain a better understanding of how to minimize rehospitalization and relapse rates.

PURPOSE

The purpose of this essay is to do a literature review on follow-up interventions offered to patients suffering from psychotic disorders, after hospital stay in psychiatric settings, and to study how its effectiveness is measured. Such a review can give a better understanding of how to minimize rehospitalization and relapse rates.

Research questions

What kind of follow-up interventions are offered to people with psychotic disorders, after a hospital stay in psychiatric setting?

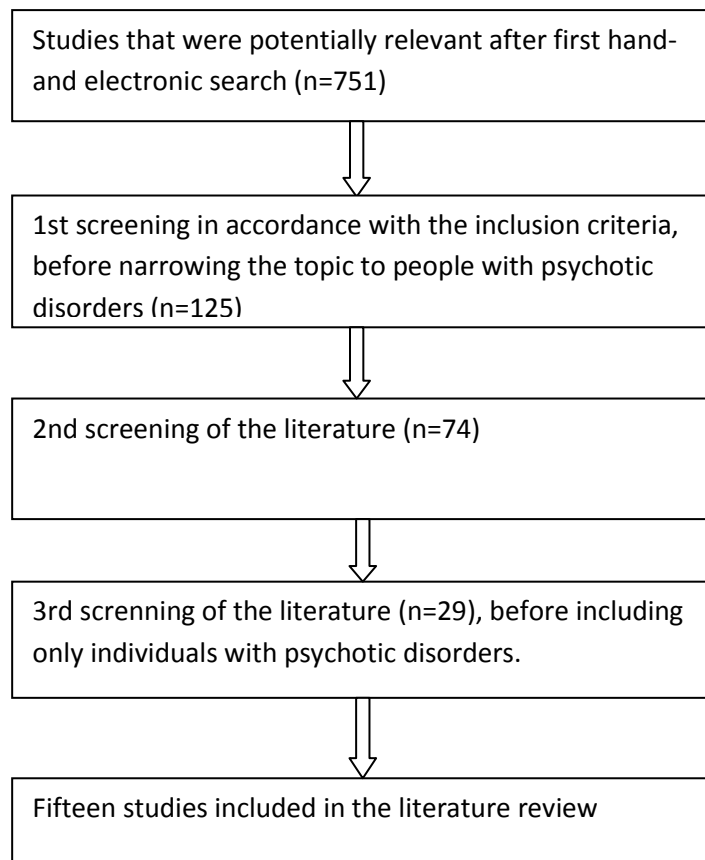
What kind of measurement instruments are used to evaluate the outcome?

METHOD

The search for literature for this literature review took place from october 2012 to september 2013. In the beginning the inclusion criteria were all patients diagnosed with psychiatric illness, but to narrow it down it was changed to patients with psychotic disorders. The searches were made in electronic databases. Sources searched were Pubmed, Psychinfo, ProQuest, Cinahl, Medline, and Scopus. Papers in english language between 2003 and current time were assessed. The search words were “psychiatric care“, “rehospitalization“, “readmission“, “relapse“, “intervention“, “psychiatric hospitalization“, “follow-up“, “follow-up program“, “discharge“, “psychiatric hospital discharge“, “post-ward outpatient service“, “mental health nurse follow-up program“, “post-ward follow-up” and “nurse follow-up”. Difficulties in searching for relevant literature were rather profound in the beginning, but using all the search words in different ways gave acceptable results.

In the process of searching for relevant literature and before narrowing the topic to patients with psychotic disorders, studies selected for the literature review were twenty-nine but became fifteen after altering the inclusion criteria (see Figure 1).

Figure 1 Flow diagram of selection process of the studies



Inclusion criteria

Studies where the participants were diagnosed with schizophrenia and/or other psychoses, with or without substance abuse disorders, according to DSM IV or ICD 10, were included, and if the individuals were discharged from a psychiatric unit, or in the process of being discharged and participating in a specific follow-up intervention, being psychologically, socially and/or biologically orientated, but focusing on aftercare. All quantitative studies were included, with or without a control group. The studies were both from developed and developing countries, published in English, and in journals with a referee system. Only reviewed articles were used.

Exclusion criteria

Follow-up methods for children and adolescents were not selected, neither were interventions for homeless people and people with primary substance abuse problem. Articles in other languages were excluded, and also those published before January 1st, 2003. Qualitative studies were not included because the main purpose of this literature review was to analyze which follow-up interventions are available, and how the outcome was measured, which does not concur with qualitative methodology.

Analyzing and writing a literature review

In this literature review, a thorough analysis was done on how the interventions, covered in this review, are implemented and how the outcome is measured. The aim and the research questions in this review were the focus when taking out the main features of the studies. When answering the research question “What kind of follow-up interventions are offered to people with psychotic disorders, after a hospital stay in psychiatric setting?”, the interventions were analyzed systematically. For example psychoeducation was investigated by analyzing how it was implemented, that is, how it was structured, how often it was given and in what forms it was implemented, also if individual or group treatment was given, and when the intervention began, pre- or post discharge. When answering the second research question “What kind of measurement instruments are used to evaluate the outcome?”, a thorough analysis was done by covering what kind of measurement instrument were used in the studies to evaluate the outcome and how they were addressed in the studies. The instruments were described in how they were utilized in research and/or clinical settings and how the validity and reliability was managed. Searching for evidence based literature for every instrument was done. This was done to secure that the writing was clear, coherent, and consistent in avoiding misunderstanding and hinder that the main idea got lost. To offer explicitness, the review must account for what was done and why it was done (Hart 1998). A thorough background was implemented in this review, to gather information needed to see what already was known about the topic by finding relevant literature. This was done in the theoretical background by discussing several important evidence based factors, by

covering schizophrenia and other psychoses, treatment available for this illness, e.g. antipsychotic medication and other treatments, and the importance of continuity of care. How the process looks like regarding hospital utility in recent decades was addressed. Rehospitaizaion and what factors can increase it, was discussed as well, and what can trigger relapse. In addition, an overview of several follow-up interventions, was covered, that are analyzed in this review and are evidence based.

When reading the studies used in this literature review, skimming through the articles was done in the beginning, by reading the abstract and the results first, then focusing in more details on every article. In this process, purpose and the main focus of the study were inspected, what the study were analyzing and what kind of methodology was used. The theoretical framework used in the study and how validity was addressed, was investigated.

In the beginning of the process of this literature review, writing down relevant information on a big piece of paper was done to get an overview of relevant information in the studies and to manage the information better, this information being the ten factors highlighted in table 1; country of origin, aim of the study, study design, study settings, the sample size, both in intervention and control group, which interventions were implemented, control groups, conclusion, measurements and length of follow-up.

The planning process of this literature review was rather long and several factors changed along the way. When analyzing the interventions used in the studies, factors like how the interventions were organized, the theoretical framework of the interventions, and how they were described in the studies, were examined. Time period of the interventions, were examined as well and when the follow-up evaluation were conducted. Other factors, like if the patients received antipsychotic medication and what were the results of the studies, were examined as well. Analyzing the instruments used to evaluate the outcome were also done thoroughly.

In mapping the ideas in this literature review and to classify the material, two tables (table 1 and table 2) were used to isolate and focus on specific factors.

RESULTS

Fifteen studies were included in the literature review. Four from Germany, three from the United Kingdom, and one each from China, Denmark, Finland, Turkey, The Netherlands, Czech Republic, USA, and Malaysia (see table 1). Ten of the studies used randomized controlled method. In the other studies, analyzis, unblinded non-randomized design, a prospective follow-up field study, a naturalistic and retrospective cohort study with simple random sampling, and longitudinal study design was used.

Ten factors were highlighted in table 1; country of origin, aim of the study, study design, study settings, the sample size, both in intervention and control group, which interventions were implemented, control groups, conclusion, measurements and length of follow-up (see table 1). These factors had a different importance in the analyzing

process. Intervention selected, measurement instrument, and the studies' aim were the most important factors of the analysis. Conclusion and length of the follow-up were also rather important, while the country of origin, design of the study, sample size, and control group were not as important in the analysis, the reason being the focus of this literature review.

In table 2, instruments used to evaluate the outcome of the interventions implemented in the studies reviewed, were organized by what they measured, what kind of follow-up interventions used the instrument to evaluate the outcome and how many studies used them.

Table 1. Analyzis of the studies in the literature review

Study	Country	Aim	Design	Sample size; intervention/ control	Intervention	Control	Conclusion	Measurements	Length of follow-up
Bäuml et al. (2007)	Germany	Long-term effects of psychoeducation over a period of 7 years were investigated in regard to rehospitalization rates and hospital days.	Randomized multicenter study	N=24/24	Psycho-education	TAU	Seven years after psychoeducational group therapy, significant effects on the long-term course on the illness were found. Intervention group had fewer rehospitalizations.	Rehospitalization rate, number of hospital days, Compliance-4 step ordinal scale BPRS, GAF LQoLP	One , two and, seven years
Dahlan et al. (2013)	Malaysia	Assess the outcome of Hospital-based community psychiatric service (HCPS) with respect to rehospitalization and factors associated with low rehospitalization among patients with schizophrenia	A naturalistic and retrospective cohort study, with simple random sampling	N=155	HCPS	No control group	HCPS reduces rates of hospital admission among patients with schizophrenia, the reduction were significant. Social support was associated with less hospitalization rate.	Rehospitalization rate. Social support questionnaire.	One year
Garety et al. (2008)	UK	Test the effectiveness of CBT and family intervention in reducing relapse, and in improving symptoms and functioning in patients who had recently relapsed with non-affective psychosis	A multi-centre RCT	N=83/ 218	Carer pathway → FI+TAU → TAU → CBT+TAU	No carer pathway → CBT+TAU → TAU	The CBT and family intervention had no effects on rates of remission and relapse or on days in hospital at 12 or 24 months. CBT significantly improved delusional distress and social functioning.	Remission and relapse ratings, PANSS, PSYRATS, BDI-II, BAI, SOFAS, CSRI, SUMD, IPQ, BCSS, CFI, ECI, General Health Questinnoaire-28	12 and 24 months

Study	Country	Aim	Design	Sample size; intervention/control	Intervention	Control	Conclusion	Measurements	Length of follow-up
Gumley et al. (2003)	UK	Evaluate whether CBT delivered on the appearance of prodromal early signs of psychotic relapse resulted in reduced admission and relapse, and as a secondary outcome, reduced positive and negative symptoms, and improved social function.	RCT	N=72/72	CBT and TAU	TAU	CBT is effective in targeting early signs of relapse. Significantly statistical results. CBT group showed significantly greater improvement in positive symptoms, negative symptoms, global psychopathology, performance of independent functioning and prosocial activities.	PANSS, BSI PBIQ, RSES, SFS.	12 months
Kampman et al. (2003)	Finland	To explore the outcome of non-compliant schizophrenia patients during the deinstitutionalisation. Comparing the outcome between subgroups receiving ambulatory outpatient care (AOC) or conventional outpatient treatment.	Analysis	N=18/23	AOC (Ambulatory outpatient care)	TAU	Half of the patients in the intervention group did not need hospitalization at all and the number of days of hospitalization in the whole group decreased by 4/5 compared with the previous four years. This was not statistically significant.	Number of hospital days GAF, and mortality rates.	Four years
Klingberg et al. (2010)	Germany	Test the impact of a CBOS on relapse rates under the conditions of routine health care.	RCT	N=84/85	CBOS (cognitive behaviorally oriented service)	TAU	The mean time to relapse after discharge from hospital in the CBOS group was significantly longer than in the TAU group. The mean time to relapse is statistically significant in relation to negative symptoms but not to positive symptoms. The mean time to rehospitalization is not significantly different in the CBOS or the TAU group.	PANSS Rehospitalization rate, QoL	6 months

Study	Country	Aim	Design	Sample size; intervention/ control	Intervention	Control	Conclusion	Measurements	Length of follow-up
Malik et al. (2009).	UK	Comparing the effect of brief-CBT to TAU in terms of time to relapse (primary outcome), rehospitalization rates, and, occupational recovery.	Randomized trial	N=205/ 125	Brief- CBT	TAU	Relapse rates were lower in the CBT group than in the TAU group, and the mean time to relapse were longer in the CBT group, but it does not say if the difference is significant. Rehospitalization was improved, and the improvement seems to be significant. Insight and negative symptoms improved significantly in the CBT group compared to the TAU group.	Time to relapse, number of patients relapsed, Days hospitalize occupational recovery.	24 months
Motlova et al. (2006)	The Czech Republic	Analyse the effectiveness of a clinically based family psycho-education programme after discharge, and assess the participant reported impression of the programme.	A prospective follow-up field study	N=86/34	Family psycho-education	Non-participants	Lower rate of previous hospitalizations and shorter time in hospital were seen one year after discharge, this results seems to be significant. The probability of rehospitalization was higher in the psycho-education group.	Rehospitalization, POQ, GAF.	One year
Petersen et al. (2005)	DK	To evaluate the effects of integrated treatment for patients with first episode of psychotic illness.	RCT	N=275/ 272	Integrated treatment (with ACT)	Standard treatment	Integrated treatment improved clinical outcome and adherence to treatment. The results were statistically significant.	SAPS, SANS, GAF, SCAN, CSQ, Suicide attempts and suicidal ideation. Duration of untreated psychosis	12 and 24 months

Study	Country	Aim	Design	Sample size; intervention/control	Intervention	Control	Conclusion	Measurements	Length of follow-up
Schmidt-Kraepelin, Janssen and Gaebel (2009)	Germany	To reduce rates of rehospitalizations in “high utilizing“ patients with schizophrenia	Un-blinded non-randomized controlled inter-ventional study	N=46/47	Complex intervention suggested by the software	TAU	Rehospitalization rate were significantly lower in the intervention group compared with the control group. The mean length of hospital stay decrease although it was not significant.	PANSS, GAF, CGI, a list of burden factors (DSM IV), LQoLP, treatm.satisfact(ZUF 8), Previous admissions.	6 and 12 months
Sungur et al. (2011)	Turkey	To compare the clinical and social benefits of routine schizophrenia treatment with evidence-based pharmacological and psychosocial treatment strategies.	Randomized controlled effectiveness trial	N=50/50	Optimal Clinical Management (OCM)	Routine Clinical Management (RCM)	Statistically and clinically significant advantages were observed for OCM vs RCM on all measures.	CPS-50 MFIS, DI GCS, CAN QoL.	6, 12, 18, and 24 months
van Meijel et al. (2006)	The Netherlands	To study if Relapse Prevention Plans (RPPs) is an effective intervention in reducing relapse rates among patients with schizophrenia	RCT	N=51/44	RPP	TAU	No statistical significant effects of the intervention were found.	PANSS, Insight scale, WAI, CGI, CASH.	One year
Vickar et al. (2009)	USA	Test the Scizophrenia Treatment and Education Programs (STEPS) to reduce subsequent need for rehospitalization, generating potential cost savings in private-sector care	RCT	N=26/31	STEPS	TAU	Rehospitalization over six months was significantly less frequent among STEPS participants than among usual care participants (20% vs 56%).	DIS, SAPS, SANS.	Six months

Study	Country	Aim	Design	Sample size; intervention/ control	Intervention	Control	Conclusion	Measurements	Length of follow-up
Wittorf et al. (2008)	Germany	Identify predictors of functional outcome from a broad range of neuro-psychological, clinical psychopathologic, and socio-demographic factors	Longitudinal study	N=96/55	CBOS (Cognitive-Behaviorally Oriented Service)	TAU	Findings show that negative symptoms and cognitive dysfunctions are key determinants of community outcome and could point to a potential predictive of positive symptoms. The results were significant.	GAF, PANSS, SAS II.	15 months
Xiang et al. (2007)	China	To evaluate the effectiveness of the Chinese version of the Community Re-Entry Module (CRM) for patients with schizophrenia compared with standard group psycho-education.	RCT	N=53/50	CRM	Group psycho-education	The CRM group significantly improved in terms of social functioning, insight and psychiatric symptoms compared with the psychoeducation group.	SDSS, PANSS, ITAQ, Relapse and rehospitalization rates.	6, 12, 18, and 24 months.

