

Psychoeducational family interventions for schizophrenia in the last decade: from explanatory to pragmatic trials

LORENZA MAGLIANO and ANDREA FIORILLO

SUMMARY. A number of explanatory RCT studies published since the 1980s have demonstrated the clinical efficacy of Psychoeducational Family Interventions (PFI) for schizophrenia when provided in combination with drug therapy. In recent years, there has been a shift from efficacy to effectiveness studies and great attention by the researchers in developing training programmes in these interventions for ordinary staff. In this paper, we will provide an overview of the studies on PFI for schizophrenia which have been carried out in the last decade in routine clinical settings or with at least a partial involvement of ordinary staff. These studies have been grouped into: a) studies comparing PFI with standard care; b) studies comparing PFI with individual integrated interventions; c) studies comparing different PFI strategies; d) implementation studies. The results of these studies reveal that, when provided in clinical settings, PFI have positive middle-term effects on patients' clinical status and disability, and limited impact on family burden. From a methodological viewpoint, these studies had several similarities, such as homogeneity of PFI models and mid-term follow-up assessments, and several differences, mainly in the intensity and duration of the family exposure to the intervention. Future studies are needed to identify the "best dose" at which PFI can be provided in routine conditions at the most convenient cost-benefit ratio.

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INTRODUCTION

In the past 30 years, research on Expressed Emotions (EE) (Wearden *et al.*, 2000) and family burden (Ohaeri, 2003), and the adoption of the stress-vulnerability model of schizophrenia (Zubin & Spring, 1977), have led to the development of integrated treatments for this mental disorder combining pharmacological and family cognitive-behavioural interventions. The latter, usually called Psychoeducational Family Interventions (PFI) (McFarlane *et al.*, 2003), share the following objectives: a) to provide the family with information about the patient's disorder and its treatments; b) to improve communication patterns within the family; c) to enhance family's problem solving

skills; d) to improve relatives' coping strategies; e) to encourage relatives' involvement in social activities outside the family.

A number of studies published since the 1980s have demonstrated the clinical efficacy of these interventions. In patients whose families received them, the relapse rate at one year ranged from 6 to 12%, compared with 41 to 53% in control group. At two years, the relapse rates were 17 to 40% and 66 to 83%, respectively (Goldstein *et al.*, 1978; Falloon *et al.*, 1982; Falloon, 1985; Hogarty *et al.*, 1986; 1991; Tarrier *et al.*, 1989; Haas *et al.*, 1988; Glick *et al.*, 1990; Leff *et al.*, 1990). In addition, PFI have been found to be effective in improving patients' compliance to drug treatments, and in reducing the overall costs of care (Cardin *et al.*, 1985; Tarrier *et al.*, 1988; Pharoah *et al.*, 2006). Research findings are also consistent with the possibility that these interventions reduce patients' disability (Falloon, 1985; Barrowclough *et al.*, 1999; Montero *et al.*, 2001) and lighten family burden in schizophrenia (Canive *et al.*, 1996; Stam & Cuijpers, 2001; Berglund *et al.*, 2003; Hazel *et al.*, 2004).

Address for correspondence: Prof. L. Magliano, Department of Psychiatry, University of Naples SUN, Largo Madonna delle Grazie, I-80138 Naples (Italy).

Fax: +39-81-5666523

E-mail: lorenza.magliano@unina2.it

The results of the large number of RCTs have been confirmed by several meta-analyses reporting that these interventions, compared to routine case management, reduce fourfold patients' relapse rate at one year and, in the subsequent year, the rate is still half than when no such intervention is provided (Mari & Streiner, 1994; Dixon & Lehman, 1995; Goldstein & Miklowitz, 1995; Barbato & D'Avanzo, 2000; Pharoah *et al.*, 2006).

The large majority of the studies on PFI carried out from 1980 to 1995 assessed their efficacy. Such studies typically selected patients who were carefully diagnosed for this mental disorder, were at high risk of relapse due to high levels of Expressed Emotions in their relatives, and did not suffer from additional serious illnesses. The intervention was usually provided by highly skilled therapists, mostly those who developed the intervention itself.

The results of such trials demonstrated the significant effects of PFI on relapse rate under ideal conditions and carved the way to verifying their effects in routine clinical settings and the possibility of disseminating them on large scale.

