

Do individuals with schizophrenia and a borderline intellectual disability benefit from psychoeducational groups?



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Abstract Studies on psychoeducation in schizophrenia demonstrate significant effects on rehospitalization rates, compliance and knowledge. Within the framework of the Munich COGPIP study we examined whether borderline intellectual disability in patients with schizophrenia limits the benefit from psychoeducational groups. A total of 116 inpatients with schizophrenic or schizoaffective disorders were recruited for the COGPIP study. A manualized, interactive psychoeducational programme of eight sessions (4 weeks) was initiated. Measures of knowledge, adherence and the concept of illness were completed before and after the groups. The short-term outcome of 22 participants with schizophrenia and borderline intellectual disability (IQ 70–85) was compared with the outcome of 75 participants with schizophrenia and IQ > 85. Results showed that individuals with schizophrenia and borderline intellectual disability could be successfully integrated into general psychoeducational groups. The conclusion is that borderline intellectual disability should not be an exclusion criterion for participation in such groups.

Keywords adherence; illness knowledge; intellectual disability; psychoeducation; schizophrenia

Introduction

Psychoeducation is defined as 'systematic, structured, didactic information on the illness and its treatment, and includes integrating emotional aspects in order to enable patients – as well as family members – to cope with the illness' (Bäuml and Pitschel-Walz, 2008). Several meta-analyses showed that participation in psychoeducational groups can reduce the relapse and rehospitalization rates (Lincoln et al., 2007; Pekkala and Merinder, 2002; Pitschel-Walz et al., 2001). Lincoln et al. (2007) found that bifocal psychoeducation for patients and their families is more successful than a mere patient (unifocal) psychoeducation. The effects of the relatively short psychoeducational interventions are retained over several years (Bäuml et al., 2007; Hornung et al., 1999; Ito et al., 2002; Tarrier et al., 1994). Because of its positive results, psychoeducation is considered an integral part of the state-of-the-art treatment in treatment guidelines for schizophrenia (American Psychiatric Association, 2004; DGPPN, 2006).

There are few treatment studies and no randomized controlled trials with individuals with a dual diagnosis of schizophrenia and intellectual disability in general (Duggan and Brylewski, 2004) and specifically with respect to psychoeducation. Therefore the question is still open as to whether these patients can benefit from psychoeducational groups as well as patients without intellectual impairments. Crowley et al. (2008) performed a pilot study with eight people with a dual diagnosis of psychosis (schizophrenia or bipolar disorders) and mild or borderline intellectual disability. They tested a special psychoeducational programme that was adapted to the needs of their target group. The participants appreciated being in the groups; they liked to meet each other and were interested in talking about their illness. A significant knowledge gain was observed. This preliminary study encourages more psychoeducation for this target group and for further research in this field.

In the routine care of psychiatric hospitals the question arises as to whether patients with schizophrenia and cognitive deficits can be involved in a general psychoeducational programme. What makes cognitive deficits in schizophrenia clinically so important is that they play a crucial role in case management, challenging clinicians' and other professionals' communication skills (McGurk and Mueser, 2006; Priebe and McCabe, 2008), and may limit rehabilitation efforts. For example, an increasing number of studies have observed poor insight, which itself is crucial for treatment adherence, to be a reflection of cognitive dysfunctions, primarily of those mediated by the frontal and the parietal cortex (Shad et al., 2006). Similarly, psychosocial rehabilitation outcome is associated primarily with the amount and pattern of neurocognitive deficits (Brekke et al., 2007;

Green et al., 2000). Against this background the assumption appears mandatory that neurocognitive deficits can limit the therapeutic use and the effects of psychosocial interventions for patients with schizophrenia. If this were true for psychoeducational interventions, it would be reasonable to adapt existing treatment programmes to patients who are strongly cognitively impaired to enable them to profit from such an intervention as well.

