

## ORIGINAL PAPER

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# Timing of psychoeducational psychotherapeutic interventions in schizophrenic patients

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**Abstract** Psychoeducational interventions for schizophrenic outpatients and their key-persons have shown impressive long-term effects on the course of illness. Psychoeducation is suggested to be offered as early as possible to be most effective. This prospective randomized study examines the influence of pre-therapy duration of illness on the effects of a psychoeducative training. The controlled study covered a total of 191 schizophrenic outpatients and comprised psychoeducational training and cognitive psychotherapy. Pre-therapy duration of illness was divided at 4 and 7 years resulting in groups of short, medium, and long duration of psychosis. Study patients were examined for rehospitalization at a five year interval. In patients with long duration of illness, attendance at psychoeducation did not modify rehospitalization rate. This was true for patients with very short duration of psychosis. Only patients with medium duration of illness after psychoeducative intervention showed a reduced rehospitalization rate. In general, results do recommend psychoeducative intervention at early psychosis. However, psychoeducation was not optimally located in patients with a very short duration of illness. Psychoeducation showed a most pre-

ventive effect in patients with a medium duration of illness who already accept their illness but are not yet adhering to fatalistic assumptions often established to explain the manifestation of illness.

**Key words** schizophrenia · psychoeducation · duration of illness · early intervention

## Introduction

If schizophrenic patients attend to a psychoeducational psychotherapy added to standard therapy they are expected to improve their outcome markedly. Concerning therapeutic efficacy, numerous controlled studies showed that psychoeducational family interventions can reduce relapse rates of schizophrenic patients within two years following discharge by 20 % on average (Mari and Streiner 1994; Dixon and Lehman 1995). To date, two controlled studies on psychoeducational family interventions covering periods of five years reveal a relevant prophylactic effect on relapse rates in the long-term as well. Tarrier et al. (1994) noted a relapse rate of 62 % in the family intervention group in contrast to 83 % in the control group. Hornung et al. reported readmission rates at 42 % and 69 %, respectively (Hornung et al. 1999). Within a four year period after psychoeducational intervention and subsequent long-term treatment, Basan et al. (2000) found hospital days to be reduced in patients who maintained the subsequent treatment.

Intervention studies did comment primarily on setting and patient characteristics appropriate to effective psychoeducation. Recently, it was McGorry who pointed out that the optimal treatment time for psychoeducation still is unknown [1995, 1998]. McGorry (1995) supposed an early intervention to be most effective. Early psychoeducation should encourage acceptance of illness and promote crisis management skills (Birchwood et al. 1997).

In a prospective study with schizophrenic outpatients enrolled by the Muenster Schizophrenia Study

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Group (Hornung et al. 1996), the efficacy of psychoeducational training was investigated in terms of rehospitalization rates and overall functioning within a five year follow-up (Hornung et al. 1999). The present evaluation was carried out to determine the effect of duration of illness on post-treatment outcome characteristics.

## Methods

Patients met the following inclusion criteria: a) schizophrenia according to DSM-III-R 295 without 295.7 (American Psychiatric Association, 1987); b) at least two acute psychotic episodes within the past five years; c) at least four weeks' psychopathological stabilization; d) indication for long-term neuroleptic medication; e) no secondary psychiatric diagnosis.

A total of 191 patients (111 male, 80 female) who met these criteria were assigned in balanced randomization either to one of four different treatment groups with combined psychoeducational and cognitive treatment including key-person counseling or a control group. Criteria of the balanced randomization procedure were age, sex, medication compliance (dichotomized) and prognostic score (Strauss et al. 1977). Within the treatment condition patients received the following treatments: 32 patients with psychoeducational training alone, 34 patients with psychoeducational training combined with cognitive psychotherapy, 35 patients with psychoeducational training in conjunction with psychoeducational groups of their key relatives, and 33 patients with psychoeducational training, cognitive psychotherapy and relatives' groups. The 57 patients of the control group attended a structured but unspecific leisure-time group of the same length. The routine outpatient treatment was continued for all study patients. The psychoeducational intervention aimed at improving knowledge about schizophrenic illness and its treatment and at promoting medication and crisis management skills. Following the procedure proposed by D'Zurilla & Goldfried (1971), the cognitive treatment aimed at improving problem-solving skills by providing a structured planning of coping behavior. Key-person counseling was intended to improve the coping skills of key persons in the management of schizophrenia by providing extensive information on schizophrenia. The patients of the control group pursued regular leisure-time activities. It was ensured that there was no specific psychotherapeutic treatment.

Patients' mean age was 31.3 ( $\pm 7.0$ ) years, the mean duration of illness was 8.4 ( $\pm 5.8$ ) years. Duration of illness was median dichotomized at 7 years resulting in short and long duration groups. The short duration group was subdivided at the 25<sup>th</sup> percentile. If their duration of illness before treatment was less than 5 years, patients were placed in the very short duration group and leaving a remaining group of medium duration (5 to 7 years).