Interventions

In the following session the interventions used in the studies are outlined. Ten interventions were selected according to the inclusion criteria, they are; psychoeducation, CBT (Cognitive-Behavioral Therapy), CBOS (Cognitive Behavioral Oriented Service), OCM (Optimal Clinical Management), RPP (Relapse Prevention Plans), AOC (Ambulatory Outpatient Care), CRM (Community Re-entry Module), interventio selected by a software, integrated treatment and HCPS (Hospital-based Community Psychiatric Service).

Psychoeducation

Three studies used psychoeducation as a follow-up intervention (Bäuml et al. 2007; Motlova et al. 2006; Vickar et al. 2009).

Bäuml et al. (2007) implemented Psychosis Information Project (PIP Study), a psychoeducation that offered four weekly 60 minutes group sessions and then four more monthly sessions. Relatives were invited to eight biweekly sessions, lasting from 90-120 minutes. The essence of the PIP program was interactive spreading of information and emotional relief. The patient and relatives' group sessions were constructed almost the same way to help the families use similar language when speaking with the patient. They were informed about the biological factors in schizophrenia, as well as the psychosocial stress and the importance of long-term antipsychotic medication in combination with psychosocial therapy. In group sessions, pragmatic coping strategies were reviewed where patients could speak about their illness, their treatment, their individual crisis plan, their present emotional state, and share similar details with other patients.

In Vickar et al. (2009) the STEP program (Schizophrenia Treatment and Education Program) started during the inpatient stay and continued through attainment of residential stability with families, and even independent living. Those receiving the STEP program were given daily structured educational activities for the purpose of comprehending their illness and symptoms better, by offering a "Managing Your Illness Class", to help with establishing or improving coping skills, specific to the symptoms. Also, to provide support with managing daily living skills specific to the illness, social skills, and personal development. All participants in the STEP program also received treatment as usual. The STEP program activities continued after discharge in form of partial hospitalization and evening programs and full-day workshop every year. Relatives were offered to participate for as long as they wanted, at every level by attending inpatient family meetings, discharge planning meetings, and monthly drop-in meetings for informal support and information, and a picnic twice a year.

Motlova et al. (2006) only used family psychoeducation, where the patients and their relatives participated in separate parallel groups of eight to ten participants, after discharge. A combination of education on mental illness, crisis intervention, communication, family support and problem-solving skills training were the main topic in the psychoeducation program. The interventions used theoretical orientation that was broadbased, supportive, and cognitive-behavioral, and the course of schizophrenia was explained by using a vulnerability/stress model. The early warning signs of relapse were emphasized.

Five studies used a form of Cognitive-Behavioral Therapy as a follow-up intervention. One used CBT (Gumley et al. 2003), another used Brief-CBT (Malik et al. 2009), one combined

both CBT and family intervention (Garety et al. 2008), and two used Cognitive Behaviorally Oriented Service (CBOS) (Klingberg et al. 2010; Wittorf et al. 2008).

CBT (Cognitive-Behavioral Therapy)

Gumley et al. (2003) used CBT, separated into two phases. The first phase consisted of five sessions, delivered between entry and 12 weeks. If there was a sign of relapse, the second phase began, an intensive targeted phase with two to three sessions per week. The intervention began with a description of the cognitive model of relapse. The early signs of relapse were explained and how it could trigger negative beliefs concerning relapse. The participants were encouraged to formulate their own experience of relapse. Participants lacking insight regarding their illness were also encouraged to consider their own experience in relation to prior hospital admissions. When relapse was suspected, a targeted CBT began by evaluating if a real relapse was beginning and if the targeted CBT should begin. In targeted CBT, those behaviors and beliefs were identified that could increase risk for the individual and others, also, how it could increase the risk of relapse. The development of different beliefs and the possibility to motivate behavior change were encouraged. The alternative beliefs of relapse were tested in between sessions.

Malik et al. (2009) implemented a brief-CBT that was not formulation-based and scheme-focused, but a technique-based intervention. This intervention was delivered by registered mental nurses that received a ten-day CBT-of-schizophrenia training program. The brief-CBT was given in six sessions over a two- to three-month period. The elements of the intervention included engaging psychotic patients and developing stigma-reducing understanding of psychotic symptoms, diminishing distress and improving adherence and altering negative beliefs of psychotic symptoms. In addition, relapse prevention strategies were covered. The main caregivers, those not delivering the brief-CBT, were also offered three sessions of CBT to prevent relapse, manage psychotic symptoms and to help with understanding the case formulation. The patients and carers also received a series of information booklets to guide them through the CBT sessions.

Garety et al. (2008) used both CBT and family intervention (FI) to reduce relapse and improve function and lessen symptoms in patients with psychoses. The central focus of the CBT work was to establish shared formulation of relapse where they began to develop a positive psychotherapeutic relationship. The causes and risks of relapse were examined in an attempt to offer a new explanation to delusional thinking. The key problems regarding risk of relapse were used to develop strategies to handle relapse. The FI emphasized enhancing communication, offering information about psychosis, problem-solving, minimizing conflicts and criticism, improving activity, and working with grief, loss, and anger, often associated with diagnosis of psychotic disorder. The therapy sessions were individualized and focused on one problem at a time, with a particular focus on relapse prevention. The therapy sessions involved two therapists and usually took place at home. Patients included in the study were grouped in two pathways, no carer pathway and carer pathway. Those in the no carer pathway had no carer with whom they were in close contact with. The no carer pathway was then divided into two groups, CBT and treatment as usual (TAU), and the carer pathway was also divided into three groups, FI and TAU; TAU, and CBT; and TAU.

CBOS (Cognitive Behaviorally Oriented Service)

Cognitive behaviorally oriented service (CBOS) was used in two of the studies (Klingberg et al. 2010; Wittorf et al. 2008). This intervention is divided in five units, where the first four are an inpatient treatment and the last one an outpatient treatment. (1) A psychoeducational group therapy where information is catered about the illness and the treatment, building a useful subjective illness concept, encouraging the patient-therapist relation, and improving crisis coping skills. (2) Construction of a social-emotional skills training. (3) Treatment addressing the patients' living situation, occupation, and leisure time. (4) Structured group sessions for relatives, providing information about the illness and treatment. (5) After inpatient treatment, patients participated in a needs-based outpatient therapy group where the topic was stress coping skills, crisis management skills, and coping with day-to-day problems.

In Wittorf et al. (2008) the follow-up measurements were conducted one year after discharge. In Klingberg et al. (2010) the intervention lasted approximately eight months and the follow-up measurements were conducted after six months.

OCM (Optimal Clinical Management)

Sungur et al. (2011) used optimal clinical management (OCM), an intervention derived from an assertive case management service delivery model. In addition, they used home-based crisis intervention and cognitive-behavioral family interventions. The OCM aims at encouraging complete and lasting recovery and is based on thorough evaluation of each patient, and designs individually tailored interventions that are extracted from psychoeducation and CBT. Specific approach consisted of education about the illness and treatment, approaches to improve adherence to medication, identify and managing side effects, and use effective methods to prevent relapse. The cognitive-behavioral family intervention was used to establish communication regarding problem solving strategies, when managing stress in everyday life, and when common problem solving was limited, evidence based cognitive behavioral strategies were integrated into the treatment. Every attempt was made to keep the patients in their original work setting. The patients and their caregivers (also family members) attended 120-min sessions every two weeks in the patients' home for the first three months. The remaining 24 months, 45 monthly sessions were offered at the outpatient clinic.

RPP (Relapse Prevention Plans)

In determining if the use of relapse prevention plans (RPPs) in nursing practice were an effective intervention for patients with schizophrenia, van Meijel et al. (2006) implemented the intervention. It included four phases: (1) Information was offered to patients, where the objective was to establish a mutual ground for working with a relapse prevention plan. (2) The early signs were systematically organized and described at three levels of severity: level 1: normal and stable; level 2: light to moderate; and level 3: serious. (3) Monitoring phase, where instructions and assistance were given when the early signs were detected. (4) Action plan was developed to use when relapse was a fact. The follow-up period in this study was one year.

Intervention selected by a software

Schmidt-Kraepelin, Janssen and Gaebel (2009) implemented a complex intervention, based on computerized decision support module. Two physicians, two psychologists, one psychotherapist, a nurse specialized in psychiatry and psychotherapy, and a social worker constituted the treatment-team. Besides including medical interventions, the software suggested complex intervention including psychoeducation, social competence group therapy, integrated psychological therapy, computer-based cognitive training, coping skills training, sociotherapy, nursing care, home visits, social-worker care, assistance to family members, and the use of an emergency call-in line. The complex intervention lasted for a maximum of six months after discharge.

AOC (Ambulatory Outpatient Care)

Kampman et al. (2003) analyzed the need for hospitalization, level of functioning and mortality rate during de-institutionalization process in schizophrenic patients with repeated hospitalization and a history of non-compliance. This intervention focused on enduring medication treatment, where one of the hospital nurses conduct home visits every 2-4 weeks. The follow-up period in this study is four years.

CRM (Community Re-entry Module)

The Community Re-Entry Module (CRM) is a module of a standardised, structured social skills training programme (Xiang et al. 2007). This intervention was intended for in-patients, in the transition between hospital and community. It consisted of 16 sessions, each lasting one hour. The groups contained six to eight patients and took place four times a week. Each session used seven learning activities: (1) introduction, (2) videotape and questions/answers, (3) role-play, (4) resource management, (5) outcome problems, (6) in vivo exercises, and (7) homework assignments. The intervention were evaluated after 24 months.

Integrated treatment

In evaluating the effects of integrated treatment for patients with first episode of psychotic illness, Petersen et al. (2005), implemented integrated treatment, lasting for two years and consisting of assertive community treatment with programs for family involvement and social skills training. Every patient was appointed a primary team member that was responsible for maintaining contact and coordinating treatment. The patient and the team member met in the patient's home or in other places in their community, or at the team member's office. If the patient needed hospitalization the team member visited the patient once a week, although the responsibility of the care was converted to the hospital. The patient had an easy access to the team member. Every patient received a crisis plan and if the patient was unwilling to commit to treatment, the team conducted a motivational approach. The team member made contact with at least one family member and a psychoeducational family treatment was offered. The family treatment included 18 months of treatment, one and a half hour, twice a week. This was conducted in a multiple family group, targeting problem solving and developing skills to cope with the illness. Patients with reduced social skills according to the World Health

Organization's psychiatric disability assessment were offered social skills training, focusing on coping with symptoms, conversation, problem solving skills, and medication. This was conducted in a group, with six patient and two therapists.

HCPS (Hospital-based Community Psychiatric Service)

Hospital-based community psychiatric service (HCPS) was implemented to determine changes in hospitalization, and factors associated with lower rehospitalization rates among patients with schizophrenia (Dahlan et al. 2013). The HCPS team is a multidisciplinary team and they work within office hours. The case managers in the team are a trained psychiatric nurse and medical assistants. The team provides service for people with a severe mental illness who have a high risk of relapse. The main areas could be working with insight, compliance, and the support system. The results were assessed one year after receiving HCPS.

Measurements

In the following session, measurement instruments evaluating the outcome of the interventions are described. The instruments are thirty-eight (see table 2). A range of one to fifteen instruments were used to measure results of the follow-up interventions implemented in the studies.

Table 2. Overview over measurement instruments

Instrument	What does it measure?	What kind of interventions used the instrument to evaluate outcome?	What studies use the instrument
GAF (Global Assessment of Functioning)	Measures change in psychiatric patients, it evaluates the psychological, social and occupational functioning	Psychoeducation CBOS (both studies) Intervention selected by a software AOC Integrated treatment	Bäuml et al. (2007) Kampman et al. (2003) Motlova et al. (2006) Petersen et al. (2005) Schmidt-Kraepelin, Janssen and Gaebel (2009) Wittorf et al. (2008)
PANSS (The Positive and Negative Syndrome Scale)	Measures the prevalence of positive-negative symptoms in schizophrenia.	CBT (two studies) CBOS (both studies) RPP Intervention selected by a software CRM	Garety et al. (2008) Gumley et al. (2003) Klingberg et al. (2010) Schmidt-Kraepelin, Janssen and Gaebel (2009) van Meijel et al. (2006) Wittorf et al. (2008) Xiang et al. (2007)
SAPS (Scale for Assessment of Positive symptoms)	Measures positive symptoms in schizophrenia	Psychoeducation Integrated treatment	Petersen et al. (2005) Vickar et al. (2009)
SANS (Scale for assessment of negative symptoms)	Measures negative symptoms in schizophrenia	Psychoeducation Integrated treatment	Petersen et al. (2005) Vickar et al. (2009)
PSYRATS (Psychotic Symptom Rating Scales)	Measures of delusions and hallucinations	CBT	Garety et al. (2008)
BPRS (Brief Psychiatric Rating Scale)	Assesses patients psychiatric status and it also contributes information about symptom characteristics.	Psychoeducation	Bäuml et al. (2007)
BSI (Brief Symptom Inventory)	Measures psychological symptoms of psychiatric and medical patients.	CBT	Gumley et al. (2003)
CPS-50 (Current Psychiatric Status)	Measures the presence and severity of symptoms	OCM	Sungur et al. (2011)
CGI (Clinical Global Impression Scale)	Measures the global functioning of an individual	RPP Intervention selected by a software	Schmidt-Kraepelin, Janssen and Gaebel (2009) van Meijel et al. (2006)

Instrument	What does it measure?	What kind of interventions used the instrument to evaluate outcome?	What studies use the instrument
SOFAS (Social and Occupational Functioning Assessment Scale)	Measures the level of social and occupational functioning	CBT	Garety et al. (2008)
SFS (Social Functioning Scale)	Measures social role and behavioural functioning.	CBT	Gumley et al. (2003)
SAS-II (Social Adjustment Scale II)	Interview that compares the patient's functioning level with the society's standards and demands.	CBOS	Wittorf et al. (2008)
SDSS (Social Disability Screening Schedule)	Measures social functioning.	CRM	Xiang et al. (2007)
MFIS (Mental Functions Impairment Scale)	Measures the severity of complete impairment related to symptoms	OCM	Sungur et al. (2011)
DI (Disability Index)	Evaluates individuals complete self-care, interpersonal, social and occupational abilities	OCM	Sungur et al. (2011)
The General Health Questionnaire	Identifies those with psychiatric disorder.	CBT	Garety et al. (2008)
LQoLP (Lancashire Quality of Life Profile)	Measures quality of life.	Psychoeducation Intervention selected by a software	Bäuml et al. (2007) Schmidt-Kraepelin, Janssen and Gaebel (2009)
QLS (Quality of Life Scale)	Measures quality of life.	CBOS OCM	Klingberg et al. (2010) Sungur et al. (2011)
SUMD (Scale to Assess Unawareness of Mental Disorder)	Measures insight.	CBT	Garety et al. (2008)
Insight Scale	Measures insight	RPP	van Meijel et al. (2006)
ITAQ (Insight and Treatment Attitude Questionnaire)	Measures insight	CRM	Xiang et al. (2007)
PBIQ (Personal Beliefs about Illness Questionnaire)	Measures patients understanding of their illness and how it effects their lifes.	CBT	Gumley et al. (2003)
IPQ (Illness Perception Questionnaire)	Evaluates cognitive representation of the illness	CBT	Garety et al. (2008)
BCSS (Brief Core Schema Scales)	A self-rated measure of negative and positive evaluations of self and others	CBT	Garety et al. (2008)
RSES (Rosenberg Self-Esteem Scale)	Measure self –esteem	CBT	Gumley et al. (2003)
CASH (Comprehensive Assessment of Symptoms and History)	Assess diagnosis and psychopathology	RPP	van Meijel et al. (2006)
SCAN (Schedules for Clinical Assessment in Neuropsychiatry)	Measures and diagnoses mental illness	Integrated treatment	Petersen et al. (2005)