At the psychiatric hospital, Technische Universität München, Germany, a randomized study ('COGPIP – Cognitive Determinants of Psychoeducation and Information in Schizophrenic Psychoses', supported by the German Research Foundation) was performed from January 2006 to April 2009. The aim of this study was to examine whether the efficacy of psychoeducation in patients with schizophrenia is dependent on their cognitive performance and if prior cognitive training can enhance the therapeutic effects of psychoeducation. As we also measured the global IQ, we had the chance to investigate in a subgroup analysis whether patients with schizophrenia and a borderline intellectual disability can improve their knowledge, their concept of illness and their adherence through psychoeducation to the same extent as the patients with schizophrenia but without intellectual disabilities.

Method

Participants

Participants were recruited by the study psychiatrist (T.F.) from three wards of the psychiatric hospital, Technische Universität München, Germany. All admitted patients who fulfilled the ICD-10 criteria for a schizophrenia-spectrum disorder (F20.x) or schizoaffective disorder (F25.x) were screened. Patients who met the following inclusion criteria were informed about the study and asked to participate: (1) age between 18 and 60 years, (2) absence of any serious somatic illness or intellectual disability, including brain injury and dementia, (3) German as first language or very good knowledge of German.

A total of 242 patients were screened, and 122 patients (50%) in 14 groups were recruited and gave informed consent. Six patients dropped out before randomization into the cognitive intervention or control group and 19 patients dropped out during the intervention phase. Pre-post data of 97 participants could be analysed. Based on the IQ estimates drawn from Raven's Standard Progressive Matrices (SPM), we had 22 participants (23%) with a borderline intellectual disability (IQ 70–85) and 75 participants with IQ > 85. The distribution of the IQ in four classes is presented in Table 1.

Descriptive data on the 97 participants differentiated by intellectual performance are reported in Table 2. There were no significant differences between the subgroups except for educational achievement. As expected, the percentage of high school graduates was significantly higher in participants without intellectual disabilities ($\chi^2 = 4.8$, d.f. = 1, Fisher's exact test, $p < 0.05$).

Table 1 IQ distribution (Raven's Standard Progressive Matrices) within our study participants (N = 97)

IQ	N (%)
70-85	22 (23%)
86-100	32 (33%)
101-115	30 (31%)
> 116	13 (13%)
Range	74-131
Mean	98.8 (SD 14.3)
Median	100.00

Table 2 Description of the study participants (N = 97)

	IQ 70-85 n = 22	IQ > 85 n = 75	Test	p
Gender (female %)	59%	55%	Fisher's exact test $\chi^2 = 0.1$	n.s.
Age, years (mean)	37 (SD 11.6)	33 (SD 9.3)	t-test T = 1.5	n.s.
Educational achievement: high school graduate (%)	18%	44%	Fisher's exact test $\chi^2 = 4.8$	$p < 0.05$
Duration of illness, years (mean)	10 (SD 9.0)	8 (SD 7.0)	t-test T = 1.3	n.s.
Number of previous hospitalizations (mean)	6 (SD 8.4)	5 (SD 4.3)	t-test T = 0.9	n.s.
PANSS* total (mean)	68 (SD 17.1)	68 (SD 13.2)	t-test T = 0.1	n.s.
IQ (mean)	81 (SD 3.0)	104 (SD 11.7)	t-test T = 15.6	$p < 0.001$
Neurocognition (GCPI) (mean)	40 (SD 4.9)	44 (SD 5.2)	t-test T = 3.6	$p < 0.001$

* Positive and Negative Syndrome Scale (Kay et al., 1992).

Procedure

When a group of 6 to 10 patients had given informed consent, t_1 assessments started. Then the study participants were randomized according to a randomization list of the Institute for Medical Statistics and Epidemiology (IMSE), Technische Universität München, either to cognitive training plus psychoeducational group (intervention group) or to routine art and occupational therapy plus psychoeducational group (control group).

Thirteen participants out of 22 (59%) with a borderline intellectual disability and 38 participants out of 75 (51%) without intellectual disability were randomly allocated to the intervention group and took part in the cognitive training sessions (2 weeks) before the psychoeducational group ($\chi^2 = 0.5$, d.f. = 1, Fisher's exact test $p = 0.628$).

While the participants of the intervention group attended the cognitive training programme, the control patients of the same recruitment group were enrolled in art and occupational therapy groups. After this 2 week period, t_2 assessments were performed. Then for all participants of the recruitment group the psychoeducational group began (4 weeks). After the last psychoeducational group session, t_3 assessments took place (see Figure 1).