Patients were assessed at baseline, immediately on completion of the approximately 8-month treatment phase, and at one-year, two-year and five-year follow-ups. The main focus of the 5-year follow-up was the rehospitalization rate defined as a stay at a psychiatric hospital for more than 36 hours or at a day-hospital for more than five days. Patients were questioned about rehospitalizations in a semistructured interview (Hornung et al. 1999). Information was completed by referring to patients' case notes and/or hospital records.

A logistic regression was performed to assess duration of illness as predictor of the long-term course of illness. Chi<sup>2</sup> tests for four-fold tables were used to analyze rehospitalization rates in treatment attenders and controls. The significance level was stipulated at  $\alpha = 0.05$ .

## Results

For various reasons, a total of 44 out of 191 patients dropped out before treatment had been started, representing 29% of the patients in the control group and

20% of those in the treatment groups. There was no significant difference in the balancing factors of randomization between these early drop-outs (N = 44) and the remaining participants (N = 147).

At the five-year follow-up, rehospitalization data and interviews of 126 participants served as a basis for the present evaluation. As far as the balancing factors of randomization and a wide range of other relevant variables were concerned, there were no significant differences between the patients of the control group (N = 35) and those of the treatment groups (N = 91) (Hornung et al. 1999). The number of drop outs within the five-year follow-up (late drop outs, N = 21, 14%) was comparatively small. Three patients had died for natural or unknown reasons, one patient had moved to the Philippines, and 17 patients were not found (i.e., no recent address or clinical data were obtainable).

A logistic regression was performed to assess duration of illness as a predictor of the long-term course of illness after psychoeducative interventions. The logistic regression model predicting rehospitalization was to reflect past history as well as sociodemographic data and psychopathologic symptoms of the patients. Thus, the model included the variables sex, duration of illness, number of hospitalizations before baseline, partnership, total scores of the Brief Psychiatric Rating Scale (Overall & Gorham 1962), the Scale for the Assessment of Negative Symptoms (Andreasen 1989), and the Global Assessment Scale (Endicott et al. 1976). All scores were obtained at baseline.

A model using all variables for the equation correctly predicted 72% of outcome. Partnership situation (i.e., the patient living alone or with a partner) contributed most to prediction of outcome, outperforming even the number of previous hospitalizations (Table 1).

Variables that did not contribute significantly to prediction (i.e.,  $p$  out  $< 0.1$ ) were then excluded stepwise. The reduced final model was correctly predicting 74% of outcome using the variables number of hospitalizations before baseline, duration of illness, and partnership situation (Table 2).

The same regression model was recalculated for patients of the control group, thus, predicting outcome not modified by therapy. Here, the reduced final model used the variables number of hospitalizations before baseline

**Table 1** Logistic regression. Statistical data for variables in the equation

	B	S. E.	Wald	df	sig.	Exp (B)
Sex	0.759	0.594	1.633	1	0.201	2.136
Partnership	-1.708	0.655	6.792	1	0.009	0.181
Duration of illness	0.080	0.047	2.952	1	0.089	1.083
Number of hospitalizations before baseline	1.026	0.679	2.285	1	0.131	2.790
BPRS total score	-0.036	0.064	0.315	1	0.575	0.965
GAS score	-0.024	0.037	0.419	1	0.517	0.976
SANS total score	-0.078	0.099	0.621	1	0.431	0.925

**Table 2** Logistic regression. Statistical data for variables contributing to prediction (final iteration)

	B	S. E.	Wald	df	sig.	Exp (B)
Partnership	-1.787	0.604	6.897	1	0.009	0.205
Duration of illness	0.075	0.046	2.625	1	0.105	1.077
Number of hospitalizations before baseline	1.132	0.650	3.031	1	0.082	3.102

and partnership situation. Duration of illness did not contribute significantly to prediction (data not shown).

Rehospitalization rates were analyzed for attenders and controls. In 44 attenders of the treatment groups, duration of illness before treatment was more than 7 years. Here, 28 attenders (64%) were rehospitalized in the following 5 years. Long duration of illness was true for 16 patients of the control group with 9 (56%) of them rehospitalized during follow-up.

In 46 attenders of the treatment groups, duration of illness before treatment was less than 7 years. Here, only 24 attenders (52%) were rehospitalized during follow-up. Short duration of illness was true for 19 patients of the control group with 15 (79%) of them rehospitalized (Table 3).

In 24 attenders of treatment group, duration of illness before treatment was less than 5 years. Here, 14 attenders (58%) were rehospitalized during follow-up. This very short duration of illness was true for 10 patients of the control group with 8 (80%) of them rehospitalized during follow-up.

