Motivational Interviewing in Patients with Acute Psychosis: First Insights from a Pilot Randomized Controlled Trial.

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Abstract

Background and objective: Psychotic disorders are among the top causes of disability worldwide. Guidelines emphasizes the need for research to tailor psychotherapeutic approaches to the acute phase of this illness. Motivational Interviewing (MI) is highly suitable for establishing a therapeutic alliance wherein the patient's intrinsic motivation can be strengthened to adhere therapy and overcome ambivalence towards treatment. Therefore, this pilot study aimed to investigate the feasibility and impact of a brief intervention with MI for patients with psychosis in an acute psychiatric inpatient setting.
Method: This pilot study was conducted as single-centered, randomized control trial (RCT), comparing a brief intervention with MI and supportive conversations. The sample size included 20 newly admitted inpatients. In both conditions they received two sessions per week. In line with CONSORT guidelines for pilot and feasibility studies, we measured various feasibility outcomes. Additionally, we assessed various clinical outcomes using Analysis of Covariance (ANCOVA), with baseline values used as covariates.
Results: The recruitment target (N = 24) was achieved at 83% in a reasonable timeframe (8 months), with a retention rate of 87% and completion rate at 71%. Eligibility rate (82 %) was high, while the consent rate (48%) was moderate and dropout rate 13% was low as well as the missing data (0.3%). With regard to the clinical outcomes, a group difference was found for the severity of psychotic symptoms, with an advantage for the MI intervention ($b = -12.0$, 95% CI: [-18.7, -5.2], $p < 0.01$), although this must be interpreted with caution in view of the small sample.
Conclusion: The study demonstrated the feasibility and acceptability of conducting a clinical trial with MI for patients with psychosis in an acute inpatient psychiatric facility. MI has also demonstrated potential for greater benefits compared to supportive conversations, particularly in addressing the severity of psychotic symptoms. Nevertheless, to obtain more definitive conclusions regarding efficacy, a larger-scale study is planned based on these promising results.

Trial Registration: clinicaltrials.gov: NCT05911529

1. Introduction

Psychotic disorders such as schizophrenia are severe mental disorders and with fundamental disturbances in thinking, perception and emotions (Rössler et al., 2005). They are among the top 25 causes of disability worldwide (Vos et al., 2015) and in its acute phase it is judged to be the most impairing of all mental health conditions (World Health Organization, 2022). Internationally, up to two-thirds of the current inpatients in a psychiatric hospital are experiencing psychosis (Wood et al., 2019) and belong to the group, which is most frequently involuntarily admitted (Maina et al., 2021).
With a focus on the treatment of these diseases, it has been found that the quality of therapeutic alliance during the acute phase is one of the most pressing obstacles for successful long term recovery (Cavelti et al., 2016). Evidence suggests that therapeutic alliance is predictive of better insight, less severe symptoms, improved functioning as well as medication and treatment adherence (Browne et al., 2019). Furthermore, nonadherence is a factor that is associated with negative treatment outcomes such as impaired illness insight and poorer symptomatic outcomes, but also with relapse, rehospitalization, and longer durations of inpatient treatment (Mullins et al., 2008; Sendt et al., 2015). According to reports published the nonadherence among patients with schizophrenia is 56% (95% CI: 48%, 63%) (Semahegn et al., 2020) and after hospital discharge it tends to increase up to 75-90% within 1-2 years (Sendt et al., 2015). Therefore, intrinsic motivation to adhere to therapy is crucial in order for patients to accept much-needed medication and psychosocial therapy and to prevent them from dropping out prematurely.
One promising method in the field of psychotherapeutic short term interventions is Motivational Interviewing (MI), which is defined as a "client-centered, directive method for enhancing intrinsic motivation to change by exploring and resolving ambivalence" (Miller & Rollnick, 2002, p. 25). MI relies on different techniques such as asking open questions, active listening, affirming, summarizing and reflecting. Therapists primarily seek to express empathy, but also work with patients to develop a discrepancy between the actual situation and a desired state (Miller & Rollnick, 2002). The intervention consists of four overlapping processes: engaging by establishing a collaborative and trusting working alliance, focusing on specific behavior change, evoking by electing change talk (pro change) and reducing sustain talk (against change) as well as the planning for implementing the behavior change (Miller & Rollnick, 2023). In a way, practicing MI is helping people talk themselves into change and growth to strengthen their own motivation and commitment (Miller & Rollnick, 2023).
Patients with psychosis might feel ambivalent about medication adherence, e.g. knowing it may help to prevent relapse and rehospitalization, while simultaneously having to deal with undesirable side effects like sedation or weight gain (Dobber et al., 2020). For the reasons described above, MI is suitable for revealing and dealing with such ambivalences on the basis of a sustainable therapeutic alliance, as well as strengthening the patient's intrinsic motivation to adhere to treatment and overcome the challenges in the acute phase of their illness. Existing evidence support the efficacy of MI for outpatients with psychosis for medication adherence but also regarding symptom severity, psychosocial functioning, illness insight as well as number of rehospitalization (Chien et al., 2015; Kemp et al., 1996). To the best of our knowledge, there is no clinical trial that has attempted to evaluate this method in the acute phase during an inpatient stay.

In general, there is still little research into psychotherapeutic methods that can be offered during an acute psychosis as part of an inpatient stay. While the NICE-guidelines for treatment of schizophrenia (National Institute for Health and Care Excellence, 2014) recommend cognitive behavioral therapy specific for psychosis already in the acute treatment, it is well known from clinical experience that patients are provided only late during the course of hospitalizations and not when it is most needed – during the acute phase of their illness. However, cognitive behavioral therapy for inpatients with an acute psychosis has found to be effective in improving clinical outcomes such as reducing psychotic symptoms and functioning (Barnicot et al., 2020; Jacobsen et al., 2018; Wood et al., 2020). Most of the cognitive behavioral interventions for psychosis has been originally conducted for outpatients and the majority of the studies did not tailor their interventions considering the specific needs of acute psychiatric inpatients (Wood et al., 2020). According to the Swiss Society for Psychiatry and Psychotherapy (SGPP) there is an urgent need for research to adapt the psychotherapeutic approach to the circumstances of the acute phase (Kaiser et al., 2016).

Therefore, this pilot study aimed to investigate the feasibility and impact of a brief intervention with MI for patients with psychosis in an acute psychiatric inpatient setting. More precisely, the specific objectives were:

i) Evaluation of the acceptability and feasibility of a clinical trial with MI for patients with psychosis in an acute inpatient psychiatric facility (eligibility rate, consent rate, total number of recruits, recruitment duration, completion rate, dropout rate, missing data) as well as acceptability and feasibility of the therapeutic intervention (retention rate, serious adverse events).
ii) to investigate the impact of MI on factors influencing treatment outcome such as therapeutic alliance and adherence to treatment.
iii) to examine whether the effect of MI can be measured in changes in symptom severity.
iv) to examine secondary effects of MI on motivation for further psychotherapeutic treatment.

2. Methodology

2.1 Study design

This pilot study was conducted as single-centered, randomized control trial (RCT) with a parallel-group design. The pre- and post-measurement were employed using structured interviews and subjective as well as objective measurements with questionnaires. Furthermore, the trial was preregistered on the trial registry clinicaltrials.gov (NCT05911529).

2.2 Sample inclusion and exclusion criteria

Inclusion criteria:

i) Aged between 18 and 65 years
ii) Diagnosis of a psychotic spectrum disorder (schizophrenia, schizoaffective disorder, acute psychotic disorder, psychosis not otherwise specified, bipolar disorder with psychotic features, major depression with psychotic features; ICD-10)
iii) Fluent German and able to understand the instructions
iv) Have given an informed consent

Exclusion criteria:

i) Organic schizophrenia-like disorder (ICD: F0.6)
ii) Drug or alcohol abuse during treatment
iii) Previous enrolment in the current study
iv) Complete stop of taking antipsychotic medications without the consent of the attending physician during the study

2.3 Intervention condition

Patients allocated to the intervention condition received four sessions of MI within two to three weeks. MI was tailored to the circumstances of an acute phase of psychosis. In principle, we were guided by the modifications of MI as described by Martino et al., 2002, and developed for patients with psychosis and addictions. Strategies such as repetition, utilization of simple verbal and visual materials, and incorporating breaks within sessions were employed to accommodate issues like inattention, poor concentration, and diminished mental flexibility. Additionally, and as Martino and colleagues recommended, MI strategies were adjusted to simplify decision-making processes that may be confusing to psychotic patients. For instance, instead of constructing a complex 2x2 decisional balance matrices, the focus was restricted to only consider the positive and negative aspects of changing behavior.