Although several guidelines recommend PFI as elective treatments for schizophrenia in addition to antipsychotics (National Institute for Clinical Excellence, 2002; Lehman *et al.*, 2004; Gaebel *et al.*, 2005), data collected in clinical settings revealed that they are rarely applied (Anderson & Adams, 1996; Fadden, 1997). In Western Europe, between 0% and 15% of families of patients with schizophrenia receive structured supportive interventions in routine settings (Magliano *et al.*, 1998). In USA, data from the PORT survey outline that 10% of families of patients with schizophrenia receive PFI (Dixon *et al.*, 2001; Lehman *et al.*, 2004). In Italy, although 80% of the families of users with schizophrenia have regular contact with the local mental health centre, 8% receive these interventions (Magliano *et al.*, 2002).

In recent years there has been a shift from efficacy to effectiveness studies (Roland & Torgerson, 1998a; Hotopf, 2002; Stroup, 2005) and great attention by the researchers to developing training programmes in psychoeducational family intervention for ordinary staff (Leff, 2000).

In this paper, we will provide an overview of the studies on PFI for schizophrenia which have been carried out in the last decade in routine clinical settings or with at least a partial involvement of ordinary staff. This will not be a comprehensive literature review on these interventions (Tarrier *et al.*, 1999; Falloon, 2003; McFarlane *et al.*, 2003; Pharoah *et al.*, 2006), but rather a presentation of recent evidence on this topic which could support the implementation of PFI in public mental health centres.

OVERVIEW OF THE LAST DECADE STUDIES ON PSYCHOEDUCATIONAL FAMILY INTERVENTIONS

The main studies on PFI for schizophrenia carried out in the last decade in routine settings can be grouped as follows: a) studies comparing PFI with standard care (table I); b) studies comparing PFI with individual integrated interventions (table II); c) studies comparing different PFI strategies (table III); d) implementation studies (table IV).

a) Studies comparing psychoeducational family interventions with standard care

In UK, a study carried out by Barrowclough *et al.* (1999) and Sellwood *et al.* (2001) tested the effectiveness of a needs-based family intervention service for outpatients and their relatives. Carers were randomly allocated to receive needs-based PFI for six months in combination with standard care (including generic family support) or standard care only. The PFI was conducted by the project staff in collaboration with patients' key-workers, taking into account their experience and previous training in behavioural therapy. The differences in relapse rate between the two groups were of borderline significance at 6 months (24% vs. 46%) and more marked at 12 months (37% vs. 72%). The addition of the PFI to standard care did not reveal any significant impact on carers' levels of stress, burden, and needs for care.

Dyck *et al.* (2000; 2002), McDonnell *et al.* (2003) and Hazel *et al.* (2004) compared the effects of a PFI provided in group format according to the McFarlane approach superimposed to standard care with standard care alone provided biweekly for two years. The study was carried out in a large mental health centre and the intervention was administered by family clinicians who received specific training in the group intervention, followed by weekly phone supervision and annual on site visits by clinical supervisors over the study period. The one-year results showed that patients whose relatives attended the multi-family group experienced a significant reduction of negative symptoms compared with those receiving standard care, and had a lower rate of rehospitalisation (9% vs. 22%) that was not related to increase in mental health service use. At two years, there was no significant difference in family burden between the two groups, although the level of distress was significantly lower in relatives who had received PFI.

Table 1. – Studies comparing psychoeducational family interventions with standard care.