Instrument	What does it measure?	What kind of interventions used the instrument to evaluate outcome?	What studies use the instrument
DIS (Diagnostic Interview Schedule)	Facilitate clinicians to make consistent and precise diagnosis	Psychoeducation	Vickar et al. (2009)
CSRI (Client Service Receipt Inventory)	Covers service provided by the National Health Service, other health and social care agencies, the criminal justice system and informal carers.	CBT	Garety et al. (2008)
CAN (Camberwell Assessment of Need)	Evaluates the social and clinical needs of people with mental disorders	OCM	Sungur et al. (2011)
ECI (Experience of Caregiving Inventory)	Evaluates the experience of caring for a relative with severe mental illness.	CBT	Garety et al. (2008)
CFI (Camberwell Family Interview)	Measures expressed emotions (EE).	CBT	Garety et al. (2008)
WAI (Working Alliance Inventory)	Measure the quality of the therapeutic alliance.	RPP	van Meijel et al. (2006)
GCS (Global Caregiver Stress)	Measures the stress when caring for individual with mental disorder	OCM	Sungur et al. (2011)
CSQ (Client Satisfaction Questionnaire)	Measures consumers satisfaction in health and human service systems.	Intervention selected by a software Integrated treatment	Petersen et al. (2005) Schmidt-Kraepelin, Janssen and Gaebel (2009)
BDI-II (Beck Depression Inventory Second Edition)	Depression measurement instrument	CBT	Garety et al. (2008)
BAI (Beck Anxiety Inventory)	Measures anxiety severity.	CBT	Garety et al. (2008)
POQ (Psychoeducation Outcome Questionnaire)	Evaluates outcome of psychoeducation.	Psychoeducation	Motlova et al. (2006)

The GAF (Global Assessment of Functioning)

The GAF is a simple and brief instrument that assesses change in psychiatric patients. It evaluates the psychological, social, and occupational functioning on a continuum of mental health illness, it is included as axis V in the revised fourth edition of the Diagnostic and Statistical Manual (DSM-IV-R). The GAF score ranges from 1-100, with the lower levels reflecting more disability. The GAF scale is divided into ten equal intervals, with ten scores in each interval, and the criteria that defines each score in each interval are listed (Hall 1995; Startup, Jackson and Bendix 2002). Example given in interval 51-60: Moderate symptoms (e.g., flat affect and circumstantial speech, occasional panic attacks) OR moderate difficulty in social, occupational, or school functioning (e.g. few friends, conflicts with peers or co-workers).

Those six studies that used the GAF as an instrument to evaluate outcome, were conducted in Germany (three studies), Finland, Denmark, and the Czech Republic. The GAF was used to evaluate outcome in psychoeducation, CBOS, intervention selected by a software, AOC, and integrated treatment. When measuring the outcome of psychoeducation (Bäumel et al. 2007), the difference in the GAF scores in the intervention group and control group did not reach significance, and one study used it as baseline assessment (Motlova et al. 2006). In CBOS (Wittorf et al. 2008), the GAF was used to measure overall functioning level, at baseline and as a follow-up assessment, where the GAF scores showed improvements in function. In AOC (Kampman et al. 2003) the level of functioning was measured with the GAF but the analysis showed that the GAF score did not change. The GAF was used to measure level of functioning, both baseline and as follow-up assessment after implementing integrated treatment (Petersen et al. 2005), but according to this analysis there are no discussion of the outcome in the paper, although it seems like the GAF score is stable at follow-up. Intervention selected by a software (Schmidt-Kraepelin, Janssen and Gaebel 2009), used the GAF as a baseline assessment.

The SAPS (Scale for Assessment of Positive Symptoms) and SANS (Scale for Assessment of Negative Symptoms)

The SAPS is an 34 item instrument that measures positive symptoms in schizophrenia. It is summed up in three dimensions (psychotic, negative, and disorganised) and is subdivided into four subscales, with values ranging from zero (absent) to five (severe). The SAPS is commonly used parallel with the SANS. The SANS is a 25 item instrument, divided into five subscales, and within each subscale separate symptoms are rated from zero (absent) to five (severe). This instrument is expected to measure negative symptoms in schizophrenia (Andreasen and Olsen 1982; Dollfus and Petit 1995). These instruments were developed by Andreasen and Olsen (1982), and published around 1984.

Two studies used the SANS/SAPS as an instrument to measure the outcome of an intervention or as a baseline assessment. They were from Denmark (Petersen et al. 2005) and the USA (Vickar et al. 2009). According to this analysis, the study from Denmark used SANS/SAPS when assessing the outcome from an integrated treatment, and a significant improvement in positive and negative symptoms were detected. The study from the USA, used the instruments to evaluate symptom severity at baseline prior to a psychoeducation intervention conducted in a private sector.

The PANSS (Positive and Negative Syndrome Scale)

The PANSS was developed by Kay, Flszbein and Opfer (1987) from several studies conducted by the authors. This instrument is a 30-item, seven point rating instrument, that measures the prevalence of positive-negative symptoms in schizophrenia. The instrument has seven positive-symptom components, seven negative-symptom components, and 16 general psychopathology symptom components, and they are all scored on the same seven-point severity scale. It requires minimum training for the clinician before using it and can be used in a rather brief period of time (45-60 minutes) but gives an opportunity for the interviewer to observe the patients' behaviour, both physical and interpersonal, the way the patient reacts to structured questioning and at the same time monitor thought content and cognitive-verbal processes. The PANSS includes the complete components in the Brief Psychiatric Rating Scale (BPRS) and some components from the Psychopathology Rating Scale (Emsley et al. 2003).

The interventions that used the PANSS as a measurement instruments were RPP, CBOS, CBT, intervention selected by a software, and CRM. These studies were from Germany (three studies), UK (two studies), The Netherlands and China. When evaluating the implementation of the RPP (van Meijel et al. 2006), the PANSS was used to measure the psychopathology at baseline. The scale was tested for validity and reliability with satisfactory results and the researcher received PANSS training. In the CBOS (Wittorf et al. 2008), the PANSS was used to measure symptoms at baseline. PANSS was also used in the other CBOS (Klingberg et al. 2010), where relapse was defined by an increase of six points on the standard PANSS positive and/or negative syndrome subscale. In this study the raters were trained regarding the PANSS-rating to establish a sufficient inter-rater reliability and discussed the ratings of at least ten patients in detail as well as using another ten videos of patient interviews to assess further the inter-rater reliability. The raters were independent from the treatment team but the ratings were not blind. According to the analysis, 22% relapsed in the control group compared with 13% in the intervention group regarding positive symptoms, and 22% in the control group and 8% in the intervention group regarding negative symptoms, respectively. When evaluating the outcome from the CRM (Xiang et al. 2007) a Chinese version of the PANSS was used, it has been validated and is frequently used in China. According to the analysis of this literature review, a worsening in positive symptoms in the control group by 24-month follow-up and significant difference in positive symptoms in both 18- and 24-month follow-up, favoring the intervention group, were detected (Xiang et al. 2007). Garety et al. (2008) used the PANSS to measure psychopathology at baseline, at 12-months follow-up and 24-months follow-up, when implementing a CBT and according to the analysis improvements were detected in psychopathology in all the groups investigated. The PANSS scores indicated improvements in positive and negative symptoms, after implementation of CBT (Gumley et al. 2003). Schmidt-Kraepelin, Janssen and Gaebel (2009) used the PANSS instrument to measure psychopathology at baseline when implementing intervention selected by a software.

The PSYRATS (Psychotic Symptom Rating Scales)

The PSYRATS is a 17-item, 5-point scale (0–4), multidimensional measure of delusions and hallucinations. The delusions subscale has six items and measures duration and frequency of preoccupation, intensity of distress, amount of distressing content, conviction and disruption. The auditory hallucination has 11 items and measures frequency, duration, controllability,

loudness, location, severity and intensity of distress, amount and degree of negative content, beliefs about the origin of voices, and disruption (Drake et al. 2007).

This instrument is used in a study from the UK (Garety et al. 2008), as secondary outcome evaluation, when measuring the effectiveness of a CBT and family intervention. The analysis shows a decline in PSYRATS scores in all study groups, which means decrease in symptom severity.

The BPRS (Brief Psychiatric Rating Scale)

The BPRS is an effective assessment instrument, frequently used when assessing patients' psychiatric status and it also contributes information about symptom characteristics. The clinicians ask the questions and it is recommended that the patient is interviewed by two raters, and should take 20 minutes to conduct. In the beginning it consisted of 16 items, then it was expanded to 18 items and again to 24 items, this was done to increase sensitivity to a broader range of psychotic and affective symptoms. It is efficient, rapid and economic (Morlan and Tan 1998; Overall and Gorham 1962; Ventura et al. 2000).

Bäumel et al. (2007) used the BPRS instrument to measure psychopathology after implementing psychoeducation. The paper lacks discussion on how the rating is conducted when using the instrument. The same scores are measured in the intervention group two years later but the control group is rated with worse outcome. At seven years follow-up the scores of BPRS are the same for both groups.

The BSI (Brief Symptom Inventory)

The BSI is a brief psychological self-report symptom scale, that was developed from the SCL-90-R, a longer instrument (Derogatis and Melisaratos 1983). This instrument is a 53-item inventory that assesses the psychological symptoms of psychiatric and medical patients. Each item on the instrument is rated on a five-point scale of distress (0-4), ranging from "not at all" to "extremely". The introduction to this instrument ordinarily takes one or two minutes and to complete the inventory takes less than ten minutes. The BSI measures nine primary symptom dimensions; (1) somatization (2) obsessive-compulsive behavior (3) interpersonal sensitivity (4) depression (5) anxiety (6) hostility (7) phobic anxiety (8) paranoid ideation and (9) psychoticism. Three global indices of distress can likewise be acquired with the BSI. They are the General Severity Scale (GSI), to indicate the level of ongoing distress, the Positive Symptom Distress Index (PSDI), showing if individuals' interpretation, adds to the distress level related to the response given, and the Positive Symptom Total (PST), showing the total number of symptoms the individual is experiencing (Derogatis and Melisaratos 1983).

The BSI was used when implementing CBT, in Gumley et al. (2003), to measure the psychological distress at baseline.

The CPS-50 (Current Psychiatric State)

The CPS-50 interview is a semi-structured instrument with 50 items covering general health, eating disorders, sleep/fatigue, dysphoric mood, anxiety disorders, elevated mood, psychotic

symptoms, and cognitive screening. The existence of all symptoms experienced the prior month are included. The assessment is done on a four-point scale, with ratings from zero to three. Zero meaning the absence of symptoms and three that the symptom is generally present. The median time period in conducting the interview is 31 minutes, ranging from 19-123 minutes. This is an instrument that explains the present core psychiatric symptoms and their severity, it does not supply diagnosis. The CPS can be used after brief training for a wide range of mental health professionals, both in routine mental health practice and in clinical research (Falloon et al. 2005).

The analysis show that Sungur et al. (2011) used the CPS-50 interview, when implementing OCM, to rate the presence and severity of psychiatric symptoms, both at baseline and again at 24 months follow-up. Overall improvements were seen in the intervention group on the CPS-50 scale and both groups showed reductions on psychoses and dysphoria subscales, but favouring the intervention group.

The CGI (Clinical Global Impression Scale)

The CGI is a short instrument that consists of three various global measures. (1) Symptom severity, (CGIS) (2) improvement of illness (CGII), and (3) treatment efficacy (CGI-E) (Forkmann et al. 2011). The scale is structured symmetrically: from 1 (very much improved) to 4 (no change) to 7 (very much worse).

According to this analysis, two studies used the CGI when measuring patients condition. van Meijel et al. (2006) used only the Global Impression Scale of the CGI, when implementing RPP, to measure change over time but when analyzing the paper, it lacks the discussion of the outcome. In Schmidt-Kraepelin, Janssen and Gaebel (2009) the CGI is used as a baseline assessment, before implementing intervention selected by a software.

The SOFAS (Social and Occupational Functioning Assessment Scale)

The SOFAS is an instrument that measures the level of social and occupational functioning where any impairment in these areas is considered in the instrument. It is included in the DSM-IV-TR. Derived from the Global Assessment of Functioning (GAF) scale, the instrument usually measures functioning for the current period but there are exceptions when a certain time period is being evaluated. The SOFAS is divided into ten equal intervals, with ten scores in each interval. The criteria that define each score in each interval are listed. Example given; Score 21-30: Inability to function socially or occupationally in almost all areas (e.g., stays in bed all day; no job, home, or friends) (Saraswat et al. 2006).

Garety et al. (2003) used the SOFAS to rate the social and occupational functioning, after implementing CBT and family intervention, the social and occupational functioning improved significantly at 12 months.

The SFS (Social Functioning Scale)

The SFS is a measurement instrument that assesses social role and behavioral functioning across seven key areas of community functioning, they are: social engagement/withdrawal,

interpersonal behaviour, pro-social activities, recreation (e.g. hobbies), independence-competence, independence-performance, and employment/occupation (Birchwood et al. 1990).

The SFS was used in Gumley et al. (2003) to measure the social role and behavioural functioning across seven basic areas of community functioning, after implementing CBT. They used a criterion of clinical significance to define if the participants accomplished improvements or a decline in social functioning. Gumley et al. (2003), detected greater improvements in performance and independent functioning and prosocial activity in the intervention group than in the control group.

The SAS II (Social Adjustment Scale II)

The SAS II is a semistructured interview that compares the patient's functioning level with the society's standards and demands. The SAS-II is a seven point interviewer-rated scale, that measures functional outcome in the work, social life and leisure, and the household domain. In the global scale of work, an evaluation is made on the patient's stability and effectiveness of occupational functioning, in relation to education level, earlier vocational training and professional background. When assessing the scale of household, the participation and reciprocal assistance is evaluated and in regard to the scale of social and leisure activity, the quantity and quality of the activity and the depth of interpersonal relationships, and personal well-being is measured. Higher value indicates poorer adjustments (Wittorf et al. 2008).

In evaluating the outcome in schizophrenia one year after discharge from inpatient treatment, using CBOS, Wittorf et al. (2008) used the SAS II to measure functional outcome in the work, social and leisure, and household domain. When assessing the scale of household, the participation and reciprocal assistance is evaluated and in regard to the scale of social and leisure activity, the quantity and quality of the activity and the depth of interpersonal relationships, and personal well-being is measured. This instrument was selected because it assesses the functional outcomes that are targeted in the CBOS (Wittorf et al. 2008).

The SDSS (Social Disability Screening Schedule)

The SDSS is an instrument that measures social functioning and is a shorter version of the Disability Assessment Schedule (DAS). The SDSS is often used in China (Xiang et al. 2007). The SDSS was used to measure social functioning, when evaluating outcome from the CRM (Xiang et al. 2007).

The DI (Disability Index)

The DI is derived from the Charing Cross Health Index. This eight-point disability scale evaluates individual's complete self-care, interpersonal, social and occupational abilities (Sungur et al. 2011).

The DI was used to measure outcome when implementing OCM (Sungur et al. 2011).

The MFIS (Mental Functions Impairment Scale)

The MFIS is an instrument adapted from the Clinical Global Impressions Scale (CGI). It is a seven-point scale that measures the severity of complete impairment related to symptoms experienced. It is based on the quantity of interference of illness with every day life, when the thinking and making daily decisions is disturbed (Sungur et al. 2011).

This instrument was used to assess outcome from OCM (Sungur et al. 2011) by measuring the severity of overall impairment related to the key symptoms the patient was experiencing. According to the paper, the patients in the intervention group showed significant improvements on the global impairment scores on the instrument.

Quality of life measurements

Measuring the quality of life is a widespread method to assess the individual's health and general well-being. Several instruments exist that measure quality of life (QoL) and interest in such measurements is increasing. This is often used in research when trying to assess change in the patient's condition after implementation of an intervention.