When we evaluated with our therapists which adjustments were the most important, several aspects were emphasized: First of all, the establishment of a stable therapeutic alliance was crucial, as positive symptoms such as paranoid delusions and suspicion are often paramount during this critical period. Through empathetic listening, exploring the delusional system, and building trust, a sense of being understood and accepted was supported. The collaborative search for adaptive explanatory models always took place in the language of the patient and we aimed to take their values into account. As patients did sometimes struggle with understanding or organizing responses to complex questions, compound open-ended questions were avoided, and

questions were presented in clear and concise language to facilitate comprehension and engagement. In cases of cognitive impairment and severe negative symptoms, shorter sessions were conducted. Last but not least, it has always been important to emphasize that the aim is not to eliminate delusions, but rather to reduce suffering.

2.4 Control condition

In the control intervention, the patients also received therapy sessions in which no MI techniques were used. They were carried out in the sense of supportive conversations. Supportive conversations aim to promote stabilization of the patient's current state without pursuing a goal set by the therapist, while topics are preferably defined by the patient. This type of conversation includes tasks such as assistance with everyday requirements, emotional relief in the event of problems, as well as the provision of a reliable relationship. The clarification and processing of conflicts and problems that underlie the psychopathology is not usually the subject of therapy (Weierstall & Schonauer, 2016).
Since we wanted to proof whether the patients really benefit from the specific intervention and not from getting more speaking time (all therapy sessions were in addition to the treatment as usual), the patient in the control group were also given the same amount of sessions as in the intervention group. It is known that supportive conversations can have a certain effect on the well-being and recovery process of patients, as the therapeutic relationship, i.e. appreciation, attention and/or attention, is an important efficacy factor (e. g. Grawe, 1995).

2.5 Measurements

2.5.1 Secondary clinical outcomes

The *Scale to Assess Therapeutic Relationships STAR* (McGuire-Snieckus et al., 2007) is used to evaluate the therapeutic alliance between patients and clinicians in mental health care. It has two versions, the patient version (STAR-P) and the clinician version (STAR-C) with each twelve items comprising three subscales: positive collaboration and positive clinician input in both versions, non-supportive clinician input in the patient version, and emotional difficulties in the clinician version. As McGuire-Snieckus et al. (2007) report, both versions demonstrated good internal consistency, with Cronbach's α ranging from 0.71 to 0.95 for the clinical version and 0.79 to 0.98 for the patient version across the three subscales. The test-retest reliability was 0.68 for STAR-C and 0.76 for STAR-P. Higher scores indicate a stronger therapeutic alliance.

The *Brief Adherence Rating Scale BARS* (Byerly et al., 2008) is a brief clinician-administered instrument to assess medication adherence in patients with psychotic disorders. The scale comprises four items: three questions and an overall visual analog rating scale designed to evaluate the percentage of medication doses taken by the patient in the past month (0%-100%). The scale demonstrates a high internal consistency (Cronbach's $\alpha = 0.92$) and a moderate-to-strong test-retest reliability, ranging between 0.53 and 0.92.

The *Positive and Negative Symptom Scale PANSS* (S. R. Kay et al., 1987), a clinician-administered semi-structured interview, which consists of four scales measuring positive and negative syndromes of schizophrenia, their differential, and general severity of illness. It consists of 30 items, each rated on a seven-point Likert scale, with scores between 1 (not present) and 7 (extreme). It demonstrates a strong internal consistency (Cronbach's $\alpha = 0.79$) and a test-retest reliability of moderate to strong ($r = 0.60$-0.80) as well as a high interrater reliability (between 0.83 and 0.87) (Stanley R. Kay et al., 1988).

The short version of the *Therapy Motivation Questionnaire* (German: "Fragebogen zur Psychotherapiemotivation» FPTM-23) (Schulz et al., 2003) is an economical self-rating questionnaire with 23 items, each rated on a four-point Likert scale. This questionnaire includes six scales: psychological distress, symptom-related support from others, hope, denial of psychological helplessness, initiative, and knowledge about psychotherapy. The FPTM-23 demonstrates high internal consistency, as indicated by Cronbach's α values ranging between 0.71 and 0.81. A test-retest reliability was not determined by the authors, as the questionnaire was not designed to capture time-stable characteristics. Higher scores indicate a higher treatment motivation.

2.5.2 Feasibility Outcomes

Following the CONSORT guidelines for pilot and feasibility studies, the feasibility outcomes encompass: (1) eligibility rates, (2) consent rate, (3) total number of participants recruited into the pilot study and duration,

(5) completion rate, (6) retention rate, (7), dropout rate (8) missing data rate, (9) numbers of adverse events. The evaluation of the feasibility outcomes was benchmarked using a traffic light system on recruitment number relative to target, completion, and retention rate: red (not feasible < 50%), yellow (modification intervention ≥ 50% < 75%), and green (feasible without modification > 75%) (Gussmann et al., 2023; Jacobsen et al., 2020; Lewis et al., 2021).

2.6 Sample size

The target recruitment was set at least $N = 24$. This is consistent with recommendations for pilot studies of clinical interventions (Julious, 2005; Whitehead et al., 2016). In conclusion, a sample size of $N = 20$ (MI = 9 and CI = 11) was used to evaluate the feasibility.

2.7 Randomization

Contrary to the original study protocol, patients were not randomized directly to either the intervention group or the control group. Randomization took place indirectly, as patients were randomly assigned to a ward (where there was a free place) on admission to the clinic. The interventions were delivered by the ward psychologists, which meant that patients were either on a ward with a psychologist trained in MI, or a psychologist not specifically trained in MI, and accordingly received the MI intervention or the supportive conversations. All psychologists in the study held similar training in psychotherapy, with the exception of MI training.

2.8 Study procedure

The trial was undertaken between April and November 2023. Newly admitted patients from nine acute inpatient wards of the Psychiatric University Hospital Zurich were screened for eligibility using electronic patient files at the hospital. In consent with the inpatient consultant psychiatrist and the nursing team, potential eligible patients ($N = 92$) were approached and asked for participation. They were informed about the nature of the study, it purpose, the procedure as well as the potential risks and benefits. Subsequently, written informed was obtained. All reasons for patient refusal to participate in the study were documented in the screening log. We recruited a total of $N = 28$ patients. In both conditions (MI or supportive conversations) they received a total of four sessions. This study was single-blinded, i.e. the patients did not know which method they were being treated with, even if this could be guessed with some basic knowledge. At the end of the intervention the post-measurement was conducted. The pre- and post-measurements were undertaken by a third party in order to avoid a potential rater bias. The entire procedure, including the intervention and the pre- and post-measurement, required two to three weeks.

2.9 Data analysis

The statistical analysis was undertaken in R-software and SPSS, IBM. Initial differences in sociodemographic data between groups were assessed using t-test, Mann Whitney U test and Fisher's Exact Test, depending on the type of data being examined. Changes in secondary clinical outcome measures were examined using Analysis of Covariance (ANCOVA) with baseline values used as covariates. Following the reporting recommendations outlined in the CONSORT guidelines for pilot and feasibility studies (Eldridge et al., 2016), the feasibility outcomes were reported descriptively using percentages and frequencies.

3. Results

3.1 Sample description

Sociodemographic and clinical characteristics are presented in Table 1 while the baseline clinical outcomes are reported in Table 2. There were no significant differences between the two groups regarding distribution of sociodemographic and clinical characteristics. The clinical outcomes at baseline differed in the total score of the therapeutic alliance in the clinician version and in the total score of therapy motivation. Specifically, within the MI condition, the therapeutic alliance received higher ratings in the clinician version, while the control group demonstrated higher scores on the therapy motivation questionnaire. The sample demonstrated

moderate levels of therapeutic alliance in both the clinician and patient versions, as well as in symptom severity. Furthermore, the sample demonstrated high levels of adherence and therapy motivation.

Table 1
Descriptive statistics: Sociodemographic and clinical characteristics of patients

	MI (*N* = 9)	CI (*N* =11)	Total (*N* = 20)
Age			
Mean (range)	40.8 (18-64)	39.0 (21-63)	39.8 (18-64)
Gender			
Male	7 (77.8 %)	8 (72.7 %)	15 (75.0 %)
Female	2 (22.2 %)	3 (27.3 %)	5 (25.0 %)
Years of education			
Low (≤ 9 years)	4 (44.4 %)	6 (54.5 %)	10 (50.0 %)
Middle (≥ 13 years)	1 (11.1 %)	4 (36.4 %)	5 (25.0 %)
High (≥ 16 years)	4 (44.4 %)	1 (9.1 %)	5 (25.0 %)
Mean (range)	13.8 (9-26)	11.3 (8-18)	12.5 (8-26)
Employment status			
Unemployed	2 (22.2 %)	1 (9.1 %)	3 (15.0 %)
In education/ studies	1 (11.1 %)	0 (0.0 %)	1 (5.0 %)
Employment regular job market	2 (22.2 %)	3 (27.3 %)	5 (25.0 %)
Supported employment	2 (22.2 %)	0 (0.0 %)	2 (10.0 %)
Disability insurance	1 (11.1 %)	6 (54.5 %)	7 (35.0 %)
Other	1 (11.1 %)	1 (9.1 %)	2 (10.0 %)
Diagnosis			
F 20	6 (66.7 %)	6 (54.5 %)	12 (60.0 %)
F 22	1 (11.1 %)	2 (18.2 %)	3 (15.0 %)
F 23	1 (11.1 %)	1 (9.1 %)	2 (10.0 %)
F 25	1 (11.1 %)	2 (18.2 %)	3 (15.0 %)
Number of comorbid psychiatric diagnoses			
0	5 (55.6 %)	4 (36.4 %)	9 (45.0 %)
1	2 (22.2 %)	4 (36.4 %)	6 (30.0%)
2	1 (11.1 %)	1 (9.1 %)	2 (10.0 %)
3	0 (0.0 %)	1 (9.1 %)	1 (5.0 %)
4	1 (11.1%)	1 (9.1 %)	2 (10.0 %)
Duration of illness in months			
Mean (range)	161.1 (1-432)	153.1 (1-540)	136.5 (1-540)
Number of psychotic episodes			
Mean (range)	2.7 (1-7)	2.6 (1-5)	2.6 (1-7)
Type of hospital admission			
Voluntary	5 (55.6 %)	7 (63.6 %)	12 (60.0 %)
Involuntary	4 (44.4 %)	4 (36.4 %)	8 (40.0 %)
Number of hospitalizations			
Mean (range)	4.3 (1-14)	6.5 (1-15)	5.5 (1-15)