Interventions

Cognitive training The intervention group attended a maximum of 10 daily training sessions lasting 60 minutes each over a 2 week period using the COGPACK programme (Marker, 2003). Each session consisted of a sequence of computerized exercises designed to improve five selected cognitive domains (attention, verbal and non-verbal memory, psychomotor speed, language processing and visuomotor skills). The training took place in small groups and was overseen by a trained psychologist (A.G.), who explained the tasks to the participants and helped them overcome difficulties. Task difficulty varied depending on individual performance and was gradually increased over the course of the training. The selected tasks and the course of the cognitive training will be reported in detail elsewhere.

Psychoeducational groups All study participants were encouraged to attend a psychoeducational group. Psychoeducation was performed in accordance with the manual *Arbeitsbuch PsychoEduktion bei Schizophrenie (APES)* of Bäuml et al. (2005). Interactive spreading of information and emotional relief are the basic elements of this psychoeducational concept (Bäuml et al., 2006). The total programme consisted of eight 1 hour group sessions, with two sessions per week. Comprehensive information was

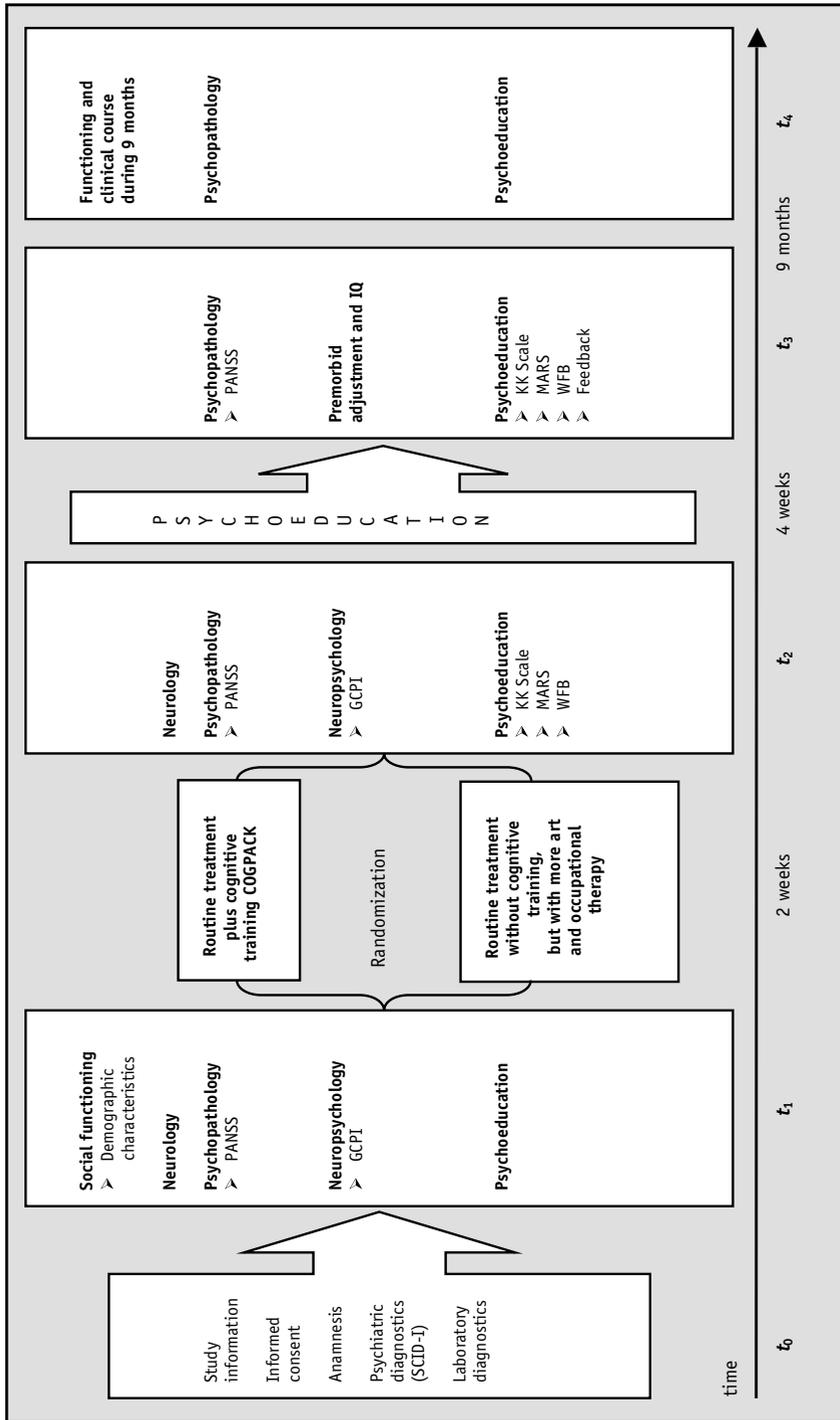


Figure 1 Design of the COGPIP study: procedure, assessment points and measures used in the present analysis

given about symptoms, etiology, acute treatment, relapse prevention and psychosocial treatment of schizophrenia; adequate coping strategies were discussed and individual crisis plans were drawn up (cf. Table 3). Furthermore, participants had the opportunity to discuss current questions or day-to-day problems concerning the illness. By establishing good group cohesion, the psychoeducational groups also made self-help effects for the group members possible. There were 14 psychoeducational groups, with 6–12 study participants on average in each group. Participants with or without intellectual disabilities took part in the same groups and used the same written material. Their relatives were invited to separate psychoeducational relatives' groups. Also in the relatives' groups no difference was made between study participants with or without intellectual disabilities. The total psychoeducational programme for relatives consisted of eight 2 hour group sessions, with one session every fortnight. Information in the relatives' groups was of the same tenor as in the patients' groups and the relatives received the same written material. In addition it was discussed how family members can better help the patient with schizophrenia and how they can obtain support and emotional relief for themselves.