Bigelow, McFarland and Olson (1991) developed a quality of life measurement that they derive from the individual's social needs and the demands of society. The needs are achieved in the social environment and demands are met by the circumstances in a social context, with basic psychological abilities. When people suffer from mental illness their capacity to participate in society diminish and it becomes more difficult to fulfill social needs.

This analysis shows that four studies report on measuring the quality of life when evaluating outcome. Three are from Germany and one from Turkey. Klingberg et al. (2010) comment on measuring the quality of life after implementing CBOS, but do not report on it in the paper.

The LQoLP (Lancashire Quality of Life Profile)

The LQoLP offers both objective and subjective measurements. The instrument was developed from Lehman's Quality of Life Interview and is divided into four areas, personal characteristics, objective QoL indicators, subjective QoL indicators, and a global well-being measure. This instrument consists of nine domains, with 105 items. The domains are: work and education, leisure and participation, religion, finance, living situation, personal safety, family relations, social relations, and health (Oliver et al. 1997; van Nieuwenhuizer et al. 2001).

Two studies used the LQoLP (Bäuml et al. 2007; Schmidt-Kraepelin, Janssen and Gaebel 2009), when measuring outcome from psychoeducation and intervention selected by a software. The studies using LQoLP showed little improvement in quality of life, one showing a little better score after implementation of psychoeducation but not with significant difference (Bäuml et al. 2007). Other study showed no improvement after implementation of intervention selected by a software (Schmidt-Kraepelin, Janssen and Gaebel 2009). Also, in Bäuml et al. (2007), when evaluating the outcome from a psychoeducation, quality of life were one of the main targets, and therefore important to use quality of life measurements. Quality of life was also the studies scope when implementing intervention selected by a software (Schmidt-Kraepelin, Janssen and Gaebel 2009).

The QLS (Quality of life Scale)

The QLS is a 21-item scale instrument that consists of semistructured interview. It is designed to be conducted by a trained clinician and takes about 45 minutes to finish. It provides knowledge on symptoms and functioning that have lasted for at least four weeks. Each item is rated on a seven-point scale that consists of three parts: (1) Brief explanatory statement to orient the clinician what he is about to assess; (2) a set of suggested probes, but encouragement is made to go beyond them, focusing on the individual's symptoms; (3) the seven-point scale with explanatory anchors for every other point, which varies among items. High scores reflects normal or unimpaired functioning, and low scores reflect severe impairment of the functioning. This assessment is similar to careful clinical interview and was designed to address the more subtle aspects of schizophrenic psychopathology, it is also designed for patients outside of institutions (Heinrichs, Hanlon and Carpenter 1984).

Sungur et al. (2011) use the QLS, when evaluating the implementation of OCM and significant improvements were detected in quality of life over 24 months, compared to RCM.

The SUMD (Scale to Assess Unawareness of Mental Disorder)

The SUMD is an instrument that measures insight. It is broadly used in clinical trials and epidemiological studies rather than in clinical practice, because of its length of 74 items (Michel et al. 2013). The SUMD was used to assess insight after implementation of CBT and family intervention (Garety et al. 2008). There is scarce discussion about the handling of the instrument in the study and difficult to see the outcome deriving from the instrument.

The Insight Scale (IS)

The Insight Scale is a self-report scale that measures insight. It consists of three dimensions; attribution of symptoms, awareness of illness and need for treatment, with a total of eight items (Birchwood et al. 1994).

In van Meijel et al. (2006), insight is measured with this instrument, after implementing a RPP. According to the analysis, the application of the RPP intervention did not lead to significant change in total scores on the Insight-Scale, and in relation to that no statistical significance were found regarding relapse. It is relevant to measure insight after implementing a RPP as the patients insight can determent the likelihood of him following through with planned treatment and therefore the probability of relapse.

The ITAQ (Insight and Treatment Attitude Questionnaire)

The ITAQ is an semi-structured interview of 11 items that measures recognition of psychiatric illness and attitudes towards antipsychotic drugs, hospitalization, and follow-up (Mahadun and Marshall 2008; Xiang et al. 2007).

After implementing a CRM, a standardised, structured social skills training program, Xiang et al. (2007), measured insight using the ITAQ, an instrument that focus on how the patient accepts the psychiatric illness and the beliefs he holds regarding treatment. The analysis show

significant improvement in insight after implementation of the CRM intervention, as well as improvements in social functioning and psychiatric symptoms. In the study from China (Xiang et al. 2007), improvements in insight were detected.

The PBIQ (Personal Beliefs about Illness Questionnaire)

The PBIQ is a 16 items instrument on a four-point scale that measures patients understanding of their illness and how it effects their lives. The PBIQ evaluates patients beliefs about the illness in five domains: (1) control over illness, where the patient evaluates the amount of control he has over his life and illness, (2) self as illness, how much the patient believes the origin of their illness is connected to their personality, (3) expectations, how the illness affects their independence, (4) stigma, evaluates patients' experience of their illness in relation to social judgment and (5) social containment, that evaluates the understanding of the amount of segregation and the control of the mentally ill (Birchwood et al. 2012; Acosta et al. 2013).

Gumley et al. (2003) used the PBIQ to assess negative appraisals of psychosis when implementing a CBT. According to the analyzis it seems that they have used the PBIQ to measure baseline characteristics prior implementing the intervention.

The IPQ (Illness Perception Questionnaire)

The IPQ is an instrument that evaluates cognitive representation of the illness. The IPQ consists of five scales that gives information about the severity and content of the illness. The five scales assess identity; how the individual experiences their illness, cause; what do the individual thinks causes the illness, time-line; how long the individual thinks the illness will continue, consequenses; what the individual considers the consequenses of the illness to be and cure control; how the recovery process looks like and what part does the individual play in it (Weinman et al. 1996).

Garety et al. (2008) uses the IPQ to evaluate cognitive representation of the illness, when implementing CBT and/or family intervention. According to this analyzis no discussion is in the paper regarding the outcome.

The BCSS (Brief Core Schema Scales)

The BCSS is a rapid self-rated measure of negative and positive evaluations of self and others, with good reliability and validity. This instrument has 24 items on a five-point rating scale (0-4). It measures beliefs that individuals hold about themselves, e.g. Myself: i am unloved/i am worhtless (0-4), and beliefs about other people, e.g. Other people: other people are hostile/ other people are harsh (0-4) (Fowler et al. 2006).

According to this analyzis, Garety et al. (2008) used the BCSS to measure negative and positive evaluation of self and others. As for the IPQ instrument no discussion is available of the outcome in the paper.

The RSES (Rosenberg Self-Esteem Scale)

To measure self-esteem, the RSES, was developed. This is a widely used self-report instrument that has ten items on a four-point scale, from strongly agree to strongly disagree. A high total score demonstrates a low global self-esteem. Example given: 1. On the whole, I am satisfied with myself. The individual circles the statement he/she agrees with. This instrument is effortless and brief and easy to use in a short time and do not require training for the clinician. It has been translated and adapted to several language and administered across 53 nations (Schmitt and Allik 2005; Pullmann and Jüri 2000).

Gumley et al. (2003) used the RSES to measure negative appraisal of self to assess the baseline characteristics before implementing CBT.

The CASH (Comprehensive Assessment of Symptoms and History)

The CASH is a comprehensive instrument for assessing diagnosis and psychopathology. This is an analytical interview and recording instrument to document the signs, symptoms and history in research studies of affective disorders and major psychoses. This instrument is supposed to be used by individuals with training and sufficient understanding of mental illness, and thus requires adequate training and practice (Andreasen, Flaum and Arndt 1992).

van Meijel et al. (2006) used this instrument in their study, to obtain a comprehensive diagnosis for baseline comparison, but only used sections one (socio-demographic data) and four (illness history).

The SCAN (Schedules for Clinical Assessment in Neuropsychiatry)

The SCAN is an instrument developed by WHO, that measures and diagnoses mental illness. This instrument can both be used with ICD-10 or DSM-IV. The instrument's computer analysis produces a diagnosis that is similar anywhere it is used. The SCAN is derived from the ninth edition of the Present State Examination (PSE), published in 1974. The instrument is constructed as semi-structured, standardized clinical interview where the patient is cross-examined. The questions are not in a fixed order but depend on the most prominent symptoms the patient experiences (WHO; <http://whoscan.org/>; Wing et al. 1990).

This instrument is used when implementing integrated treatment (Petersen et al. 2005) to identifying main diagnosis and comorbidity.

The DIS (Diagnostic Interview Schedule)

The DIS is an instrument used to help clinicians to make a consistent and precise diagnosis. It is structured with reference to the DSM III, with 33 diagnoses, ranging from organic brain syndrome to pathological gambling (Hendricks et al. 1983). The DIS is also structured with reference to the DSM IV (American Psychiatric Association 2000).

In Vickar et al. (2009) the DIS (Diagnostic Interview Schedule) were used by a trained rater before the program participation.

The CSRI (Client Service Receipt Inventory)

The CSRI is an inventory that covers service provided by the National Health Service, other health and social care agencies, the criminal justice system and informal carers (Garety et al. 2008).

Garety et al. (2008) used this instrument to examine non-intervention counselling or psychological therapy delivered to the intervention and control group in the six months prior baseline and in the two 12 month periods following induction, before implementing CBT and family intervention.

The CAN (Camberwell Assessment of Need)

The CAN is an instrument that evaluates the social and clinical needs of people with mental disorders. The instrument exists in two versions; one clinical version and another research version. The CAN was developed around four principles; (1) that every person has their own, similar needs, (2) there is a requirement of assessing the needs with instrument like CAN, because the multiple needs people with mental illness have are not recognized by mental health services, (3) this should be a basic element in routine clinical practice, and also in service evaluation, hence the instrument should be practical and easy to use, and (4) the needs should not be solely explained by clinical staff.

This instrument is easy to use and takes about 25 minutes to use. There are 22 areas of need included in the instrument; accommodation, food, household skills, self-care, occupation, physical health, psychotic symptoms, information about condition and treatment, psychological distress, safety to self, safety to others, alcohol, drugs, company of others, intimate relationships, sexual expression, child care, basic education, telephone, transport, money, and welfare benefits (Phelan et al. 1995).

Sungur et al. (2011) used the CAN instrument to assess the wide range of personal and health needs in patients with mental illness, when carrying out a OCM. They concluded that the intervention group showed accumulative reduction in unmet needs throughout the two years of treatment.

The ECI (Experience of Caregiving Inventory)

The ECI is designed to assess the experience of caring for a relative with a severe mental illness. A 66-item version of the ECI, with ten subscales, was developed by analyzing responses from 626 caregivers, and testing the responses on an independent sample of 63 relatives of patients with schizophrenia, recently in acute care (Szmukler et al. 1996).

When implementing CBT and family intervention, Garety et al. (2008) used the ECI to assess the experience of caring for a relative with a severe mental illness.

The CFI (Camberwell Family Interview)

The CFI is an instrument that measures expressed emotions (EE). EE has been used to describe some essential aspects of interpersonal relationship. It includes measurements of critical comments, hostility, emotional overinvolvement, number of positive comments, and warmth. The CFI is a semi-structured interview that rates the EE. This instrument is relatively long, taking about one and two hour to complete (Wearden et al. 2000).

The analyzis show that the CFI was used in Garety et al. (2008) to evaluate the level of expressed emotion (EE), after implementing CBT and/or family intervention. It is mentioned that all raters were trained according to the instrument standard, prior to assessing the EE. There were no statistical differences in EE exept for a considerable reduction in levels of criticism in those who were in receipt of family intervention.

The WAI (Working Alliance Inventory)

The WAI is an instrument widely used to measure the quality of the therapeutic alliance. It measures three dimensions of the therapeutic alliance proposed by Bordin (1979): (a) the agreement on the goal that is being worked towards, (b) the agreement on how tasks can be achieved and (c) the development of the relationship between patient and caregiver (Horvath and Greenberg 1989).

van Meijel et al. (2006) used the client verion of the WAI to measure the quality of the therapeutic alliance, when implementing RPP. The measurements of the WAI showed significant time-intervention interaction effects on the total score, on the goal dimension, and on the bond dimension. These results are difficult to interpretate.

The GCS (Global Caregiver Stress)

The GCS is an instrument that measures the stress when caring for an individual with a mental disorder, this is measured on a five-point measurement scale (Sungur et al. 2011).

Sungur et al. (2011) used GCS to measures the stress when caring for individual with mental disorder, when implementing OCM. According to the analyzis there were significant reduction in caregivers´ stress over the 24-month study period in the intevention group compared to the control group.

The CSQ (Client Satisfaction Questionnaire)

The CSQ is a ranking scale, based on eight questions with four answering categories added together for a total score. This instrument measures consumer satisfaction in health and human service systems (Petersen et al. 2005), and was used when implementing an integrated treatment.

Schmidt-Kraepelin, Janssen and Gaebel (2009) used the ZUF-8 (Fragebogen zur Patientensufridenheit), when implementing intervention selected by a software. It equals the German version of the CSQ. Questions like “how would you judge the quality of the

treatment that you have got?” were included in the instrument (Gebhardt, Wolak and Huber 2013).

The BDI–II (Beck Depression Inventory Second Edition)

The BDI–II is one of the most broadly used depression measurement instrument. This is a 21-question self-report inventory, created by Aaron T. Beck. Three versions of the BDI exists, the original BDI, published in 1961, revised as BDI-1A in 1978 and, the BDI-II, published in 1996 (Whisman, Perez and Ramel 2000). Every 21-items in the instrument consist of four self-evaluative statements, scored zero to three, with increasing score indicating more severe depression.

To assess the level of depression in patients with psychoses, when implementing CBT and family intervention (Garety et al. 2008), this instrument was used.

The BAI (Beck Anxiety Inventory)

The BAI is a 21-question inventory, also created by Aaron T. Beck and colleagues, that measures anxiety severity. The 21-questions cover the individual’s psychological condition the prior week and is created for age 17-80 years old. Every question consists of four potential answers, example given; not at all (0 point), mildly: it did not bother me much (1 point), moderately: it was very unpleasant, but I could stand it (2 points) and severely: I could barely stand it (3 points). The instrument has a maximum score of 63 (Beck et al. 1988).

This instrument was also used when implementing CBT and family intervention (Garety et al. 2008), in measuring levels of anxiety.

The POQ (Psychoeducation Outcome Questionnaire)

The POQ is an instrument that was originally developed to assess the outcome of psychoeducation and to obtain as many facts as possible about family atmosphere, disease management, ability to cope, etc (Motlova et al. 2006).

In Motlova et al. (2006) the POQ was used to measure the outcome of psychoeducation.

The General Health Questionnaire-28

The General Health Questionnaire-28 is a self-reported questionnaire that identifies those with psychiatric disorders. This instrument has four subscales; somatic symptoms, anxiety and insomnia, social dysfunction and severe depression (Garety et al. 2008).

This questionnaire was used when implementing CBT and family intervention. The results when using this instrument is unclear in the paper.

DISCUSSION

The discussion will be divided in two sections, interventions and measurements. The intervention section will cover the follow-up interventions used in the studies, discussing their differences and similarities and summarizing the most important elements in the follow-up interventions. In the measurement section the fundamental focus will be on those instruments most often used in the studies, and those measuring psychotic symptoms. Explanations are given regarding how these instruments are used and advantages and disadvantages discussed. The measurement instruments will be discussed in relation to evidence based data and what kind of literature is accessible regarding the instruments.

Interventions

The interventions discussed are psychoeducation, CBT (Cognitive Behavioral Therapy), CBOS (Cognitive Behaviorally Oriented Service), OCM (Optimal Clinical Management), RPP (Relapse Prevention Plan), intervention based on suggestion of a software, AOC (Ambulatory Outpatient Care), CRM (Community Re-entry Module), integrated treatment and HCPS (Hospital-based Community Psychiatric Service).