Note: CI: Control intervention (supportive conversations); F 20: Schizophrenia; F 22: Persistent delusional disorders; F23: Acute and transient psychotic disorders; F 25: Schizoaffective disorders; MI: Motivational Interviewing; SD: Standard Deviation.

Table 2
Descriptive statistics: Baseline clinical outcomes

	MI ($N = 9$) Mean (SD)	CI ($N = 11$) Mean (SD)	Total ($N = 20$) Mean (SD)
Therapeutic Alliance – Patient (STAR-P)			
Total	37.9 (4.7)	33.5 (8.5)	35.6 (7.2)
Positive Collaboration	19.3 (3.7)	16.9 (5.6)	18.6 (4.8)
Positive Clinician Input	8.9 (1.6)	8.2 (2.2)	8.3 (2.1)
Non-Supportive Clinician Input	9.4 (2.4)	9.1 (2.0)	9.3 (2.1)
Therapeutic Alliance – Clinician (STAR-C)			
Total	36.0 (3.3)	30.6 (4.9)	33.1 (5.0)*
Positive Collaboration	17.1 (1.8)	14.0 (2.5)	15.4 (2.7)
Positive Clinician Input	8.9 (0.6)	8.2 (1.3)	8.5 (1.1)
Emotional Difficulties	10.0 (1.7)	8.5 (2.0)	9.2 (2.0)
Adherence (BARS)	99.4 (1.7)	97.0 (6.8)	98.2 (5.1)
Psychotic Symptoms (PANSS)			
Total (30-210)	66.4 (15.4)	73.3 (14.0)	70.2 (14.7)
Positive symptoms (7-49)	16.9 (4.7)	17.3 (7.1)	17.1 (6.0)
Negative symptoms (7-49)	15.3 (5.4)	18.0 (4.8)	16.8 (5.1)
General symptoms (16-112)	34.2 (8.9)	38.0 (8.8)	36.3 (8.9)
Therapy motivation (FPTM)			
Total	53.5 (5.1)	62.2 (3.6)	58.3 (6.1)*
Psychological distress	10.7 (2.8)	11.6 (3.0)	11.2 (2.9)
Symptom-related support from others	5.9 (2.1)	7.2 (1.7)	6.6 (3.0)
Hope	7.6 (2.8)	9.3 (2.0)	8.5 (2.5)
Denial of psychological helplessness	10.6 (3.6)	12.2 (3.4)	11.5 (3.5)
Initiative	8.7 (3.3)	10.6 (2.8)	9.7 (3.1)
Knowledge about psychotherapy	10.2 (2.7)	11.4 (2.2)	10.8 (2.5)

Note: BARS: Brief Adherence Rating Scale; CI: Control intervention (supportive conversations); FPTM: Therapy Motivation Questionnaire; MI: Motivational Interviewing; PANSS: Positive and Negative Symptom Scale; SD: Standard Deviation; STAR-C: Scale to Assess Therapeutic Relationships - clinician version; STAR-P: Scale to Assess Therapeutic Relationships - patient version. *Significant differences between intervention condition with MI and control condition with supportive conversations groups.

3.2 Feasibility outcomes

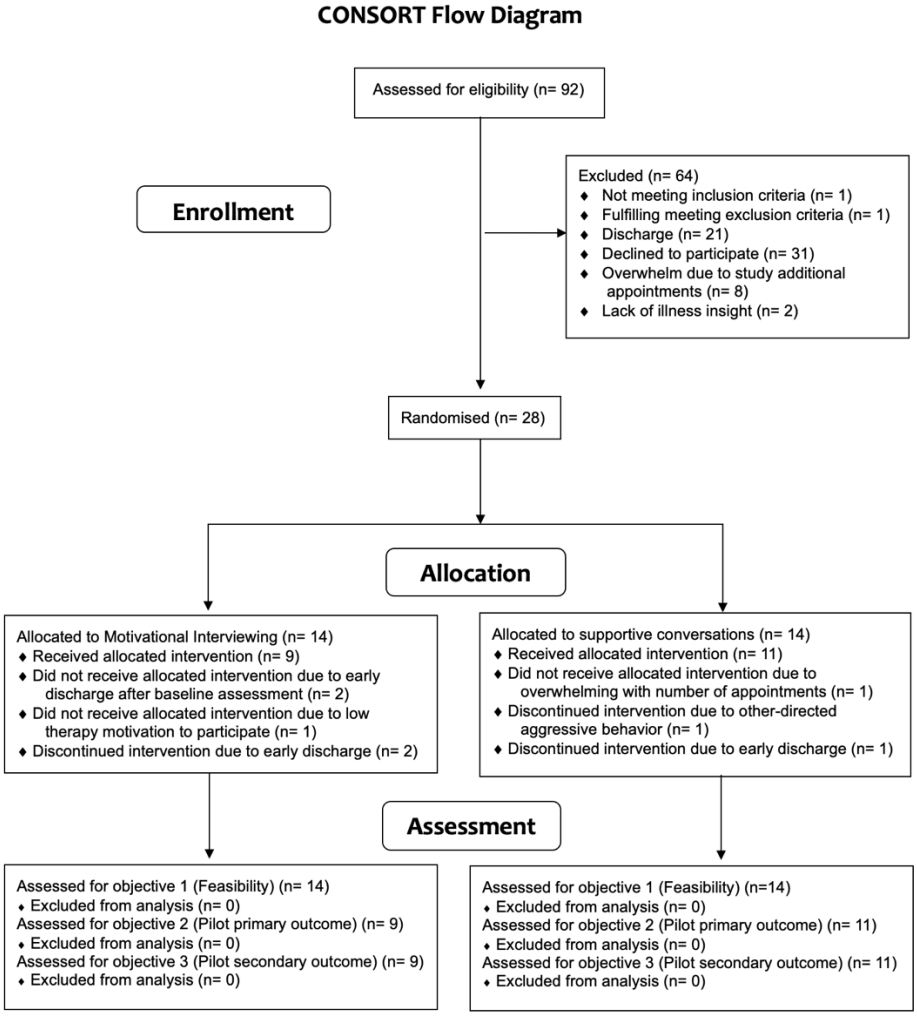

Figure 1: CONSORT Flow Diagram

The CONSORT flow diagram is illustrated in Fig. 1 and, an overview about the different feasibility outcomes is provided in Table 3. A total of 92 patients were assessed for eligibility, of whom 75 were eligible to participate (82 %). Among these 92, one patient did not meet the inclusion criteria (due to not speaking German), another met one exclusion criteria (due to unwillingness to abstain from drug use) and 15 were excluded from participation because they were unable not attend enough sessions due to their planed discharge. Of these 75, 36 (48%) consented to enroll in the pilot study. While 29 declined to participate, eight felt overwhelmed due to the number of additional appointments of the pilot study and two declined due to a lack of illness insight. Out of these 36 patients given consent, eight participants discontinued before the baseline assessment and randomization due to early discharge (n = 6) and withdraw to participate (n = 2). This left 28 recruited patients, of whom 20 completed the trial. The recruitment target was set at N = 24, demonstrating that recruitment was feasible as the target was met 83% (20/24), which exceeds the defined threshold of 75%. Furthermore, the participant recruitment rate was 37% (28/75), with an average of 3.5 participants per month. In the MI intervention, 9 out of 14 patients (64%) completed the full trial, with three patients not receiving allocated intervention due to early discharge after baseline assessment (n = 2) and to low therapy motivation to continue after baseline assessment (n = 1). Additionally, two patients discontinued intervention due to early discharge during intervention stage. Of the 14 patients allocated into the control condition with supportive conversations, 11 (85%) completed the trial. Among these 14 patients, one did not receive the allocated intervention due to an overwhelming with number of appointments of the trial and two patients discontinued the intervention due to other-directed aggressive behavior (n = 1) and due to early discharge (n = 1).