In 22 attenders of treatment group, duration of illness before treatment was between 5 and 7 years. Here, only 10 attenders (45%) were rehospitalized during follow-up. Medium duration of illness was true for 9 patients of the control group with 7 (78%) of them rehospitalized (Table 4).

**Table 3** Reprehospitalization within the five-year follow-up

## a) Patients with long duration of illness

	No rehospitalization N (%)	Rehospitalization N (%)	Sum
Control	7 (44)	9 (56)	16
Psychoeducation	16 (36)	28 (64)	44
Sum	23	37	60

Chi-Square = 0.27080; DF = 1; p = 0.60279

## b) Patients with short duration of illness

	No rehospitalization N (%)	Rehospitalization N (%)	Sum
Control	4 (21)	15 (79)	19
Psychoeducation	22 (48)	24 (52)	46
Sum	26	39	65

Chi-Square = 4.01602; DF = 1; p = 0.04507

**Table 4** Reprehospitalization within the five-year follow-up

## a) Patients with very short duration of illness

	No rehospitalization N (%)	Rehospitalization N (%)	Sum
Control	2 (20)	8 (80)	10
Psychoeducation	10 (42)	14 (58)	24
Sum	12	22	34

Chi-Square = 1.45101; DF = 1; p = 0.22837

## b) Patients with medium duration of illness

	No rehospitalization N (%)	Rehospitalization N (%)	Sum
Control	2 (22)	7 (78)	9
Psychoeducation	12 (55)	10 (45)	22
Sum	14	17	31

Chi-Square = 2.69451; DF = 1; p = 0.10069

## Discussion

There have been studies on predicting different psychoeducational effects (Klingberg et al. 1999, Feldmann et al. 2000). Study models used a range of possible predictors such as psychopathological symptoms, patient compliance, baseline prognostic scores, and different variables reflecting cognitive skills and thought disorders. Time itself was not taken into account. However, pre-therapy duration of illness contributes substantially to predicting the long-term course of schizophrenic illness after psychoeducative intervention. Within a set of variables used for the logistic regression presented here, the number of previous hospitalizations and the partnership situation (i. e., the patient living alone or with a partner) may have been expected as predictors of further readmissions. Duration of illness, however, predicts long-term outcome only in those patients who attended psychoeducative intervention. The effect of psychoeducation, therefore, seems to refer to the pre-therapy duration of illness. In general, the presented results support McGorry's suggestion that an early psychoeducative intervention is more effective. However, the intervention was not optimally located in patients with a very short duration of psychosis. Psychoeducation showed the most preventive effect in patients with a medium duration of illness.

There is some evidence that patients, after a long duration of their schizophrenic illness, adhere to idiosyncratic and fatalistic assumptions they established to explain the illness and its invariance to therapeutic interventions. These assumptions do not give way easily to psychoeducationally promoted knowledge and crisis management skills. Then again, if duration of illness is very short, patients may still deny their illness. They may thus not accept knowledge about an illness not concerning themselves or an improvement of skills not applicable to their supposed situation. Psychosis can threaten

self and identity, autonomy and social status, and patients need some time to accept their illness and the need of professional support (Birchwood et al. 1997).

If they are already familiar with their illness but have not yet experienced it as long lasting and unalterable, schizophrenic patients are more willing to become involved in the psychoeducative process. This seems to be the optimal time for psychoeducation to result in sustained relapse prevention.

The presented results are subject to some limitations. Groups were defined by quartiles to cover short or medium duration of illness. Thus, group size was crucial. Group definitions are arbitrary if therapeutic advice is concerned. Psychoeducation may not be located too close to first episode. However, the 'medium duration' of schizophrenic illness stated as optimal for psychoeducative treatment may be of variable length in different patients.

Variables other than duration of illness may have a moderating effect on outcome after psychoeducative intervention. Many of these effects were controlled by the study design; others were not. This is being investigated, and some additional analyses are being done.

Variables that may moderate therapeutic effects such as number of hospitalizations before baseline or previous psychosocial interventions had been added to the balancing factors of randomization or even were exclusion criteria. Partnership situation, although not a balancing factor, was almost the same (singles being a majority) within all groups of duration of illness; partnership situation and duration of illness did not correlate. However, the level of education was not controlled by randomization. Therefore, although randomization was done carefully, it can not be excluded that patients with higher levels of education were to be found more often in the group of medium duration of illness.