Psychoeducation

Three studies used psychoeducation as a follow-up intervention (Bäumel et al. 2007; Motlova et al. 2006; Vickar et al. 2009). Many factors were similar in the interventions but they also varied a bit. In Bäumel et al. (2007), and Vickar et al. (2009), the intervention began before discharge and continued after hospital stay, whereas in Motlova et al. (2006), the intervention began after discharge. Thorough discharge planning and organized follow-up intervention is important in attaining continuity of care and to reduce rehospitalisation (Steffen et al. 2009). The length of the interventions also varied. Bäumel et al. (2007) do not outline in a clear manner the time period of the intervention in the study but it seems that it is about five months, whereas the follow-up time was seven years. In Vickar et al. (2009) the therapy was conducted in a six months period and followed-up after one year. Motlova et al. (2006) offered eight hour programs and the follow-up was conducted one year after implementation. It is not clear how these eight hours were divided but it was a short-term intervention. All the interventions were education focused and emphasized managing the illness by talking about it and discussing coping strategies. Motlova et al. (2006) used the vulnerability/stress model to explain the illness, as did Bäumel et al. (2007) by using biological factors in combination with psychosocial stress as a cause. Vickar et al. (2009) emphasized the education from managing the illness, with social-and personal growth. Bäumel et al. (2007) emphasized the importance of all the patients receiving antipsychotic medication and stressed that the psychosocial treatment could not show positive result without sufficient antipsychotic medication. The patients in Motlova et al. (2006) were all receiving antipsychotic medication whereas this was not mentioned at all in Vickar et al. (2009). Antipsychotic medication is one of the most important aspects in both acute and maintenance therapy in treating psychotic disorders (Royal Australian and New Zealand College of Psychiatrists Clinical Practice Guidelines Team for the Treatment of Schizophrenia and Related Disorders 2005). One of the interventions was conducted in a private-sector inpatient facility (Vickar et al. 2009). Evidence of psychoeducation being used as a follow-up intervention in the private sector were

not found. Both in Vickar et al. (2009) and in Bäuml et al. (2007) the intervention group and the control group received treatment as usual (TAU), where the TAU is thoroughly explained. But in Motlova et al. (2006) the TAU is not mentioned and unclear what kind of treatment the control group is receiving. All studies showed lower rate of rehospitalization in the intervention group compared to the control group. All three studies used similar sample size (see table 1), but varied in follow-up time. Bäuml et al. (2007) show long time effect of their intervention, whereas Vickar et al. (2009) evaluates the outcome six months later. It is therefore uncertain if this effect matters in the long run. When measuring the outcome of the psychoeducation, Bäuml et al. (2007) used the BPRS, the GAF, and the LQoLP, as well as rehospitalization rates. Motlova also used the GAF when assessing the effectiveness of the psychoeducation, as well as rehospitalization rates and the POQ. Vickar et al. (2009), used the DIS, and the SAPS and the SANS. The SAPS and the SANS were used to evaluate symptoms severity at baseline.

CBT (Cognitive Behavioral Therapy)

Garety et al. (2008), Gumley et al. (2003) and Malik et al. (2009) used a CBT as a follow-up intervention. Even though all these three interventions are based on CBT, they vary greatly. Garety et al. (2008) compared CBT with family intervention (FI), Malik et al. (2009) used brief-CBT, delivered by mental health nurses, and Gumley et al. (2003) used CBT provided by a psychologist. When comparing CBT and FI, Garety et al. (2008) divided the study group into two pathways, those with no carer and those with a carer. The CBT were adapted to CBT for psychosis, where the emphasis was on relapse prevention. This intervention was divided into four stages where the purpose was to recognize people's understanding of the illness and focusing on altering these understanding to prevent relapses. The FI emphasized on improving communication, using the manual of Kuipers et al. Gumley et al. (2003) used CBT, which were divided in two phases, engagement phase covering the cognitive model of relapse, and the intensive targeted phase, delivered in case of relapse. Malik et al. (2009) used brief-CBT, an intervention given to engage psychotic patients and develop stigma-reducing explanation for psychosis, also reducing distress and altering negative attitude towards symptoms and preventing relapse. In Garety et al. (2008), it does not say if the patients were in inpatient or outpatient treatment when receiving the intervention, only that they had recently relapsed, whereas the patients selected in Gumley et al. (2003), were receiving treatment from local community mental health teams and were considered relapse prone. Likewise, patients in Malik et al. (2009) were receiving treatment from primary care settings, mostly in outpatient, depot injection, or clozapine clinics, and considered in a risk of relapse. Garety et al. (2008) offered nine months of treatment, with planned minimum of 12 and maximum of 20 sessions, whereas Gumley et al. (2003) offered an engagement phase between study entry and 12 weeks, and an intensive targeted phase (two-three sessions /week) in case of relapse, the time period for this intervention were not mentioned. The brief-CBT (Malik et al. 2009) was conducted in two or three months. Treatment as usual was described in the studies (Garety et al. 2008; Gumley et al. 2003; Malik et al. 2009), and were offered to both intervention group and control group in Garety et al. (2008) and Gumley et al. (2003), but not in the brief- CBT intervention (Malik et al. 2009). Garety et al. (2008) discussed antipsychotic medication as a part of treatment as usual that the total study group received, while antipsychotic medication treatment were one of the entry criteria into the intervention in Gumley et al. (2003). Antipsychotic medication treatment where mentioned as a part of treatment as usual and in the intervention group in Malik et al. (2009). In Garety et al. (2008) the outcome showed no

effect from CBT or FI on rates of remission and relapse, neither on days spent in hospital at 12 or 24 months. However, depression decreased in the CBT group at 24 month follow-up, but no effect appeared in the FI group. Regarding the carer pathway, CBT significantly improved delusional distress and social functioning. In contrast to these results, Gumley et al. (2003) found that relapse rates were lower in the CBT group than in the TAU group and, fewer patients in the CBT group were admitted to hospital compared to the TAU group and they had also less days spent in the hospital. In addition, the CBT group demonstrated significantly better improvement in positive symptoms, negative symptoms, global psychopathology, performance of independent functions and prosocial activities. Malik et al. (2009) showed similar results, that is, relapses were fewer and delayed in the CBT group versus in the TAU group, those rehospitalized in the CBT group spent a fewer days in the hospital compared to those in the TAU group. No improvements were shown in occupational recovery, in the CBT group. When evaluating the outcome, Garety et al. (2008) used the PANSS, the PSYRATS, the BDI-II, the BAI, the SOFAS, the CSRI, the SUMD, the IPQ, the CFI, the ECI, and the General Health Questionnaire-28, as well as using remission and relapse rates. What could be the reason for using that many instruments to evaluate study outcome? Could it be the lack of narrowing the studies' scope? Or is it to compensate for something missing in the research? In Gumley et al. (2003), the outcome was evaluated with the PANSS, the BSI, the PBIQ, the RSES, and the SFS. On the other hand, Malik et al. (2009) measured the outcome exclusively with time to relapse, number of patients relapsed, days hospitalized, and occupational recovery.

CBOS (Cognitive Behaviorally Oriented Service)

Klingberg et al. (2010) and Wittorf et al. (2008) used cognitive behaviorally oriented service (CBOS). The intervention began in the hospital setting and was divided into five units, where the first four were an inpatient treatment and the last one was conducted after discharge. In Klingberg et al. (2010) the time period for the intervention was about eight months, inpatient treatment was approximately eight weeks and continued after discharge for six months. In Wittorf et al. (2008) the outpatient treatment was conducted in one year, without mentioning the time period for inpatient treatment. In both Klingberg et al. (2010) and Wittorf et al. (2008) the essence in the CBOS treatment is relapse prevention, and the interventions are conducted in the same way, where the first four units are an inpatient treatment and the fifth unit is an outpatient treatment, a group treatment focusing on coping skills. In Klingberg et al. (2010), emphasize is on the importance of individualized plan, where the treatment is tailored to the patients illness. Also, the patient receives an individual supportive treatment during the inpatient care, one session per week. In Wittorf et al. (2008) there is no discussion about individualized plan and individual supportive treatment during the inpatient care is not offered. On the other hand they mention, when describing the intervention, that the treatment protocol is presented in detail elsewhere but do not give a reference to that statement. In both studies, antipsychotic medication is given according to the patient individual needs. Treatment as usual is given to the control group and is described in both studies. The interventions were conducted in a university hospital, whereas Klingberg et al. (2010) also conducted their intervention in a state hospital. These two studies have different objectives, in Klingberg et al. (2010) the focus is on how the CBOS can impact relapse rates in a routine health care and they conclude that preventing early relapses can be accomplished, where the mean time to relapse after discharge in the CBOS group is significantly longer than in the TAU group. On the other hand, in Wittorf et al. (2008), the focus was on identifying predictors of functional

outcome, where they hypothesized that cognitive dysfunction and negative symptoms were most consistently associated with functional outcome. The results indicated that the negative symptoms and cognitive dysfunctions are key determinants of community outcome and as well could be a potential predictive relevance of positive symptoms. In Kingberg et al. (2010), the PANSS and the QoL are used to assess the outcome, as well as rehospitalization rates. In Wittorf et al. (2008), the PANSS is also used, as well as the GAF and the SAS-II. Comparing these studies is challenging because of the different objectives and questions used. When analyzing these two studies it appears that they are both part of one larger study.

OCM (Optimal Clinical management)

The essence in the Optimal Clinical Management (OCM) is establishing permanent recovery, where every patient is evaluated and an individualized intervention is designed, which is obtained from psychoeducation and CBT, with home-based crisis intervention and cognitive – behavioral family interventions (Sungur et al. 2011). The OCM intervention was conducted in 24 months, where the patient and their caregivers (also family members) attended 120-min sessions every two weeks in the patients' home for the first three months, the rest of the intervention time, a 45 minutes monthly sessions were held at the outpatient clinic. The control group received Routine Clinical Management (RCM) in the outpatient clinic, that contained education, strategies helping with medication compliance and relapse prevention, case management and day hospital, information and referrals about rehabilitation. They received 60 minutes training session once a month for the first three months and then 45 minutes sessions in the remaining intervention period. Both the intervention group and the control group received antipsychotic treatment chosen with their psychiatrist. Results indicate that the OCM show better clinical and social recovery than the RCM, and continued throughout the whole study period. To gather the results several instruments were used in this study, the CPS-50, the MFIS, the DI, the GCS, the CAN, and the QoL.

RPP (Relapse Prevention Plan)

Relapse Prevention Plan (RPP) was one of the follow-up interventions (van Meijel et al. 2006). The patients receiving this intervention needed to be stabilized so they could participate in the intervention and be hospitalized, be attending the day clinic, or be treated in outpatient care. The intervention was divided into four phases; receiving information, systematically organizing and describing early signs of relapse, monitoring when early signs appeared, and offering action plan when relapse was a fact. The time period of the intervention is not discussed in the article but the follow-up period is one year. The control group received TAU, but the description of TAU is missing in the article. There is no discussion about antipsychotic medication except when addressing those who relapsed in the study. The results do not show statistically significant effects from the RPP, regarding relapse rates. This result is interesting giving that the control group was receiving standard psychoeducation, and therefore possible to argue that the control group were receiving an equally competent treatment and therefore no statistical difference were found between the intervention group and the control group. In this study instruments like the PANSS, insight scale, the WAI, the CGI, and the CASH are used to measure the outcome.

Intervention selected by a software

In Schmidt-Kraepelin, Janssen and Gaebel (2009) the main focus is on preventing rehospitalization. This is done by offering the intervention group an intervention that is selected by a software that suggests a certain intervention. The software is based on the documentation of diagnostic and therapeutical procedures by the treating psychiatrist. In this case the intervention is highly individualized and selected so that it may match the patient and his problem. The participants in the study was recruited during their inpatient treatment, but the intervention was offered to optimize aftercare for six months after discharge. The control group received TAU. There is no discussion about antipsychotic medication. The results show reduction in rehospitalization in the intervention group by nearly 50%, and a rise in patient satisfaction with treatment, despite that quality of life measurements stay constant. The attendance in coping skills training were most important in effecting rehospitalization. Cost effectiveness was higher in the intervention group. To gather these results several instruments were used. The PANSS, the GAF, the CGI, and the LQoLP, as well as treatment satisfaction (ZUF-8), a list of burden factors (DSM IV) and previous hospital admissions.

AOC (Ambulatory Outpatient Care)

As an aftercare, Kampman et al. (2003) studied an intervention focused on enduring antipsychotic medication treatment by initiating Ambulatory Outpatient Care (AOC). The intervention offered home visits every 2-4 weeks by the hospital nurses. The intervention lasted approximately four years as was the follow-up period. The control group or the non-AOC group received TAU, or conventional outpatient treatment. The results show that in the AOC group half of the patients did not need hospitalization at all, and the number of days of hospitalization decreased by nearly 80% in the whole group compared with the previous four years. In the non-AOC less decrease was seen in the number of days of hospitalization. The mortality rates showed small tendency regarding improved outcome in the AOC group but no difference in level of functioning. Those individuals receiving this intervention often need rehospitalization and in this study all the patients were on disability pension due to schizophrenia. The main target in the AOC is to secure continuity of antipsychotic medication treatment, with the use of short-term hospitalization, if needed. This study analyzed an intervention given to a small sample. Half of the patients not needing hospitalization were only nine patients, and the whole group that hospital days declined in were 18 patients. Even though this outcome strengthen the effect of the AOC it is questionable to generalize this outcome because of the small sample. To measure the outcome the GAF was used, as well as number of hospital days and mortality rate.

CRM (Community Re-entry Module)

Community Re-entry Module is an intervention of a standardized, structured social skills training programme. Xiang et al. (2007) offered this intervention for inpatients that had been clinically stable for at least one month and were beginning their pre-discharge home leave. The intervention were conducted by an experienced psychiatric nurse, in 16, one hour sessions, where each session had specific topic. The nurses received a one week training. No discussion was about the anti-psychotic medication. The control group received

psychoeducation. More improvements were seen in the CRM group regarding social functioning, insight and psychiatric symptoms compared with the control group, also the re-employment rates were higher in the CRM group and relapse and rehospitalization rates were significantly lower in the CRM group. Xiang et al. (2007), used the SDSS, the PANSS, the ITAQ, and relapse and rehospitalization rates, to measure the outcome.

Integrated Treatment

Petersen et al. (2005) implemented an integrated treatment that consisted of assertive community treatment with programmes for family involvement and social skills training. The intervention was delivered for two years where a primary team member was assigned to the patient that was in charge of managing contact and coordinate treatment within the team and across different treatment and support facilities. The intervention took place in the patients' home or elsewhere in the community or at the primary team member's office. There was an easy access to the team member and they continued the contact if the patient needed hospitalization. Crisis plan was developed, and psychoeducational family treatment was offered, with focus on problem solving and development of skills to cope with the illness. One of the inclusion criteria was not to been given antipsychotic drugs for more than 12 weeks of continuous treatment. The control group received TAU, standard treatment usually offered at a community mental health centre. The results shows that psychotic symptoms changed positively in favour of the intervention group, as did negative symptoms at one- and two year's follow-up. In addition, those in the intervention group had significantly less comorbid substance abuse, better adherence, and greater treatment satisfaction. In gathering the results, Petersen et al. (2005) used several instrument and measurement techniques. The SAPS and the SANS were used as well as the GAF, the SCAN, the CSQ, and suicide attempts and suicide ideation. Duration of untreated psychosis were also used.

HCPS (Hospital-based Community Psychiatric Service)

Dahlan et al. (2013) implemented Hospital-based Community Psychiatric Service (HCPS) for approximately one year. The HCPS uses multidisciplinary team and works within office hours. The team begins the day by discussing the management progress of the patients, receiving interventions in the community. The case load is rather high, 1:40 per case manager. The case manager supports people with severe mental illness that have high relapse risk, lack of insight, poor compliance, insufficient support or unmet needs. The intervention is poorly described in the study. The study is conducted by using a naturalistic retrospective approach and therefor no need of a control group. No discussion is about antipsychotic medication treatment. The results indicate an effectiveness of the HCPS in reducing rates of hospital admissions where a reduction in hospital rates was significantly lower within one year after receiving HCPS. This is the only study without control group in the literature review, and even though the HCPS reduces rates of hospital admissions it does not demonstrate if treatment as usual would contribute the same results. In this study rehospitalization rates and social support questionnaire were used to evaluate the outcome.