The overall completion rate was 71%, slightly below the benchmarked threshold of 75%. The retention rate, indicating the proportion of patients who initiated the intervention by attending at least one session and completed all four sessions, was 90% (9/10) for MI intervention and 85% (11/13) for supportive conversations. The overall retention rate was 87%, exceeding the benchmarked threshold of 75%. Moreover, the total dropout rate was 13% (3/23), with a rate of 10% (1/10) for MI intervention and 15% (2/13) for supportive conversations. The missing data rate remained consistently low at 3%. No adverse events were reported during the trial (0%).

Table 3
Feasibility outcome

	MI Numbers (%)	CI Numbers (%)	Total Numbers (%)
Eligibility Rate	-	-	75/92 (82%)
Consent Rate	-	-	36/75 (48%)
Recruitment number relative to target	-	-	20/24 (83%)
Recruitment rate			
by participants	-	-	28/75 (37%)
by time duration	-	-	3.5 participants /month
Completion rate	9/14 (64%)	11/14 (78%)	20/28 (71%)
Retention rate	9/10 (90%)	11/13 (85%)	20/23 (87%)
Dropout rate	1/10 (10%)	2/13 (15%)	3/23 (13%)
Missing data rate	-	-	1280/458’240 (0.3 %)
Numbers of adverse events	0	0	0

Note: Feasibility outcomes were defined as follows: 1) Eligibility rate (proportion of individuals found eligible to participate as percentage of those assessed for eligibility); 2) Consent rate (proportion of individuals who provided the informed consent as a percentage of those who were eligible and approached to participate); 3) recruitment number relative to target N = 24; 3) Recruitment rate based on the number of enrolled patients and duration of time (participants per months); 4) Retention rate (proportion of individuals initiated intervention and completed all four sessions); 5) Dropout rate (proportion of individuals who attended at least one session and dropped out before completing all four sessions); 6) Completion rate (proportion of individuals who enrolled in the trial and completed all four sessions, including pre- and post-measurement); 7) Missing data (proportion of missing data from assessments conducted for the case report, pre- and post-measurement; 8) Numbers of adverse events (frequency).

3.3 Secondary clinical outcomes

The secondary clinical outcomes were examined using Analysis of Covariance (ANCOVA) with baseline values used as covariates. This enables to control for initial differences in both groups and allows a more precise evaluation of the effects of the interventions on the different secondary clinical outcomes. The β coefficients in Table 4 illustrated the estimated effects of the interventions after controlling for baseline values. These coefficients demonstrate the average change in the secondary clinical outcome variables regarding the interventions, MI and supportive conversations. The detailed tables of the ANCOVA analysis, including the F-values, p-values, and adjusted coefficient of determination (adjusted R^2) for both groups, are presented in the appendix. Additionally, Fig. 2 and Fig. 3 present the trajectory of the three subscales of therapeutic alliance for patients and clinician (STAR-P and -C) throughout the trial, while Fig. 4 shows adherence (BARS) and Fig. 5 presents the total score of the psychotic symptoms (PANSS). For the secondary clinical outcome there were no significant differences between MI and supportive conversations at the end of the intervention for STAR-P (β = -0.5, 95% CI: [-6.0, 4.9], p = 0.834), including its subscales positive collaboration (β = -1.0, 95% CI: [-4.0, 2.0], p = 0.553), positive clinician input (β = -1.1, 95% CI: [-2.5, 0.4], p = 0.145), non-supportive clinician input (β = 1.2, 95% CI: [-0.8, 3.2], p = 0.208) as well as STAR-C (β = -0.6, 95% CI: [-5.3, 4.2], p = 0.803) and its subscale positive collaboration (β = -0.4, 95% CI: [-3.3, 2.6], p = 0.797), positive clinician input (β = -0.3, 95% CI: [-1.3, 0.7], p = 0.546), emotional difficulties (β = 0.3, 95% CI: [-0.8, 1.4], p = 0.561). Similar, no significant differences were noted for BARS (β = 0.2, 95% CI: [-1.7,

2.1], $p = 0.823$) and GSES ($\beta = 1.6$, 95% CI: [-3.9, 7.0], $p = 0.542$) between MI and supportive conversations at the end of the intervention. Furthermore, it is important to mention, that the assumptions of linearity and normal distribution of errors were violated for the variable BARS and the variance of BARS values was also very low. Regarding PANSS, a significant difference between the two groups was observed ($\beta = -12.0$, 95% CI: [-18.7, -5.2], $p < 0.01$). This was evident in subscales positive symptoms ($\beta = -3.6$, 95% CI: [-6.8, -0.4], $p < 0.05$) and general symptoms ($\beta = -5.8$, 95% CI: [-9.9, -.1.7], $p < 0.01$) but not in subscale negative symptoms ($\beta = -2.3$, 95% CI: [-5.1, 0.5], $p = 0.105$). For FPTM-23, there was no significant difference in the total score ($\beta = 0.1$, 95% CI: [-6.7, 6.8], $p = 0.996$), as well as in subscales psychological distress ($\beta = -2.2$, 95% CI: [-4.8, 0.5], $p = 0.100$), symptom-related support from others ($\beta = -0.1$, 95% CI: [-1.5, 1.4], $p = 0.947$), denial of psychological helplessness ($\beta = 1.2$, 95% CI: [-1.1, 3.6], $p = 0.283$), and knowledge about psychotherapy ($\beta = -1.0$, 95% CI: [-2.8, 0.9], $p = 0.280$). However, subscales hope ($\beta = 1.9$, 95% CI: [0.5, 3.2], $p < 0.05$) and initiative ($\beta = -2.5$, 95% CI: [-4.6, -0.3], $p < 0.05$) showed significance. Although, in the case of the subscale initiative, the value significantly worsened compared to the control condition with supportive conversations, unlike the other significant values reported.

Table 4
Secondary clinical outcomes

	β	SE	95% CI	t	p
Therapeutic Alliance – Patient (STAR-P)					
Total	-0.5	2.6	[-6.0, 4.9]	-0.2	0.834
Positive Collaboration	-1.0	1.4	[-4.0, 2.0]	-0.3	0.553
Positive Clinician Input	-1.1	0.7	[-2.5, 0.4]	-1.5	0.145
Non-Supportive Clinician Input	1.2	1.0	[-0.8, 3.2]	1.3	0.208
Therapeutic Alliance – Clinician (STAR-C)					
Total	-0.6	2.3	[-5.3, 4.2]	-0.3	0.803
Positive Collaboration	-0.4	1.4	[-3.3, 2.6]	-0.3	0.797
Positive Clinician Input	-0.3	0.5	[-1.3, 0.7]	-0.6	0.546
Emotional Difficulties	0.3	0.5	[-0.8, 1.4]	0.6	0.561
Adherence (BARS)	0.2	0.9	[-1.7, 2.1]	0.2	0.823
Psychotic Symptoms (PANSS)					
Total	-12.0	3.2	[-18.7, -5.2]	-3.7	0.002**
Positive Symptoms	-3.6	1.5	[-6.8, -0.4]	-2.4	0.031*
Negative Symptoms	-2.3	1.3	[-5.1, 0.5]	-1.7	0.105
General Symptoms	-5.7	1.9	[-9.9, -.1.7]	-2.9	0.009**
Therapy motivation (FPTM-23)					
Total	0.1	3.2	[-6.7, 6.8]	0.1	0.996
Psychological Distress	-2.2	1.3	[-4.8, 0.5]	-1.7	0.100
Symptom-related Support from Others	-0.1	0.7	[-1.5, 1.4]	-0.1	0.947
Hope	1.9	0.7	[0.5, 3.2]	2.8	0.012*
Denial of Psychological Helplessness	1.2	1.1	[-1.1, 3.6]	1.1	0.283
Initiative	-2.5	1.0	[-4.6, -0.3]	-2.4	0.029*
Knowledge about Psychotherapy	-1.0	0.9	[-2.8, 0.9]	-1.2	0.280

Note: Description of the results of the analysis of covariance for secondary clinical outcomes with baseline values used as covariates including unstandardized regression coefficient (β), standard error (SE), t-value, p-value with *p < 0.05, **p < 0.01 and ***p < 0.001, as well as 95% confidence interval (95% CI).