As Hornung et al. (1999) reported, the best outcome was achieved in the group with the combined psychoeducational cognitive-behavioral treatment, including counselling for key-persons. Treatment groups that were not offered comprehensive treatment for patients or excluded their key-persons had a less favorable outcome. Did comprehensive treatment also improve the rehospitalization rate of the group of patients with medium duration of illness? Patients with medium duration of illness who attended the comprehensive treatment group reached a rehospitalization rate of 45%. However, patients with long duration of illness who attended the comprehensive treatment group reached a low rehospitalization rate of 25% (in attenders with short duration of illness it was 57%). That is, comprehensive treatment does not confound with duration of illness. In fact, a less comprehensive training or even psychoeducation itself is successful in patients with medium duration of illness.

Duration of illness in schizophrenic outpatients is highly correlated with the age of the patients. Medium duration of illness therefore points to a medium age. Is there an age best suitable for psychoeducation? In our

sample, mean age is  $31.3 \pm 7.0$  years. In the very short duration group, mean age is  $25.7 \pm 5.8$  years. In the medium duration group it is  $29.7 \pm 5.9$  years, and in the long duration group it is  $34.8 \pm 6.1$  years. These age differences are modest and statistically insignificant but may moderate therapeutic effects. Data were therefore reanalyzed for patients older as well as for patients younger than the age median of 30 years. In both age groups the prophylactic effect of psychoeducation in patients with short duration of illness was replicated. Patients with long duration of illness, however, did lack improvement in both age groups (data not shown). Duration of illness has a major impact on the effect of psychoeducation, which is of more relevance than the age of the patients.

In the study reported here, the optimal time for starting with psychoeducational interventions was defined by a medium pre-therapy duration of illness. Therapy research should focus on the 'medium duration' of pre-therapy illness that seems to be indispensable for schizophrenic patients to profit from psychoeducative interventions.

## References

1. American Psychiatric Association (1987) Diagnostic and Statistical Manual of Mental Disorders (3<sup>rd</sup> ed, revised) (DSM-III-R). APA, Washington, DC
2. Andreasen NC (1989) Scale for the assessment of negative symptoms (SANS). *Br J Psychiat* 155: 53–58
3. Basan A, Pitschel-Walz G, Bauml J (2000) Psychoeducational intervention for schizophrenic patients and subsequent long-term treatment: a 4-year follow-up study. *Fortschr Neurol Psychiat* 68: 537–545
4. Birchwood M, McGorry P, Jackson H (1997) Early intervention in schizophrenia. *Br J Psychiatry* 170: 2–5
5. Dixon LB, Lehman AF (1995) Family interventions for schizophrenia. *Schizophr Bull* 21: 631–643
6. D'Zurilla TJ, Goldfried MR (1971) Problem solving and behavior modification. *J Abnorm Psychol* 78: 107–126
7. Endicott J, Spitzer RL, Fleiss JL, Cohen J (1976) The Global Assessment Scale. A procedure for measuring overall severity of psychiatric disturbance. *Arch Gen Psychiat* 33: 766–771
8. Feldmann R, Hornung WP, Buchkremer G (2000) Prognostische und therapeutische Relevanz kognitiver Ressourcen für den Langzeitverlauf schizophrener Erkrankung nach psychoedukativ-psychotherapeutischer Behandlung. *Fortschr Neurol Psychiat* 68: 54–60
9. Hornung WP, Feldmann R, Klingberg S, Buchkremer G, Reker T (1999) Long-term effects of a psychoeducational intervention for schizophrenic out-patients and their key-persons – results of a five-year follow-up. *Eur Arch Psy Clin N* 249: 162–167
10. Hornung WP, Kieserg A, Feldmann R, Buchkremer G (1996) Psychoeducational training for schizophrenic patients: background, procedure, and empirical findings. *Patient Educ Counseling* 29: 257–268
11. Klingberg S, Buchkremer G, Holle R, Schulze Mönking H, Hornung WP (1999) Differential therapy effects of psychoeducational psychotherapy for schizophrenic patients – results of a 2-year follow-up. *Eur Arch Psy Clin N* 249: 66–72
12. Mari JJ, Streiner DL (1994) An overview of family interventions and relapse in schizophrenia: meta-analysis of research findings. *Psychol Med* 24: 565–578
13. McGorry (1998) "A stitch in time" ... the scope for preventive strategies in early psychosis. *Eur Arch Psy Clin N* 248: 22–31
14. McGorry PD (1995) Psychoeducation in first-episode psychosis: a therapeutic process. *Psychiatry* 58: 313–328

15. Overall JE, Gorham DR (1962) The Brief Psychiatric Rating Scale. *Psychol Report* 10: 799–812
16. Strauss JS, Kokes R, Klerman J, Sacksteder J (1977) Premorbid adjustment in schizophrenia: concepts, measures, and implications. *Schizophr Bull* 3: 182–244
17. Tarrier N, Barrowclough C, Porceddu K, Fitzpatrick E (1994) The Salford family intervention project: relapse rates for schizophrenia at five and eight years. *Br J Psychiat* 165: 829–832