Summary of the interventions

All the interventions offering psychoeducation focused on preventing relapse, by education, illness management and strengthening coping strategies. The illness explanation was a combination of biological factors and vulnerability/stress. Two of the interventions (Bäuml et al. 2007; Vickar et al. 2009) began prior to discharge and were short-term, approximately five to six months. Emphasis was on antipsychotic medication, except no discussion was on psychopharmacological treatment in Vickar et al. (2009). Lower rate of rehospitalization was detected in all the intervention groups. Both Bäuml et al. (2007) and Motlova et al. (2006) used the GAF to evaluate the effectiveness of the psychoeducation, as well as rehospitalization rates. In Motlova the GAF was used as a baseline assessment, and the main outcome measure were rehospitalization and number of days of rehospitalization in a one year follow-up, the POQ was used to evaluate satisfaction with the psychoeducation program. Finding reference related to the POQ was difficult and raises questions if the questionnaire is in fact evidence based. Bäuml et al. (2007) also used the BPRS and the LQoLP, perhaps to evaluate more thoroughly the long-term effect of psychoeducation, considering that the follow-up period were seven years. In Vickar et al. (2009), the SAPS and the SANS were used to evaluate the outcome. These instruments measures positive symptoms and negative symptoms of schizophrenia. The program implemented in this research was to help patients to understand the illness and symptoms of schizophrenia, by providing coping skills that are specific to the symptoms, daily living skills specific to the problem of the illness, social skills, and personal development. Because of the focus on education about the illness and guiding the patient through daily life it is obvious to understand why the SANS and the SAPS are selected in this research.

The studies using CBT oriented service focused on relapse prevention. While the three studies using CBT (Garety et al. 2008; Gumley et al. 2003; Malik et al. 2009), also focused on altering harmful beliefs about the illness in purpose of minimizing psychological distress and as previously mentioned, preventing early relapse. The time period of the interventions was six to nine months, except in the brief-CBT (Malik et al. 2009), where it was two or three months. In Gumley et al. (2003) the time period was only given for the first phase, which was 12 weeks. TAU was described in all the five studies but was only given to the intervention group and the control group in two of the studies (Garety et al. 2008; Gumley et al. 2003), where the remaining three only offered TAU to the control group (Klingberg et al. 2010; Wittorf et al. 2008; Malik et al. 2009). The studies mentioned or offered antipsychotic medication treatment in addition to the intervention or TAU (Malik et al. 2009; Garety et al. 2008; Gumley et al. 2003; Klingberg et al. 2010; Wittorf et al. 2008), whereas in Gumley et al. (2003) the emphasis on medication treatment was considerable. The results indicate reduction in relapse and rehospitalization, and lower rate on days spent in hospital, except in Garety et al. (2008), where the intervention did not effect rehospitalization and relapse, or days spent in hospital and in Wittorf et al. (2008) since this wasn't the studies scope. Other outcomes are numerous. In Garety et al. (2008) the CBT enhanced delusional distress and social functioning, and in Gumley et al. (2003) improvements was detected in positive and negative symptoms, global psychopathology, performance of independent function and prosocial activities. In Malik et al. (2009) there were no improvements in occupational recovery in the intervention group, whereas social contacts improved in Klingberg et al. (2010), in the CBOS group. Wittorf et al. (2008) concluded that the negative symptoms in schizophrenia and the cognitive dysfunction were key determinants of community outcome and could be a potential predictor of positive symptoms. To evaluate the outcome, Malik et al. (2009) used time to relapse, days hospitalized, as well as occupational recovery, according to the objective of the study. Gumley et al. (2003) hypothesized that CBT would result in

reduced admission and relapse, reduced positive and negative symptoms and improved social functioning. The instruments used to test the hypothesis are in concordance with the studies scope. The PANSS measuring positive and negative symptoms, the BSI measuring psychological distress, the PBIQ assessing negative appraisals of psychosis, the RSES measuring self-esteem, and the SFS measuring the social role and behavioral functioning. Perhaps it could have been an option to skip the RSES, because evaluating self-esteem is not included in the hypothesis. In Garety et al. (2008) the aim is to test effectiveness of CBT and family intervention in reducing relapse, and in improving symptoms and functioning in patients who had recently relapsed with non-affective psychosis. In order to investigate this, numerous instruments are used to measure the outcome, (see table 1), as well as remission and relapse rates. The reason for using so many instrument is unclear and raises many questions. It is seldom practical to use many instruments neither in real settings, nor in research setting. In agreement to the aim of the study it would have been enough to use either the PANSS or the PSYRATS to evaluate psychotic symptoms, and perhaps skip the IPQ measuring the subjective perception of illness, the BCSS measuring negative and positive evaluation of self and others and the General Health Questionnaire-28.

The OCM implemented by Sungur et al. (2011) include both psychoeducation and CBT previously discussed and emphasize also on relapse prevention. Included in the hypothesis was to evaluate if the intervention would achieve significantly more improvement in clinical symptoms, social functioning and caregiver's stress than the control group. In this study, the CPS-50 measuring the presence and severity of psychiatric symptoms, the MFIS measuring the severity of overall impairment, the DI evaluating individuals complete self-care, interpersonal, social, and occupational abilities, the GCS measuring the stress when caring for individual with mental disorder, the CAN assessing personal and health needs, and the QoL measuring the quality of life, was used to measure the outcome. In accordance with the hypothesis it could have been possible to leave out the QoL and the CAN as the hypothesis did not include measuring the quality of life and personal and health needs. RPP (van Meijel et al. 2006) is a relapse prevention plan that includes organizing and detecting early signs of relapse and offering action plan when relapse occurs. The purpose of this study was to determine whether the use of RPP in nursing practice is an effective intervention in reducing relapse rates. Instruments used to measure the effectiveness of this intervention were the PANSS, insight scale, the WAI, the CGI, and the CASH. Other intervention focus more on enhancing and strengthening social skills (Klingberg et al. 2010; Wittorf et al. 2008; Xiang et al. 2007; Petersen et al. 2005; Dahlan et al. 2013), with one of them (Dahlan et al. 2013) using case management. Case manager organizes and coordinates all service from several disciplines that covers the patients care plan, and helps organize the service from a multidisciplinary team (Zwarenstein et al. 2011). Several studies in this literature review, emphasize on conducting an individualized plan (Klingberg et al. 2010; Petersen et al. 2005; Sungur et al. 2011; Schmidt-Kraepelin, Janssen and Gaebel 2009; van Meijel et al. 2006). Kampman et al. (2003) focused primarily on enduring antipsychotic medication treatment, one intervention argues the importance of antipsychotic medication (Bäumel et al. 2007) while some mention antipsychotic medication as being a part of general treatment. Several studies did not mention antipsychotic medication at all (Dahlan et al. 2013; Schmidt-Kraepelin, Janssen and Gaebel 2009; van Meijel et al. 2006; Vickar et al. 2009; Xiang et al. 2007), and one study restricted antipsychotic treatment given for less than 12 weeks prior intervention, as an inclusion criteria, without explanation (Petersen et al. 2005).

The similarities these interventions have is that they all focus on relapse prevention, by using education, illness management, coping strategies, and social skills training. Their differences lie in the theoretical approach. When using cognitive behavioral approach, the focus is on

altering destructive thoughts by analyzing cognitive and psychological factors to attempt to minimize symptoms and preventing relapse. In psychoeducation more emphasis is on education, and using that to connect with the patient and discussing the patient's condition to help him understand the illness and the symptoms. In relapse prevention programs the focus is on monitoring the patient and being prepared to start an action plan if relapse occurs. Interventions focusing on social skills training and treating the patient in the community, were AOC, CRM and HCPS. While all these intervention claim to focus on individualized treatment plan, intervention selected by a software targets it by selecting an intervention that is considered matching the patient and his needs. Integrated treatment, is also highly individualized, and in the OCM, the intervention combines CBT and psychoeducation, is considered individualized and uses home-based crisis intervention as well.

In a real setting, time and resources is often lacking and has to be considered when selecting appropriate follow-up intervention. Psychoeducation can be implemented despite of sparse time, by using education and general discussion. Perhaps more time is needed when implementing CBT as a follow-up intervention but can be done with preparation and by adapting the intervention into general service. Relapse prevention has to be provided for patients with schizopfreina and other psychoses and can be adapted both in inpatient and outpatient settings.

What do the results of the studies mean?

Rehospitalization or readmission refers to admitting individual to a hospital again and is often used as a measurement in health care, research and cost effectiveness analysis. This gives an idea of, if and when an individual relapses and needs hospitalization again. When implementing an intervention, rehospitalization rates are often used to measure the quality of the intervention and if the rates of rehospitalization are lower after implementation, it points to the effectiveness of the intervention.

All the studies using psychoeducation as an intervention, showed lower rehospitalization rates (Bäuml et al. 2007; Motlova et al. 2006; Vickar et al. 2009), as did those studies measuring rehospitalization using CBT (Gumley et al. 2003; Malik et al. 2009; Klingberg et al. 2010), except in Garety et al. (2008), where using CBT and FI did not show effect on rehospitalization. On the other hand lessening of depression was detected, delusional distress enhanced and social function improves. Perhaps CBT is more effective in treating affective symptoms and social difficulties, given that the CBT focus on altering harmful thoughts and behavior in relation to how the individual structure the world. In psychoeducation the therapeutic focus is on giving information and using that through the therapeutic process, possibly being less demanding as an intervention. Because of the disability developing from schizophrenia, it has been speculated that people suffering from this illness have difficulties adapting CBT. Study results vary in conclusion of the effectiveness of CBT for schizophrenia (Butler et al. 2006; Lynch, Laws and McKenna 2010), and it is often recommended as an adjunctive treatment. The Royal Australian and New Zealand College of Psychiatrists clinical practice guidelines for the treatment of schizophrenia and related disorders (2005), emphasize the effectiveness of CBT as a complementary treatment and recommend that CBT should be routinely available, particularly when positive symptoms are reluctant to respond to drug treatment. CBT should also be used to target distress and comorbidity. The clinical practice guidelines also recommend that further research need to be conducted with focus on improvement of CBT and related psychological interventions.

The OCM intervention group (Sungur et al. 2011) showed better clinical and social recovery than the control group. This intervention used both psychoeducation and CBT. Perhaps it is effective to combine psychoeducation and CBT? Implementing an intervention based on the individual is effective and combining different treatments can be necessary.

Measurements

Approximately thirty-eight instruments were used to measure the outcome of the interventions in the fifteen studies included in this literature review (table 2). The studies used other assessments when measuring the outcome that will not be discussed in this literature review, like social- and demographic factors, measurements of level of antipsychotic medication etc.

The GAF (Global Assessment of Functioning)

The GAF measures change in psychiatric patients by evaluating the psychological, social and occupational functioning on a continuum of mental health illness. The GAF is widely used, both in clinical practice and research environment. The reliability for the GAF has been measured sufficient (Startup, Jackson and Bendix 2002; Jones et al. 1995), even though clinicians have minimal training in using the instrument. It has also been concluded that the instrument is not reliable in all circumstances, that the reliability of the instrument are weak and show poor validity when practiced in realistic context compared with research environment (Grootenboer et al. 2012; Vatnaland et al. 2007). The argument being that most of studies concluding in good reliability and validity are carried out in a research setting with highly trained raters (Grootenboer et al. 2012; Niv et al. 2007) that are very well aware that their ratings are being monitored (Vatnaland et al. 2007). In clinical setting the practical use of the GAF is to measure changes over time. The common use of the GAF can be explained by how easy it is to use and the that minimal training is required. In addition, it is included in axis V of the Diagnostic and Statistical Manual (DSM-IV), used for patients diagnoses and treatment mainly in the USA. The reasons for absence of adequate reliability of GAF scores in realistic context could be lack of time and resources in acute departments, difficulties in precise ratings in first time admissions because of limited information about the patient, shortage of regular training on the GAF instrument and lack of test awareness among raters (Vatnaland et al. 2007).

In measuring symptoms in psychotic disorders, numerous instruments are available. In this literature review, four instrument that explicitly measure symptoms in psychotic disorders, are utilized. They are the PANSS, the PSYARTS, the SAPS and the SANS.

The SAPS (Scale for Assessment of Positive Symptoms) and the SANS (Scale for Assessment of Negative symptoms)

The SAPS and the SANS are instruments commonly used parallel. These instruments were developed by Andreasen and Olsen (1982), showing good reliability and validity. When assessing the comparative interrater reliability of the SANS/SAPS and the PANSS and examining the interrelationship between the scores of these instruments, Norman et al. (1996)

found out that these instruments showed good interrater reliability but perhaps a bit lower than previously reported. The SAPS is summed up in three dimensions (psychotic, negative, and disorganised), and the SANS measures the negative symptoms. The SANS/SAPS instruments are under critique regarding factor structure. Dollfus and Petit (1995) concluded that the three components in SANS/SAPS were stable, but Peralta and Cuesta (1999) concluded that there was a low internal reliability of the SAPS/SANS. They concluded that the negative symptoms were divided largely into three factors; poverty of speech, social dysfunction, and attention, and that the positive symptoms were divided into nine factors, thought disorder/inappropriate affect, schneiderian delusion, other delusions, paranoid delusions, bizarre behaviour, non-auditory hallucination, auditory hallucination, and manic thought disorder.

The PANSS (Positive and Negative Syndrome Scale)

Kay, Flszbein and Opfer (1987) developed the PANSS from several studies conducted by the authors. It is used to measure positive symptoms, negative symptoms, and general psychopathology. This is an instrument that can be used in a brief period of time but gives an opportunity for the interviewer to observe the patients' behaviour, both physical and interpersonal, the way the patient reacts to structured questioning and at the same time monitor thought content and cognitive-verbal processes. According to Kay, Flszbein and Opfer (1987), the PANSS has good reliability and validity. Good interrater reliability have been documented but perhaps on the whole lower than previously reported (Norman et al. 1996). Other studies have also reported good interrater reliability but only when raters have attended three training sessions in using the instrument (Müller and Wetzel 1998). In addition, there is evidence that the majority of authors (62%) use the PANSS calculation inaccurately when calculating the outcome (Obermeier et al. 2011). There are over 25 years since this instrument was developed and it is still used frequently despite criticism. Factor analysis is one of the components being discussed when analysing the PANSS. Kay, Flszbein and Opfer (1987) proposed two symptom dimensions, positive and negative symptoms, whereas there has been discussion of including from three to six symptom dimensions in the PANSS (Bryson et al. 1999; Emsley et al. 2003; Van den Oord et al. 2006).

The PSYRATS (Psychotic Symptom Rating Scale)

The PSYRATS is frequently used instrument, good in psychometrical assessments on delusions and hallucinations, even though the research on it is still considered deficient. This instrument has shown good interrater reliability and validity when measuring delusions and hallucinations in psychotic patients, both in chronic schizophrenia and first episode psychosis and in affective disorders with delusions (Haddock et al. 1999; Drake et al. 2007; Kronmüller et al. 2011). In Drake et al. (2007) the PSYRATS subscale correlated well with corresponding PANSS components, emphasizing the validity of the PSYRATS. This instrument assesses a wide range of information relevant to essential symptoms of psychosis despite being an instrument easy to use (Steel et al. 2007).

When comparing the PANSS and the PSYRATS, the PANSS seems to miss the complexity of the symptoms because it is limited to a single item for key symptoms and lack of other relevant dimensions such as emotional distress that can be the result when focusing on a

single dimensions of symptoms. In attempt to improve this, PSYRATS was developed, where the separation of delusions and auditory hallucinations is made. When discussing the difference between the PANSS and the SAPS and the PSYRATS, Steel et al. (2007) examine that the instruments, based on diagnosis, only reflect selected aspects of the psychotic symptomatology. Steel et al. (2007) explain this by covering the insensitivity of the PANSS and the SAPS in measuring the distress associated with hallucinations and/or their negative content. This can be important considering the relationship between the distress following these symptoms that can present itself as depression and/or anxiety.