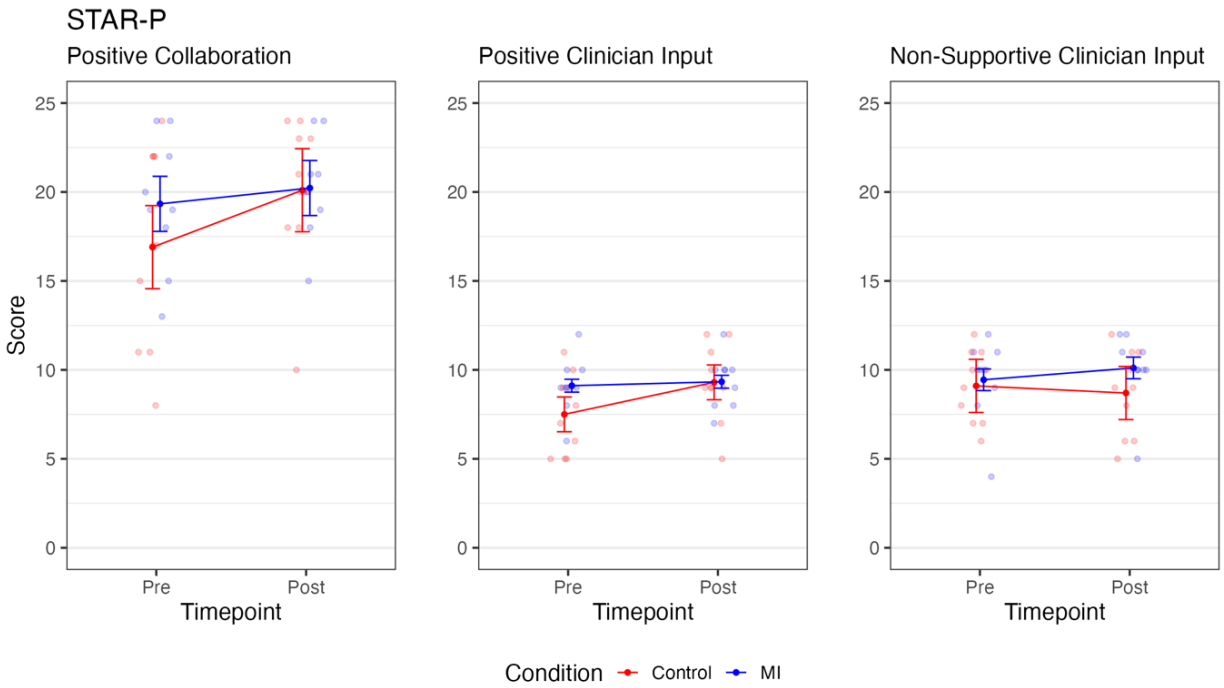

Fig. 2: Scale to Assess Therapeutic Relationships – patient version (STAR-P), three subscales "Positive Collaboration", "Positive Clinician Input", "Non-Supportive Clinician Input", Raw data.

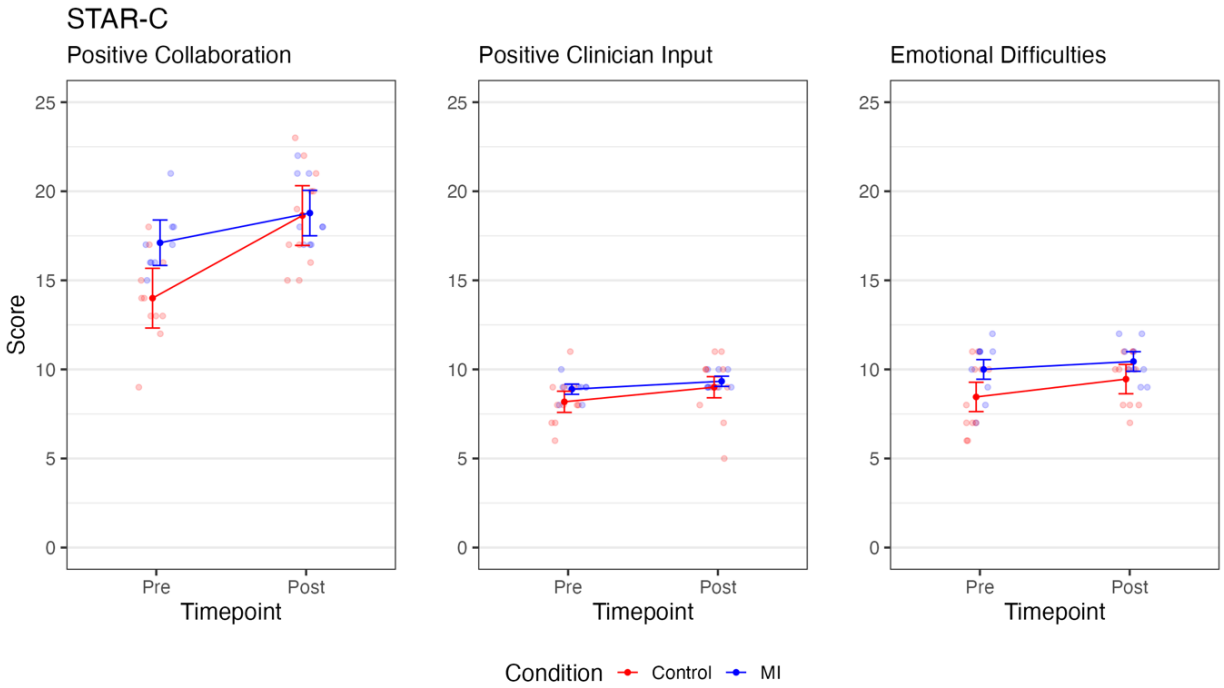

Fig. 3 Scale to Assess Therapeutic Relationships – clinician version (STAR-C), three subscales "Positive Collaboration", "Positive Clinician Input", "Emotional Difficulties", Raw data.

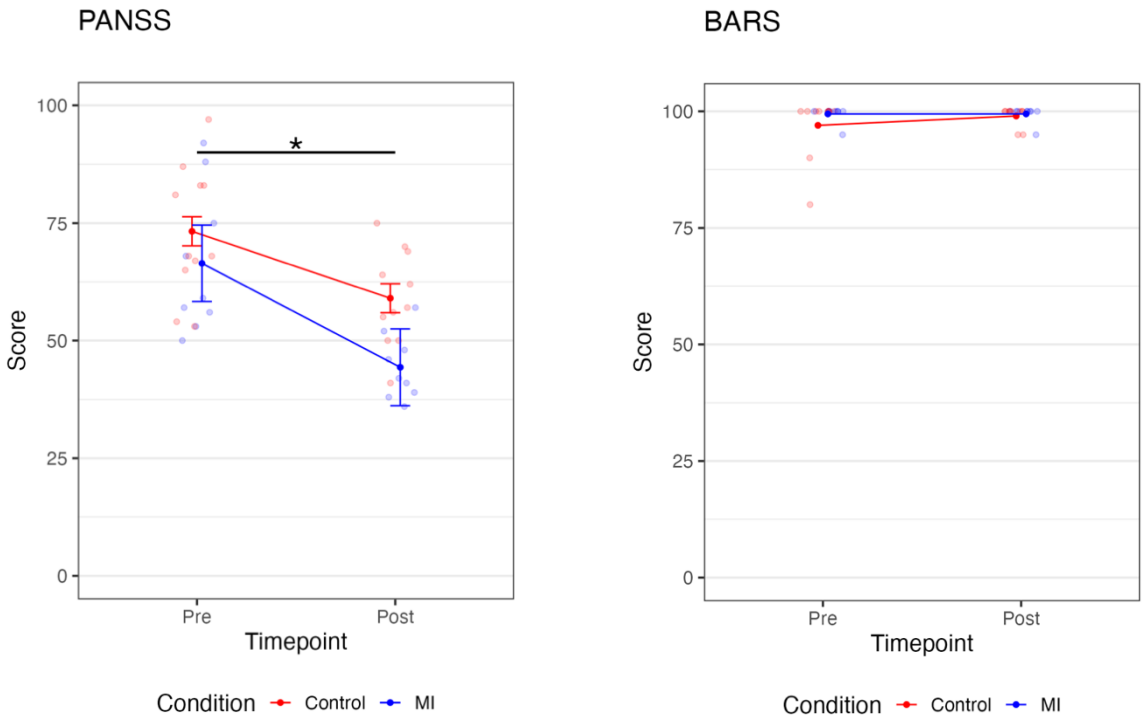

Fig. 4 and 5: Positive and Negative Symptoms Scale PANSS (left) and Brief Adherence Rating Scale BARS (right)

4. Discussion

The present pilot study aimed to examine the feasibility, acceptability, and the clinical outcomes of a brief intervention with MI for patients experiencing acute psychosis within an acute psychiatric ward. The findings demonstrate that the brief intervention with MI was not only feasible but also acceptable, meeting the criteria outlined in the CONSORT guidelines for pilot and feasibility studies (Eldridge et al., 2016). Consequently, recruitment proved to be feasible as there was a sufficient pool of eligible patients (82%) from which to recruit, and the recruitment target was achieved within a reasonable timeframe. Nearly half (48%) consented to enroll in the pilot study. Out of the 28 patients finally recruited, 20 completed the trial. Thus, the recruitment target (N = 24) was achieved at 83%, exceeding the predetermined benchmark of 75%. Additionally, the participant recruitment rate was 37%, with an average of 3.5 participants per month. The overall completion rate was 71%, slightly below the benchmark of 75%. The main reason not completing the trail was due to early discharge. Therefore, we will modify the intervention's overall duration and frequency to better suit the conditions within an inpatient stay for our subsequent study. Patients will receive 3 sessions per week, rather than the previous arrangement of 4 sessions over 2 weeks, to enhance feasibility and engagement. However, the overall retention rate as well as the retention rate for both MI intervention and supportive conversations were above the pre-set benchmark of 75%, indicating that both interventions were highly acceptable to inpatients with acute psychosis. Additionally, the dropout rate during therapy was low at 13%, with similar rates observed in both conditions. The missing data rate consistently was low at 0.3%. Moreover, no adverse events were reported during the trial.