Study and (country)	Type of intervention, number (N) and assignment of cases	Family intervention model	Inclusion criteria	Sessions, duration and location of the intervention	Intervention providers	Follow-up assessments and outcome measures	Main results
Barrowclough <i>et al.</i> , 1999, Selwood <i>et al.</i> , 2001 (United Kingdom)	Needs-based Behavioural Family Intervention (NBFI) + SC (38) vs. SC (39), random assignment	Falloon; Barrowclough & Tarrier	ICD-10 schizophrenia spectrum disorders for at least 2 years, age 18-65, family contact for at least 10 hours x week, at least one relapse in the previous two years, no organic brain disease or learning disability	20 sessions in 6 months, at home and mental health centre	Project staff, in collaboration with patient's keyworkers, whenever possible	6, 12 and 24 months: patients' relapses, carers' needs and burden	In NBFI: significant reduction in patients' relapses; no effect on patients' symptoms, and carers' burden and needs
Dyck <i>et al.</i> , 2000; 2002 (USA)	MPFI (32) vs. SC (31) MPFI (55) vs. SC (51), random assignment	McFarlane	DSM-IV schizophrenia or schizoaffective disorder, age 18-45, living or in regular contact with the family	Biweekly sessions for 2 years, in outpatient facilities	Family clinicians	12 months: patients' negative symptoms and service utilization	In MPFI: significant reduction in negative symptoms and lower use of inpatient units without increment in outpatient facilities' utilization
McDonnell <i>et al.</i> , 2003; Hazel <i>et al.</i> , 2004 (USA)	MPFI (44) vs. SC (46) MPFI (44) vs. SC (53), random assignment		DSM-IV schizophrenia spectrum disorder, age 20-58, at least 5 hours x week of family contact			12 and 24 months: family burden, perceived stress and social	No effect on family burden and relatives' social resources. Reduction in relatives' perceived stress
Petersen <i>et al.</i> , 2005; Jeppesen <i>et al.</i> , 2005 (Denmark)	Integrated treatment (IT) (including MPFI) (275) vs. SC (272), random assignment	McFarlane	First episode of a schizophrenia spectrum disorder, age 18-45, no more than 12 weeks of antipsychotic treatment	Biweekly sessions for 18 months, in outpatient facilities	Trained mental health centre staff	12 and 24 months: patients' clinical status, disability and satisfaction for care; relatives' care; relatives' burden, EE, knowledge on schizophrenia and satisfaction for care	In IT: significant improvement in patients' clinical status and satisfaction for care. Reduction in patients' substance misuse, increment in treatment compliance; significant reduction in family burden and increment in satisfaction for care. No effects on relatives' knowledge of schizophrenia and EE
Bradley <i>et al.</i> , 2006 (Australia)	MPFI (25) vs. SC (25), random assignment	McFarlane	A DSM-IV schizophrenia spectrum disorder, age 18-55, 10-hour contact with relatives x week, English- or Vietnamese-speaking families	26 sessions in 12 months, in mental health centre	Trained mental health centre staff	12 and 30 months: patients' relapses, symptoms and vocational outcome	In MPFI: significant reduction in patients' relapses and improvement of symptoms and vocational outcome
Vetro <i>et al.</i> , 2006 (Italy)	IPFI (12) vs. SC (12), random assignment	Falloon	ICD-9 schizophrenia in clinical stable conditions, age 18-45, 5-year educational level, living with one relative in the previous year, no organic disease or alcohol or drug abuse	Weekly sessions for the first three months, biweekly for 6 months, monthly for the last 3 months, at home	Trained mental health centre staff	12 and 132 months: patients' symptoms, hospital admission, disability and centre; family burden	In IPFI: at 12 months, significant effect on patients' positive symptoms, self-care, autonomy in daily life and family burden. At 132 months, significant differences in hospital admissions and drop-out from the centre

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Study and (country)	Type of intervention, number (N) and assignment of cases	Family intervention model	Inclusion criteria	Sessions, duration and location of the intervention	Intervention providers	Follow-up assessments and outcome measures	Main results
Magliano <i>et al.</i> , 2005a; 2006 (Italy)	IPFI (42) vs. SC (29), random assignment	Falloon	DSM-IV schizophrenia in clinical stable conditions, in charge to local mental health centre for at least 6 months, living with at least one relative	18 sessions for 6 months, at home and mental health centre	Trained mental health centre staff	6 months: patients' clinical status, disability and social network; family burden and social support	In IPFI: significant improvement in patients' social functioning and network, and in relatives' professional and social support. In both the groups, significant reduction in family burden

Table abbreviations: IPFI = Individual Psychoeducational Family Intervention; MPFI = Multiple Psychoeducational Family Intervention; SC = Standard Care

In 2005, a large RCT was carried out in Denmark by Jeppesen *et al.* (2005) and Petersen *et al.* (2005) to compare integrated treatment including McFarlane multiple PFI and standard care in patients with a first episode of a schizophrenia spectrum disorder. The interventions were provided to patients for two years, and to their families for 18 months by three multidisciplinary teams who were trained in PFI and social skills training during the preliminary phase of the study. At one and two-year follow-ups, patients who had received integrated treatment showed fewer positive and negative symptoms, less frequent drug abuse, and 22% fewer days of bed rest. At one year, relatives who had received PFI reported lower levels of burden and greater satisfaction for care than relatives in the other group. The relatives' EE and knowledge of schizophrenia remained stable over the follow-up period.