The BPRS (Brief Psychiatric Rating Scale)

Overall and Gorham (1962) presented the BPRS instrument where they described in details how to use the instrument and recommended approximately 20 minutes time period in conducting the interview. Although, depending on how well the interviewer knows the client, it can take 10-40 minutes to conduct (Morlan and Tan 1998). Overall and Gorham (1962) suggest using two raters to enhance the interrater reliability, however in realistic settings, with lack of time and resources using two raters is not always an option (Morlan and Tan 1998). Since the development of the BPRS, an expanded version of 18-item instrument and again a 24-item instrument has been developed. The latest 24-item version has shown good interrater reliability (Ventura et al. 2000).

The BSI (Brief Symptom Inventory)

The BSI was used in Gumley et al. (2003) to measure the psychological distress at baseline. The BSI assess the psychological symptoms of psychiatric and medical patients. This is a self-report scale that is easy to administer and takes a short time to complete (Derogatis and Melisaratos 1983). Morlan and Tan (1998) found out, when comparing the total score of the BSI and the BPRS, that they were significantly correlated, concluding in that either instrument could be used when assessing overall symptomatology. They stressed that when selecting either instrument, factors like time, availability of trained raters, the richness of information needed, and how to include the assessment into clinical setting, should be considered.

The CPS-50 (Current Psychiatric State)

When evaluating patients psychiatric state the focus is on which symptoms the patient is experiencing and the severity of the symptoms, the time frame is the existence of all symptoms the past month. The CPS-50 overlap the factors in the 24-item BPRS in many ways but has the advantage of evaluate wider range of psychopathology than the BPRS, including eating and sleep problems, anxiety and obsessive-compulsive symptoms and post-traumatic stress. The CPS-50 shows satisfactory interrater reliability (Falloon et al. 2005).

The CGI (Clinical Global Impression Scale)

The CGI is a well established measurement instrument that can be used with all psychiatric disorders. The CGI has been criticized for being inconsistent and unreliable, or too general and studies have reported doubt on the validity of the CGI (Forkmann et al. 2011). In better to assess the global severity of illness with the CGI-S a structured interview guide for global impressions (SIGGI) was developed (Targum et al. 2013). It provides particular queries to identify symptoms relevant to the patient. In addition to assisting with accurate rating in the CGI-S, the SIGGI may enhance the interrater reliability and scoring precision.

The CGI-SCH (Clinical Global Impression- Schizophrenia) is an instrument designed to assess the main symptoms in schizophrenia. It was adapted from the CGI scale and the CGI-Bipolar Patient (CGI-BP) scale. The CGI-SCH scale is valid and the reliability is significant in all but one dimension, the depression dimension. In addition it correlates well with the GAF and PANSS scores, especially for positive and negative symptoms (Haro et al. 2003). When evaluating outcome of an intervention (RPP) for patients with schizophrenia, van Meijel et al. (2006) selected the CGI in stead of using the CGI-SCH, an instrument adapted for individuals with schizophrenia.

The SOFAS (Social and Occupational Functioning Assessment Scale)

The SOFAS have been criticized for being too general in measuring social and occupational functioning in schizophrenia. Burns and Patrick (2007) conducted a literature review covering the use of social functioning scales in research, where they examined the scales in regard to structure and psychometric properties. They detected a marked lack of data on psychometric properties. Scales varied considerably in terms of measurement approach, number and types of domains covered and scoring system. Those social functioning scales most frequently used when assessing social function in schizophrenia were the GAF, the GAS (Global Assessment Scale) and the SFS (Social Functioning Scale). Other instrument that measured social function and previously discussed in this literature review are the SFS, the SAS-II, and the SDSS.

Quality of life measurements

The instruments measuring quality of life analyzed in this review are the QLS (Quality of Life Scale) and the LQoLP (the Lancashire Quality of Life Profile). The validity and reliability of the LQoLP has been favorable (van Nieuwenhuizen et al. 2001; Oliver et al. 1997). Why is it important to measure quality of life when evaluating outcome of an intervention given to patients with psychotic disorders? Do we have the time and resources to evaluate these factors? Is it less important than for example evaluating the positive or negative symptoms in schizophrenia? It is difficult to answer these questions, but it is important to use instruments that answers the research questions or focus on the studies scope, and when investigating the quality of life these instruments have to be adapted. For example when evaluating the outcome from the CBOS interventions (Klingberg et al. 2010), skipping the quality of life measurement could have been an option because it was not the studies scope.

Insight measurements

Insight can be defined by covering five aspects; (1) awareness of being mentally ill, (2) understanding the need for treatment, (3) understanding the social consequences of mental disorder, (4) recognition of having a mental illness, and (5) acknowledgment of symptoms of a mental disorder (Michel et al. 2013). Poor insight have been connected to a coping mechanism where the individual tries to reject the stigma of mental illness (Lysaker et al. 2005). 30-50% of individuals suffering from schizophrenia have poor insight (Baier 2010), which is an important factor regarding recovery in individuals with schizophrenia or other psychoses. Patient with poor insight is less likely to follow through with planned treatment. Several instruments exist that measure the patients insight. In this review three instrument were analyzed that measure insight, the SUMD, the Insight Scale and the ITAQ.

The SUMD is seldom used in clinical practice, because of its length of 74 items, but more often in clinical trials and epidemiological studies (Michel et al. 2013). A shorten version of the SUMD, with nine items, has been used and seems to be reliable and valid when measuring insight in patients with schizophrenia (Michel et al. 2013).

The Insight Scale is a three dimension self-report scale that covers attribution of symptoms, awareness of illness and need for treatment, with total of eight items (Birchwood et al. 1994).

The ITAQ (Insight and Treatment Attitude Questionnaire), an instrument that focus on how the patient accepts the psychiatric illness and the beliefs he holds regarding treatment (Xiang et al. 2007).

The PBIQ (Personal Beliefs about Illness Questionnaire)

The PBIQ has been further developed and has a good level of validity and reliability in schizophrenia and schizophreniform diseases (Birchwood et al. 2012; Acosta et al. 2013). In spite of that it has not been able to make a distinction between patients with or without past suicidal behaviour (Acosta et al. 2013). When evaluating the risk of suicide after discharge it is important to consider that if adapting the PBIQ instrument.

Self-esteem measurments

Two instruments measuring self-esteem were detected, the BCSS and the RSES. Fowler et al. (2006) compared the basic psychometric properties of the BCSS in non-clinical and clinical samples, including internal consistency, stability, item factor analysis, and concurrent reliability with the RSES (Rosenberg Self- Esteem Scale) and subscales of the YSQ (Young's Schema Questionnaire). The results indicate that the BCSS have great psychometric properties and have more independence from mood than the RSES. The RSES is an instrument that is easy to use in a short time and do not require training for the clinician (Schmitt and Allik 2005; Pullmann and Jüri 2000). The RSES is probably the most widely used self-esteem measurement available.

The WAI (Working Alliance Inventory)

This instrument has shown sufficient validity and reliability. The WAI-SR is an improved instrument based on the WAI and measures the same three aspects of therapeutic alliance proposed by Bodin (1979). The WAI-SR shows a clearer representation of the alliance dimensions and improvements in confirmatory factor analysis (CFA) by removing negatively phrased items (Munder et al. 2010).

The CAN (Camberwell Assessment of Need)

This instrument was developed in 1995 by Phelan et al. (1995), and their study found the instrument to be valid and reliable. A Greek research version is also available that shows a good reliability and validity (Stefanatou et al. 2013).

Selecting the most appropriate instrument

How do we know if the instrument measures what it is intended to measure? Validity of an assessment is the degree to which it measures what it is supposed to measure and the reliability is the consistency of a measure. When we get the same result over and over again, the instrument is reliable. When choosing the most practical instrument to measure effect of an intervention, several aspects has to be kept in mind. Not only is there the consideration of the time and resources available when implementing and evaluating the intervention, but also the question asked and what the treatment targets.

The instruments or scales selected, should have high levels of resolution and sensitivity, also it should be easy to analyse the data. Scale is believed to be easy to use if they do not take long to complete, have a straightforward format and distinct defined questions or factors being measured. If a scale provides a clear picture of the factors being measured and includes important features of psychopathology, the scale is high in resolution. When a scale detects an appropriate change of a certain aspect the scale is sensitive (Morlan and Tan 1998).

If self-report measurement instrument are selected they have several advantages. The information is gathered directly from the individual and therefore it is exclusive, they take less time considering the resources available and can be included in real settings. The self-report measures are easy to analyse, they can be used in evaluating many therapeutic interventions, and can be used as a support in clinical decision making (Derogatis and Melisaratos 1983).

What are proper measurement instruments? When selecting a proper measurement instrument it is important to select instruments that are in agreement with the question being asked, the group that is being investigated and the symptoms examined. What are the research questions or what is being measured in real settings?

This literature review demonstrates thirty-eight instruments that are used to measure interventions in fifteen studies. The instruments vary greatly in what they measure and how commonly they are applied. Those instruments most often used is the GAF and the PANSS.

The GAF evaluates psychological, social, and occupational functioning. It has good reliability and validity in research settings but week reliability and poor validity when practiced in realistic context. It demands minimal training when used and is useful to measure change over

time. The GAF were used to evaluate outcome when implementing psychoeducation (Bäumel et al. 2007), CBOS (Wittorf et al. 2008), AOC (Kampman et al. 2003), and integrated treatment (Petersen et al. 2005). In all these interventions the GAF was appropriate to use when assessing change over time and can predict if the interventions are effective in strengthening the patients psychological, social, and occupational functioning. It was used to measure baseline characteristics in two studies (Motlova et al. 2006; Schmidt-Kraepelin, Janssen and Gaebel 2009). This instrument is widely used, but difficult to recommend it because evidence is of weak reliability and poor validity when practiced in clinical settings.

The PANSS measures the prevalence in positive symptoms and negative symptoms in schizophrenia, as well as measuring the general psychopathology. This instrument gives the possibility for observing the patients' behavior, both physical and interpersonal, the way he reacts to structured questioning and at the same time monitor thought content and cognitive – verbal processes. This instrument has good reliability and validity, however it is recommended that the raters are trained, also calculating the PANSS inaccurately have been seen in the majority of researcher (Müller and Wetzel 1998; Obermeier et al. 2011). Factor analysis is being discussed, and from three to six symptom dimensions have been proposed for the instrument (Bryson et al. 1999; Emsley et al. 2003; Van den Oord et al. 2006). Four interventions used the PANSS to measure outcome, in CRM, (Xiang et al. 2007), in CBT (Garety et al. 2008; Gumley et al. 2003), and in CBOS (Klingberg et al. 2010). Gumley et al. (2003) hypothesized that CBT would result in reduced admission and relapse, reduced positive and negative symptoms and improved social functioning. In agreement with the hypothesis the PANSS is appropriate according to the intervention and what is being examined. In Garety et al. (2008) the aim is to test effectiveness of CBT and family intervention in reducing relapse, and in improving symptoms and functioning in patients who had recently relapsed with non-affective psychosis. The PANSS is relevant when implementing this intervention and to investigating the aim of the study. In implementing CRM (Xiang et al. 2007), the PANSS is appropriate according to the intervention and to test the secondary hypothesis, that the CRM could significantly improve psychotic symptoms and insight and decrease the rates of relapse and rehospitalization in comparison with group psychoeducation. When implementing a CBOS (Klingberg et al. 2010), preventing relapse in patients with schizophrenia is being studied, and therefore the PANSS is established as appropriate to the intervention. Two other studies use the PANSS to measure symptoms at baseline (van Meijel et al. 2006; Wittorf et al. 2008).

The SAPS and the SANS are most often used parallel and measures positive and negative symptoms in schizophrenia. These instruments show good reliability and validity (Norman et al. 1996; Peralta and Cuesta 1999). They have been criticized for their factor structure and different views exist on how many factor should be included in the instruments. One study used the SAPS/SANS to evaluate the outcome from an integrated treatment (Petersen et al. 2005), and in concordance with the null hypothesis, that no difference would be between integrated treatment and standard treatment with regard to psychotic and negative symptoms, treatment adherence, admissions, use of bed days, substance abuse, accommodation status, labour market affiliation, and user satisfaction, the use of the instruments are appropriate in the intervention. Other study (Vickar et al. 2009), used the instruments to measure symptoms severity at baseline.

The PSYRATS measures the severity of delusions and hallucinations. This instrument has good interrater reliability and validity (Haddock et al. 1999; Drake et al. 2007; Kronmüller et al. 2011), although the research on it is still considered deficient. This instrument evaluated the outcome of CBT and family intervention (Garety et al. 2008), and testing if theses

interventions reduced relapse, improved symptoms and function in patients recently relapsed with non-affective psychosis. This instrument only measures delusions and hallucinations in psychotic patients and therefore does not cover negative symptoms etc. PANSS would be more appropriate to use according to the studies' scope, and is used as well to evaluate the outcome. Perhaps that is one of the reason for why it is adopted lesser in research than e.g. the PANSS. That said, compared to the PSYRATS, the PANSS seems to miss the complexity of the symptoms, such as emotional distress experienced in psychosis (Steel et al. 2007).

The BPRS measures patients' psychiatric status and contributes information about symptom characteristics, where the clinicians ask the questions included in the instrument. This instrument was presented as 16-item instrument in 1962, and is now a 24-item instrument, that shows good interrater reliability (Ventura et al. 2000). This instrument was used when evaluating outcome from a psychoeducation (Bäumel et al. 2007), where the psychopathology and social functioning and quality of life were among the main targets. This instrument is appropriate according to the dimension measured and the targets of the study.

The BSI is a brief self-report symptom scale that assesses the psychological symptoms of psychiatric and medical patients. This instrument is valid and reliable and takes less than ten minutes to complete (Derogatis and Melisaratos 1983). Gumley et al. (2003) used this to measure psychological distress at baseline.

The CPS-50 is a semi-structured instrument, that covers general health, eating disorders, sleep/fatigue, dysphoric mood, anxiety disorders, elevated mood, psychotic symptoms, and cognitive screening. The instrument show satisfactory interrater reliability (Falloon et al. 2005). When implementing OCM this instrument were used to evaluate the outcome, and in concordance with the studies hypothesis, which is testing if improvements occur in clinical symptoms, the instrument is appropriate.

The CGI measures symptom severity, improvement of illness and treatment efficacy. It has been criticized for being inconsistent and unreliable, or too general, and doubt have been reported on the validity of the instrument. In van Meijel et al. (2006) the Global Impression Scale of the CGI was used to measure change over time. It is difficult to evaluate if this instrument is appropriate because of the scarcity of information in the paper regarding this instrument. The research question was "do patients with schizophrenia and related psychotic disorders, with whom the RPP are applied have less chance of undergoing a psychotic relapse than do patients who receive TAU", and in relation to the question and that the reliability and validity are weak, the instrument is hardly appropriate to use. One study used this instrument as a baseline assessment (Schmidt-Kraepelin, Janssen and Gaebel 2009).

The SOFAS measures the level of social and occupational functioning, and is adapted from the GAF. This instrument has been criticized for being too general in measuring social and occupational functioning in schizophrenia. No evidence based data have been found regarding the validity and reliability of the SOFAS (Burns and Patrick 2007). When implementing CBT and family intervention (Garety et al. 2008), the SOFAS were used to evaluate the outcome of social functioning and according to the aim of the study, the instrument is appropriate, but because there is no evidence found regarding validity and reliability of the instrument it could be better to use instrument that have been tested for this.

The SFS measures social role and behavioral functioning, and has shown good reliability and validity (Birchwood et al. 1990). When evaluating the outcome from a CBT, Gumley et al. 2003, used this instrument to test if the CBT would improve social functioning in patients

with schizophrenia. This instrument is appropriate according to the intervention and the questions asked in the study.