In summary, the present pilot study demonstrated the acceptability and feasibility of conducting a clinical trial using MI for patients with psychosis within an acute inpatient psychiatric facility. This was evidenced by favorable indicators such as high eligibility rate and moderate consent rate, the recruitment of a sufficient number of patients within a reasonable duration, a high completion rate, low dropout rate, and minimal missing data. Furthermore, the therapeutic intervention showed promising retention rates and the absence of serious adverse events, all contributing to the feasibility and success of the study. Consistent with previous feasibility studies, this research demonstrated that conducting an RCT of brief psychological intervention within an inpatient setting are feasible and acceptable to patients (Jacobsen et al., 2020; Wood et al., 2018).

As a pilot study aimed at assessing the feasibility and acceptability of MI intervention, this study was not powered to detect significant differences in the clinical outcomes between MI and supportive conversations.

Nevertheless, in terms of the **severity of psychotic symptoms** assessed through PANSS, a significant difference between the two groups was observed for the total score (β = -12.0, 95% CI: [-18.7, -5.2], $p < 0.01$), as well as for its subscales of positive symptoms (β = -3.6, 95% CI: [-6.8, -0.4], $p < 0.05$) and general symptoms (β = -5.8, 95% CI: [-9.9, -.1.7], $p < 0.01$), although not for the subscale of negative symptoms. Other psychotherapy studies also report effects of psychotherapy for general symptoms and positive symptoms (Lincoln & Pedersen, 2019), and less good effects for negative symptoms (Jauhar et al., 2014; Lutgens et al., 2017). This would be consistent with our findings. Due to the small sample size, however, the result must be interpreted with caution and a study with a larger sample would first have to replicate this result. However, if we can assume a valid effect, this would definitely be an important finding as psychotherapy research, and in particular psychotherapy for psychosis, urgently needs to present more evidence-based results.
However, no significant differences were observed in **therapeutic alliance** on the patient side (STAR-P) and its subscales, including positive collaboration, positive clinician input and non-supportive clinician input. Similarly, for the clinician side (STAR-C) and its subscales, which encompass positive collaboration, positive clinician input and emotional difficulties no significance findings were observed. Additionally, there were no significant differences for adherence between MI and supportive conversations at the end of the intervention. Additionally, when assessing **adherence** through the brief clinician-administered instrument BARS, it was noted that the patients achieved high adherence levels already before the intervention, at 98.2% (SD = 5.1). Therefore, the observed average nonadherence rate of 2% was observed in the sample, which is significantly lower than the average nonadherence rate of 56% reported in the literature (Joyce A. Cramer & Robert Rosenheck, 1998; Semahegn et al., 2020). This discrepancy may stem from different reasons, such as the additional support provided to patients by ward staff during their stay, an aspect known to influence adherence (Kane et al., 2013), or potential social desirability biases. Moreover, the assumptions of linearity and normal distribution of errors were violated in adherence, with the variance of adherence being very low. This could be attributed to the scaling of the BARS questionnaire, which, despite utilizing an overall visual analog rating scale, is based on only a few items with limited response options, or the sample recruited may be overly homogeneous.
For **treatment motivation** measured by FPTM-23, there was no significant difference in the total score and the subscales of psychological distress, symptom-related support from others, denial of psychological helplessness, and knowledge about psychotherapy. However, subscales of hope (β = 1.9, 95% CI: [0.5, 3.2], $p < 0.05$) and initiative (β = -2.5, 95% CI: [-4.6, -0.3], $p < 0.05$) demonstrated significance. In contrast, for the initiative subscale, there was a significant decline compared to the control condition with supportive conversations, which differs from the results observed for the other significant values. Possible explanations for this could include, for example, that may already feel they have received treatment or at least taken an initial step towards change. This could lead to less active efforts to seek further treatment as they may feel their needs have already been met or that treatment has already began. Alternatively, interactions with therapists during MI treatment may have led to a sense of relief or reassurance, reducing the perceived need to take action to seek treatment.
Overall, the MI intervention appeared to be more beneficial than the supportive conversations in certain clinical outcomes, showing promising preliminary results in aspects such as the severity of psychotic symptom. However, for specific inferences regarding efficacy a further larger-scale study is required.

Strengths and limitations

The main strength of the current study lies in demonstrating the feasibility of conducting a RCT for a brief psychological intervention for patients with acute psychosis in an inpatient setting. Furthermore, the pilot study included adherence to a pre-registered trial protocol. The strengths of the study design included the presence of an active control group and the broad inclusion criteria (e.g., no restrictions on substance abuse at baseline or comorbidity), aiming to capture a diverse range of patients. This approach enhances the representativeness of the sample and increases the generalizability of the results to patient groups that the intervention would target in the long term (Keung et al., 2020). Moreover, the study followed the reporting guidance for feasibility trials outlined by CONSORT and utilized predetermined feasibility benchmark for recruitment number relative to target, retention rate and completion rate. Lastly, the analysis was conducted using ANCOVA with baseline values to control for initial differences between the groups.

As a pilot study, there were some methodological limitations to consider. Firstly, due to the risk of potential overlap in content between the interventions MI and supportive conversations, as both interventions would have been conducted by the same therapists, we decided that each therapist would exclusively deliver either MI or supportive conversations. Secondly, this also led to a modification of the initially planned randomization method, which involved independent pre-defined random lists (using a web-based specialist randomization service). Instead, randomization was performed through the random allocation to psychiatric wards. Thirdly, since the interventions were primarily administered by four therapists, therapist effects were present. Another limitation arose from the exclusively deliver of interventions by therapists, resulting in the raters for the pre- and post-measurements no longer being blinded. This could also lead to biases. Fifthly, the assessment of adherence was limited using only one questionnaire. The addition of objective measurement methods could help avoid effects of social desirability or memory biases (Sajatovic et al., 2010). Furthermore, the number of patients in the MI (n = 9) and supportive conversations (n = 11) conditions were unequal. Lastly, the small sample size restricted the statistical power for ANCOVA, although this was not a primary aim of the study. Nonetheless, the sample size proved adequate for evaluating feasibility and acceptability.

Implication for practice and future research

This study demonstrated that individuals experiencing acute psychosis are willing to participate in a study focused on a brief psychological intervention within an inpatient stay, indicating a demand for psychotherapeutic interventions during the acute phase of psychosis. As recommended by the treatment guidelines (e.g. of the SGPP), psychotherapy should be started in the acute phase. With the pilot study, we were able to show that this is actually feasible and can achieve relevant results for the treatment. MI provides a useful and well-structured method for therapists in this setting. This is also important because MI can be used by various professions in the healthcare sector or could be an effective alternative to psychotherapy in “resource-limited settings”.

The pilot study has provided us with important learnings that will lead to future adaptation of the study to the circumstances of the acute phase. Future research should consider utilizing an alternative active control group to prevent potential content overlap between interventions (e.g., psychoeducation). This would enable interventions to be administered by the same therapists and allow for randomization using independent randomization procedures. One notable observation from the study was that early discharge was a common reason for incomplete trial participation. Therefore, adjustments to the intervention's duration and frequency may be necessary to better align with the conditions of acute settings. Furthermore, implementing blinded assessments and incorporating additional objective methods for assessing adherence are important to avoid various biases. To enhance statistical power, a larger-scale study should be conducted to examine the efficacy of the brief intervention with MI. Additionally, conducting an intention-to-treat analysis is recommended to ensure the comprehensive data collection possible and provide a more precise estimate of treatment effect (Gupta, 2011).

5. Conclusion

Overall, the results suggest that a brief psychological intervention for acute inpatients experiencing psychosis is both feasible and acceptable. Moreover, preliminary results indicate that the MI intervention may result in greater benefits compared to supportive conversations, particularly in addressing the severity of psychotic symptoms. Nevertheless, to obtain more definitive conclusions regarding efficacy, a larger-scale study is planned based on these encouraging findings.

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Appendix

Table 1

Results of the ANCOVA for the Total Score of STAR-P

	β	SE	95% CI	*t*	*p*
Intercept	22.0	6.4	[8.5, 35.5]	3.5	0.003**
Total Score STAR-P baseline	0.5	0.2	[0.1, 0.9]	2.6	0.018*
Intervention Group MI	-0.5	2.6	[-6.0, 4.9]	-0.2	0.834

Adjusted $R^2 = 0.2$, $F\ (2, 16) = 3.6$, $p = 0.049$

Note: Results of the analysis of covariance (ANCOVA) for the Total Score of the *Scale to Assess Therapeutic Relationships*, patient version (STAR-P) with baseline values used as covariates. The table includes unstandardized regression coefficient (β), standard error (SE), t-value, p-value with *p < 0.05, **p < 0.01, ***p < 0.001, 95% confidence interval (95% CI), coefficient of determination (adjusted R^2) as well as F-value.