Table 3 Content of psychoeducational group sessions according to the APES program (Bäumel and Pitschel-Walz, 2005)

<i>Session</i>	<i>Content</i>
1	Starting the group Expectations, introduction, concept of illness
2	Signs and symptoms of schizophrenia Diagnosis of schizophrenia
3	Causes of schizophrenia: Dopamine hypothesis
4	Causes of schizophrenia: Vulnerability–stress–coping model
5	Treatment of schizophrenia: Medication, effects and side effects
6	Treatment of schizophrenia: Psychotherapy
7	Treatment of schizophrenia: Psychosocial treatment strategies
8	Relapse prevention, early warning signs and emergency plan Finishing the group

Assessments

The global (fluid) IQ was determined by Raven's Standard Progressive Matrices (SPM) in its computer-based version 31.00 as part of the Vienna Test System (Schuhfried, 2005). The assessment was performed by the study psychologist (A.G.). In order to get IQ estimates as free of interference with acute schizophrenic symptoms as possible, the assessment was applied separately from other neuropsychological tests at a later measurement point (t_3 , after psychoeducation).

Participants were assessed twice (at t_1 and t_2) with a comprehensive neuropsychological test battery including paper and pencil tests as well as computer-based tests. Taking into account the recommendations of the NIMH-MATRICES Conferences (Kern et al., 2004) and psychoeducation-related needs, the battery consisted of 11 cognitive and psychomotor tests (74 raw scores) that took between 2½ and 3 hours to complete and were aimed primarily at assessing attentional, memory, executive and psychomotor functions. In order to express all of the test variables in a common metric, T-scores (mean = 50, standard deviation = 10) were used as standard scores. Where T-scores were not the primary outcome format of a test variable, percentiles (or some other normative standard scores) were transformed into T-scores using the standard normal distribution. A global cognitive performance index (GCPI) for each measurement point was calculated as an average T-score from 40 out of 60 T-scored test variables. (The rationale for the selection of these 40 test variables on grounds of neuropsychological expertise, inspection of data, and the results of explorative factor and reliability analyses will be reported elsewhere.)