The SAS-II is a semistructured interview that compares the patients' functioning level with the society's standard and demands. Scarce literature was found on data covering this instrument and therefore no data were found on validity and reliability of the instrument. Wittorf et al. (2008) used this instrument to evaluate outcome from a CBOS, when evaluating the functional outcome in the work, social and leisure, and household domain. This instrument is not recommended due to lack of evidence based literature but seems to cover one of the purpose in the study.

The SDSS measures social functioning. When implementing the CRM, Xiang et al. (2007) used this instrument to evaluate the outcome and the instrument is appropriate according to the studies hypothesis. This instrument has been used in several other studies (Ran et al. 2011; Wang et al. 2013), most of them being from China. When searching for literature related to the instrument it was difficult to find literature describing this instrument thoroughly, and therefore evidence regarding reliability and validity were not found. As a result of that it is troublesome to recommend this instrument.

The DI measures individual's complete self-care, interpersonal, social, and occupational abilities. Sungur et al. (2011) used this instrument to measure disability and social function, when implementing OCM. According to the authors the instrument derives from the Charing Cross Health Index. According to this analysis, the references used in the paper have incorrect publication year and finding literature covering this instrument in established databases are problematic. No evidence is found regarding reliability and validity of the instrument. According to this, the DI is not appropriate as a measurement instrument.

The MFIS measures the severity of complete impairment related to symptoms experienced. This instrument was also used when evaluating outcome from OCM (Sungur et al. 2011). Finding reviewed data on this instrument was difficult and no information was found on reliability and validity regarding this instrument.

The LQoLP measures the quality of life, and the validity and reliability of this instrument has been favorable (van Nieuwenhuizen et al. 2001; Oliver et al. 1997). Two studies use this instrument to evaluate the outcome from an intervention, when implementing psychoeducation, (Bäumel et al. 2007) and intervention selected by a software (Schmidt-Kraepelin, Janssen and Gaebel 2009). In both these studies one of the purpose is to evaluate quality of life after implementing the intervention. This instrument is appropriate according to the intervention and the question asked in the studies.

The QLS measures the quality of life, and has shown good reliability (Heinrichs, Hanlon and Carpenter 1984). When implementing OCM (Sungur et al. 2011), this instrument was used to evaluate the outcome. It could have been possible to skip this measurement, as the hypothesis did not include measuring the quality of life. The hypotheses were that, OCM integrating pharmacotherapy with cognitive-behavioural and social interventions would achieve significantly more improvement in clinical symptoms, social functioning and caregiver's stress than RCM. In accordance with this hypothesis, using quality of life measurements are not relevant.

The SUMD measures insight, and is used in clinical trials and epidemiological studies rather than in clinical practice, because of its length of 74 items. A shorter version of the SUMD, with nine items, has been used and seems to be reliable and valid when measuring insight in

patients with schizophrenia (Michel et al. 2013). This instrument was used when measuring the therapy process when implementing CBT and family intervention (Garety et al. 2008). There is scarce discussion about the handling of the instrument in the study and difficult to see the outcome deriving from the instrument (Garety et al. 2008). According to the aim of the study measuring insight is not essential. If the goal is to use this instrument in clinical practice it would be more appropriate to use the shorter version of the SUMD.

The Insight Scale is a self-report scale that measures insight. It has shown good reliability and validity (Birchwood et al. 1994). This instrument was used to measure insight after implementing RPP (van Meijel et al. 2006), where evaluating insight were a part of the second research question. This instrument is appropriate to use for this intervention and the validity and reliability has also been studied. It is relevant to measure insight after implementing a RPP as the patients insight can determine the likelihood of him following through with planned treatment and the probability of relapse.

The ITAQ is a semi-structured interview that focus on how the patient accepts the psychiatric illness and the beliefs he holds regarding treatment. The reliability and the validity of the instrument is uncertain because finding research on it were difficult. When implementing the CRM, Xiang et al. (2007), measured, as a part of the second hypothesis, the insight. It is difficult to advise using this instrument when the reliability and validity is uncertain but the hypothesis in the study needs insight measurements. It could be possible to use other insight scales like the SUMD or the Insight Scale.

The PBIQ measures patients understanding of their illness and how it effects their lives. This instrument has been further developed and has a good level of validity and reliability in schizophrenia and schizophreniform diseases (Birchwood et al. 2012; Acosta et al. 2013). In spite of that it has not been able to make a distinction between patients with or without past suicidal behaviour (Acosta et al. 2013), that is important to consider when using this instruments because of high risk of suicide in the first month after discharge from a hospital settings (Crawford 2004; Hunt et al. 2009). When implementing CBT, Gumley et al. (2003) used this instrument to assess negative appraisals of psychosis at baseline.

The IPQ evaluates cognitive representation of the illness. The instrument has shown good reliability and validity (Weinman et al. 1996). Garety et al. (2008) used the IPQ to measure therapy process when implementing CBT and family intervention. According to this analyzis no discussion is in the paper regarding the outcome. Because of scarce information in the study using the instrument it is difficult to evaluate if the instrument is appropriate according to the intervention. It is interesting to consider why they use this instrument but do not account for it in their results. Did the measurement fail in any way? Was the result a disappointment? If the IPQ is not convenient because of its length, a brief IPQ and revised version of the IPQ, has been developed and has, as the IPQ, shown a good test-retest reliability and validity (Broadbent et al. 2005; Moss-Morris et al. 2002; Weinman et al. 1996).

The BCSS is a rapid self-rated measure of negative and positive evaluations of self and others. This instrument has good reliability and validity (Fowler et al. 2006). When measuring the therapy process when implementing CBT and family intervention, Garety et al. (2008) used this instrument, but no discussion is available of the outcome in the paper. It is not possible to recommend this instrument as appropriate because of limited information.

The RSES is a self-report instrument that measures self-esteem. The validity and the reliability of the instrument is strong (Robins, Hendins and Trzesniewski 2001). The RSES is an instrument that is easy to use in a short time and do not require training for the clinician

(Schmitt and Allik 2005; Pullmann and Jüri 2000). This is probably the most widely used self-esteem measurement available. When implementing CBT, Gumley et al. (2003) used this instrument to measure negative appraisal of self as a baseline measure.

Fowler et al. (2006) compared the basic psychometric properties of the BCSS in non-clinical and clinical samples, including internal consistency, stability, item factor analysis, and concurrent reliability with the RSES and subscales of the YSQ (Young's Schema Questionnaire). The results indicate that the BCSS have great psychometric properties and have more independence from mood than the RSES.

The CAN evaluates the social and clinical needs of people with mental disorders. The reliability and validity of the instrument is good (Phelan et al. 1995). When implementing the OCM, Sungur et al. (2011) used this instrument to assess needs. This instrument is not appropriate according to hypothesis, where it did not include measuring personal and health needs.

The ECI assesses the experience of caring for a relative with a severe mental illness. This instrument has shown good validity and reliability and has ten subscales that have shown good internal consistency (Szmukler et al. 1996). When implementing CBT and family intervention, Garety et al. (2008), used this instrument. Insufficient information is given in the paper regarding the outcome of this instrument, and therefore difficult to evaluate if it is appropriate instrument according to the intervention.

The CFI measures expressed emotions (EE), that are some essential aspects of interpersonal relationship, including critical comments, hostility, emotional overinvolvement, number of positive comments, and warmth. The reliability and validity of the instrument is uncertain but it is the most widely used instrument that measures EE. This instrument is relatively long, taking one and/or two hours to complete (Wearden et al. 2000). When implementing CBT and family intervention (Garety et al. 2008), this instrument was used to assess levels of EE. According to the results, a reduction in levels of criticism (EE) were significant by those receiving family intervention. Using this instrument for this intervention is appropriate because it corresponds to the hypothesis in the study.

The WAI measures the quality of the therapeutic alliance. This instrument has shown sufficient validity and reliability (Munder et al. 2010). van Meijel et al. (2006) used the client version of the WAI to measure the quality of the therapeutic alliance, when implementing RPP. The measurements of the WAI showed significant effects regarding the quality of the therapeutic alliance. One of the research questions were to study the effects of the working alliance between patient and nurse, therefore this instrument is appropriate when evaluating the outcome of the intervention.

The GCS measures the stress when caring for an individual with a mental disorder. The reliability and validity of this instrument is uncertain because finding literature covering this instrument was difficult. The reference the author give, is a book chapter from 1985 that is challenging to attain. When implementing OCM, Sungur et al. (2011) used this instrument to measure the stress when caring for individual with mental disorder, as this topic were a part of the hypothesis. On account of difficulties in gaining evidenced based literature covering this instrument it is not suitable to recommend the use of this instrument.

The CSQ measures consumer satisfaction in health and human service systems. Client satisfaction is one of the most important factors in health care and can directly effect outcome of several treatments, especially in mental health care. When implementing integrated

treatment, Petersen et al. (2005), measured client satisfaction in concordance with their null hypothesis. The reliability and validity of this instrument is not clear because of scarce or out to date literature on the instrument. To evaluate the satisfaction with intervention selected by a software, Schmidt-Kraepelin, Janssen and Gaebel 2009, used the ZUF-8 (Fragebogen zur Patientensufriedenheit), a self-evaluation questionnaire that represent the German version of the CSQ. The ZUF-8 have proven to be reliable and valid (Gebhardt, Wolak and Huber 2013).

The BDI-II measures depression and is one of the most widely used depression measurement instrument. This instrument has shown good reliability and validity (Whisman, Perez and Ramel 2000). To assess the level of depression in patients with psychoses, when implementing CBT and family intervention (Garety et al. 2008), this instrument was used. Being valid and reliable and extensively used it is appropriate when measuring levels of depression.

The BAI measures anxiety severity and has shown good reliability and validity (Beck et al. 1988). This instrument was also used when implementing CBT and family intervention (Garety et al. 2008), in measuring levels of anxiety. As in the BDI-II, the BAI can be recommended when assessing levels of anxiety, being valid and reliable.

The POQ measures outcome of psychoeducation and evaluates facts about family atmosphere, disease management, ability to cope, etc. To assess outcome from psychoeducation, Motlova et al. (2006), used this instrument. Reliability and validity of this instrument is unclear because no data were found relevant to this instrument, when searching in established databases. The reference the author uses is not achievable. On account of that, this instrument is not appropriate for this assessment.

Many other instruments were applied that will not be covered in this summary. It is clear that numerous instrument exist that measure diverse psychological and social aspects, psychiatric symptoms, as well as the health care provided.

Public health perspective

Follow-up intervention can improve recovery and hinder relapse and rehospitalization. Enhancing the service that people receive in hospital care by thoroughly plan aftercare by coordinate a comprehensive discharge plan is feasible. Adequate follow-up interventions could decrease suicide rate and, in addition, minimize disability deriving from psychotic disorders. It is also achievable to figure out future mental health utilization when discharging patients and therefore select suitable follow-up (Kolbasovsky, Reich and Futterman 2007).

Policy makers need to consider these aspects when organizing mental health service. They also need to consider cost and effectiveness of the service they are providing. Cost-effectiveness analyzis is an important method for health economic evaluation and should be used when planning health care. Information about predictors of rehospitalization is essential in this evaluation and possibility to assess future utilization of mental health service is available. Cost-effectiveness analyzis show that other resources than hospitalization can be as effective, and are often more cost-effective (Fenton et al. 2002; Hawthorne et al. 2009).

Limitations

Comparison between different interventions was difficult, mostly because some studies described their interventions thoroughly while others did not, that can be partly because of different methodological approach in the interventions and that some interventions were more evidenced based than others.

Being a thesis from the Nordic School of Public Health, it is interesting to include a discussion that is relevant to the nordic countries. Discussing the nordic perspective were deficient in this literature review and only two studies were from the nordic countries, from Finland and Denmark (Kampman et al. 2003; Petersen et al. 2005). Comparing them and detecting a nordic trend was difficult.

In the 1990s deinstitutionalization began in the Nordic countries, where care moved from institutes to the community. The idea was to move authority, both administrative and policy, to lower levels in public and private sector. This was seen as a response to increased demand on better quality in the service provided (Magnussen, Vrangbaek and Saltman 2009). Over these 20 years the number of hospital days have decreased rapidly and the focus has moved from inhospital treatment to community provided health care. In 2011 the mean hospital days in acute psychiatric settings was 11-13 days in Landspítali, University hospital of Iceland (Matthíasson 2012, <http://www.landspitali.is/lisalib/getfile.aspx?itemid=33010>). Similar trend is seen in the other European and Nordic countries (Hansson 1989; Medeiros et al. 2008).

The importance of analyzing the similarities and differences of the Nordic countries is considerable, it gives an opportunity to learn from each other, using successful methods previously adopted and implementing them. Also, one can avoid interventions and programs that have proved less successful.

What this literature review adds

This literature review reports on what kind of follow-up interventions are most often used for people suffering from psychotic disorders and how these interventions are measured. The evaluation of interventions implemented is important and should always be a part of the implementation, it is also important to contemplate what kind of instruments are being used in the evaluation. This literature review evaluates if the quality of the instruments is sufficient by studying if they are valid and reliable. This literature review analyzes those interventions most often used and the instruments used to measure their effect.

CONCLUSION

According to this analysis follow-up interventions offered to people with psychotic disorders are psychoeducation, CBT, CBOS, RPP, OMC, AOC, CRM, intervention selected by a software, integrated treatment and HCPS. The essence of these follow-up interventions is individualized perspective and education, illness management, strengthening coping strategies, social skills training, relapse preventions, and altering harmful understanding of the illness.

In a real setting, time and resources are often lacking, which has to be considered when selecting appropriate follow-up intervention. Psychoeducation can be implemented despite

sparse time, by using education and general discussion. Perhaps more time is needed when implementing CBT as a follow-up intervention but it can be done with preparation and by adapting the intervention into general service. Relapse prevention can be provided for patients with psychotic disorders and can both be adapted in inpatient and outpatient settings.

The conclusion of this literature review is that psychoeducation is the most appealing intervention to use as a follow-up program for patients suffering from psychotic disorders.

Selecting the most practical measurement instrument is important. They have to be relevant to the psychological symptoms, the selected treatment and the time and resources available when implementing and evaluating the intervention. As is the question asked when implementing the intervention or conducting the research.

Numerous instruments were used to evaluate outcome from follow-up interventions, these instruments measured psychological, social, and occupational functioning, symptoms and symptom severity, impairment related to symptoms, degree of disability, quality of life, insight, how the patients understood their illness, self-esteem, use of other health care services, the social and clinical needs, expressed emotions, quality of therapeutic alliance, experience of caring for a relative with severe mental illness and the stress when caring for them, satisfaction with service and outcome from specific intervention.

The instrument considered most practical to use when evaluating outcome of an intervention offered to patients suffering from psychotic disorders is the PANSS. Other valuable instruments that can be used are the BPRS, the SAPS and the SANS, as well as the PSYRATS. The GAF is feasible to use in research settings.

Using instruments that are not evidence based and have not been tested for reliability and validity are problematic. It is troublesome to see that several instruments analyzed in this literature review have poor validity and reliability, approximately eleven of these thirty-eight instruments had weak or unclear reliability and validity. Those instruments were the CGI, the SOFAS, the SAS-II, the SDSS, the DI, the MFIS, the ITAQ, the CFI, the GCS, the CSQ and the POQ.

Offering patients suffering from schizophrenia and other psychoses adequate aftercare has to be prioritized and is an important public health issue.

The next steps

It would be interesting to assess what kind of follow-up interventions are used in clinical settings and what kind of instruments evaluate the outcome. To investigate how psychoeducation or CBT is implemented and if and how it is evaluated. Do we have the time in clinical practice to evaluate everything we do? Are the instruments used in research settings practical in clinical practice?

How many measurement instruments is appropriate to use when measuring outcome from an intervention. This could be interesting to study. Why are many instruments used in one research? Is it because the research question is unclear or are there too many questions asked in the research?

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