Table 2

Results of the ANCOVA for the subscale Positive Collaboration of STAR-P

	β	SE	95% CI	t	p
Intercept	12.4	2.7	[6.7, 18.1]	4.6	0.001***
Positive Collaboration, STAR-P baseline	0.5	0.2	[0.1, 0.8]	3.1	0.008**
Intervention Group MI	-1.0	1.4	[-4.0, 2.0]	-0.7	0.493

Adjusted $R^2 = 0.3$, $F\ (2, 16) = 4.7$, $p = 0.025$

Note: Results of the analysis of covariance (ANCOVA) for the subscale Positive Collaboration of the *Scale to Assess Therapeutic Relationships*, patient version (STAR-P) with baseline values used as covariates. The table includes unstandardized regression coefficient (β), standard error (SE), t-value, p-value with *p < 0.05, **p < 0.01, ***p < 0.001, 95% confidence interval (95% CI), coefficient of determination (adjusted R^2) as well as F-value.

Table 3

Results of the ANCOVA for the subscale Positive Clinician Input of STAR-P

	β	SE	95% CI	t	p
Intercept	4.2	1.4	[1.4, 7.1]	3.1	0.006**
Positive Clinician Input, STAR-P baseline	0.7	0.2	[0.3, 1.0]	4.0	0.001**
Intervention Group MI	-1.1	0.7	[-2.5, 0.4]	-1.5	0.145

Adjusted $R^2 = 0.4$, $F\ (2, 16) = 7.9$, $p = 0.004$

Note: Results of the analysis of covariance (ANCOVA) for the subscale Positive Clinician Input of the *Scale to Assess Therapeutic Relationships*, patient version (STAR-P) with baseline values used as covariates. The table includes unstandardized regression coefficient (β), standard error (SE), t-value, p-value with *p < 0.05, **p < 0.01, ***p < 0.001, 95% confidence interval (95% CI), coefficient of determination (adjusted R^2) as well as F-value.

Table 4

Results of the ANCOVA for the subscale Non-Supportive Clinician Input of STAR-P

	β	SE	95% CI	t	p
Intercept	4.2	2.2	[-0.4, 8.8]	1.9	0.069
Non-Supportive Clinician Input, STAR-P baseline	0.5	0.2	[0.1, 1.0]	2.2	0.048*
Intervention Group MI	1.2	1.0	[-0.8, 3.2]	1.3	0.208

Adjusted $R^2 = 0.2$, $F\ (2, 16) = 3.4$, $p = 0.057$

Note: Results of the analysis of covariance (ANCOVA) for the subscale Non-Supportive Clinician Input of the *Scale to Assess Therapeutic Relationships*, patient version (STAR-P) with baseline values used as covariates. The table includes unstandardized regression coefficient (β), standard error (SE), t-value, p-value with *p < 0.05, **p < 0.01, ***p < 0.001, 95% confidence interval (95% CI), coefficient of determination (adjusted R^2) as well as F-value.

Table 5

Results of the ANCOVA for the Total Score of STAR-C

	β	SE	95% CI	*t*	*p*
Intercept	25.5	7.2	[10.2, 40.7]	3.5	0.003**
Total Score STAR-C baseline	0.4	0.2	[-0.1, 0.9]	1.6	0.121
Intervention Group MI	-0.6	2.3	[-5.3, 4.2]	-0.3	0.803

Adjusted $R^2 = 0.1$, $F\ (2, 17) = 1.6$, $p = 0.224$

Note: Results of the analysis of covariance (ANCOVA) for the Total Score of the *Scale to Assess Therapeutic Relationships*, clinician version (STAR-C) with baseline values used as covariates. The table includes unstandardized regression coefficient (β), standard error (SE), t-value, p-value with *p < 0.05, **p < 0.01, ***p < 0.001, 95% confidence interval (95% CI), coefficient of determination (adjusted R^2) as well as F-value.

Table 6

Results of the ANCOVA for the subscale Positive Collaboration of STAR-C

	β	SE	95% CI	t	p
Intercept	16.3	3.9	[8.2, 24.5]	4.2	0.001***
Positive Collaboration, STAR-C baseline	0.2	0.3	[-0.4, 0.7]	0.6	0.553
Intervention Group MI	-0.4	1.4	[-3.3, 2.6]	-0.3	0.797

Adjusted $R^2 = -0.1$, $F\ (2, 17) = 0.2$, $p = 0.828$

Note: Results of the analysis of covariance (ANCOVA) for the subscale Positive Collaboration of the *Scale to Assess Therapeutic Relationships,* clinician version (STAR-C) with baseline values used as covariates. The table includes unstandardized regression coefficient (β), standard error (SE), t-value, p-value with *p < 0.05, **p < 0.01, ***p < 0.001, 95% confidence interval (95% CI), coefficient of determination (adjusted R^2) as well as F-value.

Table 7

Results of the ANCOVA for the subscale Positive Clinician Input of STAR-C

	β	SE	95% CI	t	p
Intercept	1.7	1.9	[-2.2, 5.6]	0.9	0.377
Positive Clinician Input, STAR-C baseline	0.9	0.2	[0.4, 1.4]	4.0	0.001***
Intervention Group MI	-0.3	0.5	[-1.3, 0.7]	-0.6	0.546

Adjusted R^2 = 0.4, F (2, 17) = 8.2, p = 0.003

Note: Results of the analysis of covariance (ANCOVA) for the subscale Positive Clinician Input of the *Scale to Assess Therapeutic Relationships*, clinician version (STAR-C) with baseline values used as covariates. The table includes unstandardized regression coefficient (β), standard error (SE), t-value, p-value with *p < 0.05, **p < 0.01, ***p < 0.001, 95% confidence interval (95% CI), coefficient of determination (adjusted R^2) as well as F-value.

Table 8

Results of the ANCOVA for the subscale Emotional Difficulties of STAR-C

	β	SE	95% CI	t	p
Intercept	5.7	1.2	[3.2, 8.3]	5.0	0.001***
Emotional Difficulties, STAR-C baseline	0.4	0.1	[0.2, 0.7]	3.2	0.005**
Intervention Group MI	0.3	0.5	[-0.8, 1.4]	0.6	0.560

Adjusted R^2 = 0.4, F (2, 17) = 7.4, p = 0.005

Note: Results of the analysis of covariance (ANCOVA) for the subscale Emotional Difficulties of the *Scale to Assess Therapeutic Relationships*, clinician version (STAR-C) with baseline values used as covariates. The table includes unstandardized regression coefficient (β), standard error (SE), t-value, p-value with *p < 0.05, **p < 0.01, ***p < 0.001, 95% confidence interval (95% CI), coefficient of determination (adjusted R^2) as well as F-value.

Table 9

Results of the ANCOVA for BARS

	β	SE	95% CI	t	p
Intercept	89.5	8.9	[70.6, 108.4]	10.0	0.001***
BARS baseline	0.1	0.1	[-0.1, 0.3]	1.1	0.302
Intervention Group MI	0.2	0.9	[-1.7, 2.1]	0.2	0.823

Adjusted R^2 = -0.1, F (2, 16) = 0.7, p = 0.513

Note: Results of the analysis of covariance (ANCOVA) for the *Brief Adherence Rating Scale* (BARS) with baseline values used as covariates. The table includes unstandardized regression coefficient (β), standard error (SE), t-value, p-value with *p < 0.05, **p < 0.01, ***p < 0.001, 95% confidence interval (95% CI), coefficient of determination (adjusted R^2) as well as F-value.

Table 10

Results of the ANCOVA for the Total Score of PANSS

	β	SE	95% CI	t	p
Intercept	30.0	8.4	[12.2, 47.9]	3.6	0.002**
Total Score PANSS baseline	0.4	0.1	[0.7, 0.6]	3.5	0.003**
Intervention Group MI	-12.0	3.2	[-18.7, -5.2]	-3.7	0.002**

Adjusted $R^2 = 0.6$, $F\ (2, 17) = 17.4$, $p = 0.001$

Note: Results of the analysis of covariance (ANCOVA) for Total Score of the *Positive and Negative Symptom Scale* (PANSS) with baseline values used as covariates. The table includes unstandardized regression coefficient (β), standard error (SE), t-value, p-value with *p < 0.05, **p < 0.01, ***p < 0.001, 95% confidence interval (95% CI), coefficient of determination (adjusted R^2) as well as F-value.