The Knowledge of Illness About Schizophrenia Questionnaire (Wissensfragebogen, WFB) is one of the measures to evaluate the success of psychoeducation in schizophrenia. The multiple choice questionnaire was created for the German PIP study (Pitschel-Walz, 1997; Pitschel-Walz et al., 2006) and the questions are related to the topics that are discussed in the psychoeducational groups, concerning symptoms, causes, treatment and warning signs (for example: 'A person suffering from schizophrenia almost always has difficulties in coping with day-to-day life', or 'Persons who are afflicted with schizophrenic psychoses often believe that their thoughts are being controlled by other persons'). After an item analysis, items with insufficient item characteristics were excluded. A 52-item version of the questionnaire yielded the best results: Cronbach's $\alpha = 0.94$, retest reliability (Pearson) = 0.74, Kaiser-Meyer Olkin = 0.87. With this knowledge questionnaire version a maximum knowledge sum score of 52 can be achieved.

The KK Scale (Krankheitskonzept-Skala: Linden et al., 1988) was used to determine the patients' attitudes towards the illness and the possible

treatment strategies. This self-rating scale was developed to measure seven dimensions of the patients' disease concepts including 'trust in medication', 'trust in the treating physician', 'negative treatment expectations', 'guilt', 'chance control', 'susceptibility' and 'idiosyncratic assumptions'. The seven subscales are evaluated separately. The reliability and validity of the KK Scale was tested in groups of patients with schizophrenia in different treatment settings. According to Linden and co-workers, the psychometric characteristics of the scale were found to be satisfactory.

The Medication Adherence Rating Scale (MARS) is a 10-item self-report measure of medication adherence in schizophrenia (Thompson et al., 2000). Higher sum scores reflect a better adherence. Thompson et al. (2000) report for the MARS a Cronbach's α of 0.75. The test-retest reliability assessed after a 2 week interval using parallel-forms chi-square to test the goodness of fit was 0.72. The MARS has demonstrated a high level of validity compared to other existing self-report measures and is often used.

In our study, the above mentioned questionnaires (WFB, KK Scale, MARS) were completed before (pre = t_2) and after the psychoeducational intervention (post = t_3).

At the end of the psychoeducational group programme, the participants completed a feedback questionnaire for a subjective assessment of the groups with open and closed questions. The answers to the questions 'How helpful did you find the groups?' (very helpful, helpful, less helpful, not helpful at all) and 'How well informed do you feel?' (very well informed, well informed, less informed, not informed at all) are reported.

The assessment of clinical symptoms of schizophrenia was made using the Positive and Negative Syndrome Scale (PANSS: Kay et al., 1992), a standard measure in psychiatry. The PANSS consists of 30 items assessing positive and negative symptoms of schizophrenia as well as general psychopathology. The PANSS rating was made by a well trained psychiatrist (F.T.) at study entry (t_1) and before (t_2) and after psychoeducation (t_3).

Analysis

Repeated measures ANOVAs were conducted to explore main effects and interactions between time and groups. For each measurement time, additional t-tests or non-parametric procedures (Mann-Whitney test) were performed for independent samples according to distributional characteristics. In order to investigate statistically significant changes in the measures over time (pre-post) within each group, paired sample t-tests were conducted. χ^2 -tests (Pearson) were used for group comparisons involving categorical variables with more than two alternative answers. Fisher's exact test was employed for dichotomous variables.

Results

Neurocognition

Multivariate tests showed a nearly significant improvement of the global cognitive performance index (GCPI) from t_1 to t_2 ($F = 3.915$, $d.f. = 1$, $p = 0.051$) for the total group and clearly non-significant interaction effects between cognitive performance and cognitive intervention subgroups ($F = 0.885$, $d.f. = 1$, $p = 0.349$) or between cognitive performance and intellectual status ($F = 0.026$, $d.f. = 1$, $p = 0.872$). In additional t -tests for independent groups we found significantly lower global cognitive performance indices in participants with borderline intellectual disabilities at both measurement points (t_1 , $T = 3.6$, $d.f. = 95$, $p < 0.001$; t_2 , $T = 3.5$, $d.f. = 95$, $p < 0.01$). Thus the level of the global cognitive performance index (GCPI) was lower for participants with borderline intellectual disabilities, but the patterns of change were comparable.

Knowledge

As there was no randomization effect on the global cognitive performance, intervention and control group could be examined together.

The results of the multivariate tests do indicate gains in knowledge for the total group ($F = 16.379$, $d.f. = 1$, $p < 0.001$). There were no differences in knowledge gain between patients with and without intellectual disabilities (group \times time interaction effect: $F = 0$, $d.f. = 1$, $p = 0.998$). However, the level of knowledge tended to be lower in the participants with borderline intellectual disabilities at both measurement points (subgroup effect: $F = 3.207$, $d.f. = 1$, $p = 0.077$). Means and standard deviations of the knowledge scores before (pre) and after (post) the eight psychoeducational group sessions and the results of the t -tests are displayed in Table 4.

Table 4 Knowledge and adherence before (pre) and after (post) eight psychoeducational group sessions

Questionnaire	<i>IQ 70–85</i> <i>n = 22</i>	<i>IQ > 85</i> <i>n = 75</i>	Test	<i>p</i>
Knowledge (WFB-52)			<i>t</i> -test	
pre	32.9 (SD 9.6)	37.7 (SD 11.7)	$T = 1.7$	n.s.
post	36.8 (SD 10.3)	41.1 (SD 11.5)	$T = 1.6$	n.s.
Adherence (MARS)			<i>t</i> -test	
pre	7.0 (SD 2.1)	6.5 (SD 2.1)	$T = 0.9$	n.s.
post	7.5 (SD 2.1)	6.9 (SD 2.1)	$T = 1.2$	n.s.

Adherence

The MARS sum score of the total group did improve after the psychoeducational group sessions, though not significantly ($F = 2.397$, $d.f. = 1$, $p = 0.125$). The participants with borderline intellectual disabilities had a higher MARS sum score before and after the psychoeducational group (cf. Table 4), but this difference did not turn out to be significant ($F = 0.868$, $d.f. = 1$, $p = 0.354$). There was no interaction effect between intellectual status and change of the MARS sum score ($F = 0.026$, $d.f. = 1$, $p = 0.872$). Means and standard deviations of the MARS sum scores before (pre) and after (post) the eight psychoeducational group sessions and the results of the t-tests are presented in Table 4.

Concept of illness

In six subscales of the KK Scale no differences between the subgroups were found (cf. Table 5). The subscale 'Trust in the treating physician' exhibited

Table 5 Concept of illness (KK Scale) before (pre) and after (post) eight psychoeducational group sessions

<i>KK Scale subscales</i>	<i>IQ 70–85 n = 22</i>	<i>IQ > 85 n = 75</i>	<i>Test</i>	<i>p</i>
Trust in medication			Mann–Whitney	
pre	14.9 (SD 4.4)	14.4 (SD 4.3)	Z = 0.8	n.s.
post	16.2 (SD 3.8)	14.6 (SD 4.1)	Z = 1.8	n.s.
Trust in the treating physician			Mann–Whitney	
pre	12.3 (SD 2.1)	11.3 (SD 2.8)	Z = 1.6	n.s.
post	13.1 (SD 2.8)	11.1 (SD 2.7)	Z = 3.0	$p < 0.01$
Negative treatment expectations			Mann–Whitney	
pre	6.3 (SD 3.0)	7.1 (SD 4.0)	Z = 0.8	n.s.
post	5.7 (SD 4.2)	7.0 (SD 3.5)	Z = 1.5	n.s.
Guilt			Mann–Whitney	
pre	3.9 (SD 2.3)	3.8 (SD 2.9)	Z = 0.6	n.s.
post	3.2 (SD 2.6)	3.9 (SD 2.5)	Z = 1.0	n.s.
Chance control			Mann–Whitney	
pre	9.0 (SD 4.8)	7.7 (SD 4.2)	Z = 1.2	n.s.
post	7.9 (SD 4.9)	7.3 (SD 3.8)	Z = 0.3	n.s.
Susceptibility			Mann–Whitney	
pre	7.4 (SD 2.5)	6.9 (SD 2.5)	Z = 1.0	n.s.
post	6.9 (SD 2.9)	6.9 (SD 2.6)	Z = 0.3	n.s.
Idiosyncratic assumptions			Mann–Whitney	
pre	6.2 (SD 3.0)	6.8 (SD 3.1)	Z = 0.8	n.s.
post	5.7 (SD 3.4)	6.3 (SD 2.7)	Z = 1.2	n.s.

the only significant difference between participants with and without intellectual disabilities. In participants with intellectual disabilities, 'Trust in the treating physician' was generally higher and after psychoeducation (t_3) was significantly higher than in participants without intellectual disabilities (Mann-Whitney U -test, $Z = 3.045$, $p < 0.01$).