Table 11

Results of the ANCOVA for the subscale Positive Symptoms of PANSS

	β	SE	95% CI	t	p
Intercept	3.7	2.5	[-1.5, 8.9]	1.5	0.150
Positive Symptoms, PANSS baseline	0.5	0.1	[0.3, 0.8]	4.1	0.001***
Intervention Group MI	-3.6	1.5	[-6.8, -0.4]	-2.4	0.031*

Adjusted $R^2 = 0.5$, $F\ (2, 17) = 11.7$, $p = 0.001$

Note: Results of the analysis of covariance (ANCOVA) for the subscale Positive Symptoms of the *Positive and Negative Symptom Scale* (PANSS) with baseline values used as covariates. The table includes unstandardized regression coefficient (β), standard error (SE), t-value, p-value with *p < 0.05, **p < 0.01, ***p < 0.001, 95% confidence interval (95% CI), coefficient of determination (adjusted R^2) as well as F-value.

Table 12

Results of the ANCOVA for the subscale Negative Symptoms of PANSS

	β	SE	95% CI	t	p
Intercept	5.5	2.6	[0.1, 10.9]	2.1	0.047*
Negative Symptoms, PANSS baseline	0.6	0.1	[0.3, 0.9]	4.3	0.001***
Intervention Group MI	-2.3	1.3	[-5.1, 0.5]	-1.7	0.105

Adjusted $R^2 = 0.6$, $F\ (2, 17) = 13.6$, $p = 0.001$

Note: Results of the analysis of covariance (ANCOVA) for the subscale Negative Symptoms of the *Positive and Negative Symptom Scale* (PANSS) with baseline values used as covariates. The table includes unstandardized regression coefficient (β), standard error (SE), t-value, p-value with *p < 0.05, **p < 0.01, ***p < 0.001, 95% confidence interval (95% CI), coefficient of determination (adjusted R^2) as well as F-value.

Table 13

Results of the ANCOVA for the subscale General Symptoms of PANSS

	β	SE	95% CI	t	p
Intercept	17.1	4.5	[7.7, 26.5]	3.8	0.002**
General Symptoms, PANSS baseline	0.3	0.1	[0.1, 0.6]	3.1	0.007**
Intervention Group MI	-5.8	1.9	[-9.9, -1.7]	-3.0	0.009**

Adjusted $R^2 = 0.5$, $F\ (2, 17) = 11.6$, $p = 0.001$

Note: Results of the analysis of covariance (ANCOVA) for the subscale General Symptoms of the *Positive and Negative Symptom Scale* (PANSS) with baseline values used as covariates. The table includes unstandardized regression coefficient (β), standard error (SE), t-value, p-value with *p < 0.05, **p < 0.01, ***p < 0.001, 95% confidence interval (95% CI), coefficient of determination (adjusted R^2) as well as F-value.

Table 14

Results of the ANCOVA for the Total Score of FPTM-23

	β	SE	95% CI	*t*	*p*
Intercept	5.5	16.4	[-29.3, 40.3]	0.3	0.742
Total Score FPTM-23 baseline	0.9	0.3	[0.3, 1.4]	3.3	0.004**
Intervention Group MI	0.1	3.2	[-6.7, 6.8]	0.1	0.996

Adjusted $R^2 = 0.5$, $F\ (2, 16) = 11.6$, $p = 0.001$

Note: Results of the analysis of covariance (ANCOVA) for the Total Score of the *Therapy Motivation Questionnaire* (FPTM-23) with baseline values used as covariates. The table includes unstandardized regression coefficient (β), standard error (SE), t-value, p-value with *p < 0.05, **p < 0.01, ***p < 0.001, 95% confidence interval (95% CI), coefficient of determination (adjusted R^2) as well as F-value.

Table 15

Results of the ANCOVA for the subscale Psychological Distress of FPTM-23

	β	SE	95% CI	t	p
Intercept	5.6	2.7	[-0.1, 11.2]	2.1	0.051
Psychological Distress, FPTM-23 baseline	0.4	0.2	[-0.1, 0.9]	1.8	0.087
Intervention Group MI	-2.2	1.3	[-4.8, 0.5]	-1.7	0.100

Adjusted $R^2 = 0.2$, $F\ (2, 16) = 3.8$, $p = 0.046$

Note: Results of the analysis of covariance (ANCOVA) for the subscale Psychological Distress of the *Therapy Motivation Questionnaire* (FPTM-23) with baseline values used as covariates. The table includes unstandardized regression coefficient (β), standard error (SE), t-value, p-value with *p < 0.05, **p < 0.01, ***p < 0.001, 95% confidence interval (95% CI), coefficient of determination (adjusted R^2) as well as F-value.

Table 16

Results of the ANCOVA for the subscale Symptom-related Support from Others of FPTM-23

	β	SE	95% CI	t	p
Intercept	2.2	1.4	[-0.7, 5.1]	1.6	0.131
Symptom-related Support from Others, FPTM-23 baseline	0.6	0.2	[0.2, 1.0]	3.3	0.004**
Intervention Group MI	-0.1	0.7	[-1.5, 1.4]	-0.1	0.947

Adjusted $R^2 = 0.4$, $F\ (2, 16) = 6.4$, $p = 0.009$

Note: Results of the analysis of covariance (ANCOVA) for the subscale Symptom-related Support from Others of the *Therapy Motivation Questionnaire* (FPTM-23) with baseline values used as covariates. The table includes unstandardized regression coefficient (β), standard error (SE), t-value, p-value with *p < 0.05, **p < 0.01, ***p < 0.001, 95% confidence interval (95% CI), coefficient of determination (adjusted R^2) as well as F-value.

Table 17

Results of the ANCOVA for the subscale Hope of FPTM-23

	β	SE	95% CI	t	p
Intercept	-3.1	1.3	[-5.9, -0.3]	-2.3	0.034*
Hope, FPTM-23 baseline	1.1	0.1	[0.8, 1.4]	8.3	0.001***
Intervention Group MI	1.9	0.7	[0.5, 3.2]	2.8	0.012*

Adjusted $R^2 = 0.8$, $F\ (2, 16) = 34.6$, $p = 0.001$

Note: Results of the analysis of covariance (ANCOVA) for the subscale Hope of the *Therapy Motivation Questionnaire* (FPTM-23) with baseline values used as covariates. The table includes unstandardized regression coefficient (β), standard error (SE), t-value, p-value with *p < 0.05, **p < 0.01, ***p < 0.001, 95% confidence interval (95% CI), coefficient of determination (adjusted R^2) as well as F-value.

Table 18

Results of the ANCOVA for the subscale Denial of Psychological Helplessness of FPTM-23

	β	SE	95% CI	t	p
Intercept	8.4	2.1	[4.0, 13.0]	4.0	0.001***
Denial of Psychological Helplessness, FPTM-23 baseline	0.3	0.2	[-0.1, 0.7]	2.1	0.051
Intervention Group MI	1.2	1.1	[-1.1, 3.6]	1.1	0.283

Adjusted $R^2 = 0.1$, $F\ (2, 16) = 2.4$, $p = 0.119$

Note: Results of the analysis of covariance (ANCOVA) for the subscale Denial of Psychological Helplessness of the *Therapy Motivation Questionnaire* (FPTM-23) with baseline values used as covariates. The table includes unstandardized regression coefficient (β), standard error (SE), t-value, p-value with *p < 0.05, **p < 0.01, ***p < 0.001, 95% confidence interval (95% CI), coefficient of determination (adjusted R^2) as well as F-value.

Table 19

Results of the ANCOVA for the subscale Initiative of FPTM-23

	β	SE	95% CI	t	p
Intercept	7.5	1.9	[3.6, 11.5]	4.0	0.001***
Initiative, FPTM-23 baseline	0.4	0.2	[0.1, 0.7]	2.4	0.027*
Intervention Group MI	-2.5	1.0	[-4.6, -0.3]	-2.4	0.029*

Adjusted $R^2 = 0.5$, $F\ (2, 16) = 8.5$, $p = 0.003$

Note: Results of the analysis of covariance (ANCOVA) for the subscale Initiative of the *Therapy Motivation Questionnaire* (FPTM-23) with baseline values used as covariates. The table includes unstandardized regression coefficient (β), standard error (SE), t-value, p-value with *p < 0.05, **p < 0.01, ***p < 0.001, 95% confidence interval (95% CI), coefficient of determination (adjusted R^2) as well as F-value.

Table 20

Results of the ANCOVA for the subscale Knowledge about Psychotherapy of FPTM-23

	β	SE	95% CI	t	p
Intercept	6.2	2.1	[1.7, 10.6]	2.9	0.01**
Knowledge about Psychotherapy, FPTM-23 baseline	0.5	0.2	[0.1, 0.9]	2.8	0.012*
Intervention Group MI	-1.0	0.9	[-2.8, 0.9]	-1.1	0.280

Adjusted $R^2 = 0.3$, $F\ (2, 16) = 5.7$, $p = 0.014$

Note: Results of the analysis of covariance (ANCOVA) for the subscale Knowledge about Psychotherapy of the *Therapy Motivation Questionnaire* (FPTM-23) with baseline values used as covariates. The table includes unstandardized regression coefficient (β), standard error (SE), t-value, p-value with *p < 0.05, **p < 0.01, ***p < 0.001, 95% confidence interval (95% CI), coefficient of determination (adjusted R^2) as well as F-value.