Acceptance

The majority of participants found the psychoeducational groups to be beneficial. All participants with borderline intellectual disabilities (100%) and 95 percent of the other participants found the groups very helpful or helpful ($\chi^2 = 4.419$, d.f. = 3, $p = 0.220$). Also the subjective assessment of the information was comparable in the subgroups: 96 percent of the participants with borderline intellectual disabilities and 97 percent of the participants without intellectual disabilities felt very well or well informed ($\chi^2 = 2.649$, d.f. = 2, $p = 0.266$).

Discussion

Our *post hoc* analyses of data collected within the framework of the Munich COGPIP study demonstrated that individuals with schizophrenia and a borderline intellectual disability obtained a clear benefit from general psychoeducational groups. The knowledge gain, the improvement of adherence and the change in the concept of illness observed were comparable with the data of the participants without intellectual disabilities and with the results of other studies (Bäumel et al., 1996; Linden et al., 1988; Pitschel-Walz et al., 1993; Rummel-Kluge et al., 2007).

The findings show that in participants with borderline intellectual disabilities, adherence and 'trust in the treating physician' could further be strengthened in spite of a high basic level.

In accordance with the special psychoeducational programme that was introduced in the study by Crowley et al. (2008), the general psychoeducation programme APES is also interactive, uses a lot of visual material (symbols, metaphors and pictures) and provides frequent repetition of information (Pitschel-Walz and Bäumel, 2005). The empathic therapeutic attitude and the working together with the same group moderators may also have contributed to the positive results, because a good therapeutic alliance is an essential factor in the APES programme and is especially important for patients with intellectual disabilities.

High values in adherence and a good therapeutic alliance as found in our subgroup are described as positive conditions for a favourable long-term outcome and recovery in schizophrenia (Charpentier et al., 2009; Llorca, 2008; Petersen et al., 2008). Nevertheless, the question arises as to

whether these conditions are sufficient to influence the course of the illness in our participants with borderline intellectual disabilities. Low neuro-cognitive level and low knowledge scores – the post-treatment scores were lower than the pre-treatment scores of the participants without intellectual disabilities – may impair the realization of adherent behaviour in future. As we are investigating the rehospitalization rates of the participants in a follow-up 9 months after discharge, we will be able to address this question later. At this point, we suggest taking advantage of the good adherence and therapeutic alliance and offering additional psychoeducational sessions or booster sessions for patients with intellectual disabilities to further improve illness-related knowledge.

On the other hand, it might be that the patients with a high IQ could not realize their full potential in our psychoeducational groups and therefore no significant differences in the knowledge gains of the subgroups were found. They might also profit from additional psychoeducational sessions or written material tailored to their particular needs.

Limitations

It should be taken into account that these are the results of a *post hoc* analysis, which can only find patterns in subgroups of a sample. As there is a lack of studies in this field, our analyses provide important basic information for further research.

This study involved patients with schizophrenia and borderline intellectual disabilities but not with mild or stronger intellectual disabilities. Therefore our findings do not apply to that subgroup of patients. Presumably they would benefit more from a modified psychoeducational programme and the attendance of the key relatives would be all the more important.

Conclusion

In the routine care of psychiatric hospitals, a borderline intellectual disability should no longer be an exclusion criterion for participation in psychoeducational group programmes for people suffering from schizophrenia. We can concur with Haddock and Jones (2006) in their statement referring to cognitive behaviour therapy for individuals with a learning disability and conclude that psychoeducational groups for patients with schizophrenia and intellectual disabilities need to be ‘creatively delivered’, but do not ‘necessarily need extensive adaptation’.

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