In Australia, Bradley *et al.* (2006) explored the effectiveness of a multi-family psychoeducational intervention in newly arrived non English-speaking Vietnamese families and in English-speaking families vs. standard care. The intervention included 26 sessions in 12 months and was provided by ordinary staff who were specifically trained in its use by McFarlane. In the treated group, patients reported significantly lower relapse rates (at 12 months: 12% vs. 36%; at 30 months: 25% vs. 63%) and greater improvements in symptoms, social functioning and vocational skills than controls. No difference in outcomes was found between Vietnamese and English-speaking families. Concerning family burden, this was found to be similarly reduced in treated relatives and controls at follow-up.

A RCT was carried out by Veltro *et al.* (2006) in an Italian community mental health centre on a sample of 24 patients with schizophrenia randomly assigned to individual PFI or standard care group. The intervention was provided for one year by project staff in close collaboration with ordinary staff who received intensive training in its use. At the one-year follow-up, statistically significant differences were found in favour of the experimental intervention regarding the patients' positive symptoms, self-care and independent skills, and in family burden. At 11-year follow-up, treated patients were less frequently hospitalised and were more likely to maintain regular contact with local mental health centre.

In the period 2003-2005, a pragmatic controlled trial on an individual PFI for schizophrenia was carried out in 23 Italian mental health centres by Magliano *et al.* (2005a; 2006). The study, promoted by the National Institute of Health and an association of users' families, explored the professionals' compliance with a modular training programme in PFI, and the impact of the intervention provided by the trained participants for six

months on users' clinical status and disability, and on relatives' burden, social network and professional support.

Two professionals per centre attended a training programme in PFI including three monthly modules of 2 and half days each, followed by four supervision meetings and monthly tutorial support by phone in the subsequent year. In the intervals between the modules, participants were asked to: a) perform home exercises on each component of the intervention; b) run a 2-hour informative workshop on the study in their centres; c) select 5 families of patients with schizophrenia in care of the local centre for at least 6 months, who were clinically stabilised and living with at least one adult relative. The selected families were randomly assigned to a group which would have received the intervention for 6 months immediately, or to a waiting list for six months later. At the first and the last supervision, the benefits and difficulties experienced by professionals in the use of the intervention were registered on an ad-hoc schedule.

Of the 46 participants, 38 completed the training course, and 34 applied the intervention in their centres. At the last supervision, 96% of participants acknowledged that the intervention had had a positive effect on the relationship between the centre and the users and their families, and 56% reported feeling more confident in their own work competence. The availability of time to run the intervention was reported by the participants as the main obstacle encountered in the use of the PFI, in addition to difficulties in integrating the intervention with other work responsibilities.

In the treated group, statistically significant improvements were found at follow up in patients' symptoms and disability, mainly in the areas of social relationships, interests in getting a job, and management of social conflicts. In addition, the patients with poor or very poor global functioning changed from 47% at baseline to 25% at follow-up, and 74% reported a significant improvement in their social network over the study period.

Family burden significantly improved in both the treated and control groups, while relatives' social contacts and perception of professional support significantly increased only in the treated one.

b) Studies comparing family psychoeducational interventions with individual integrated interventions

In the Netherlands, Linszen *et al.* (1996) and Nugter *et al.* (1997) tested whether the addition of an individual PFI to a patient's psychosocial treatment reduced the relapse rate in persons with recent onset of a schizophrenic disorder. During the index hospitalisation, the patients received

Table II. – Studies comparing psychoeducational family interventions with individual integrated interventions.

Study and (country)	Type of intervention, number (N) and assessment of cases	Family intervention model	Inclusion criteria	Sessions, duration and location of the intervention	Intervention providers	Follow-up assessments and outcome measures	Main results
Linszen <i>et al.</i> , 1996; Nugter <i>et al.</i> , 1997 (the Netherlands)	IPI in HEE families (26) or LEE (13) vs. IPI + IPI in HEE (22) or LEE (15), random assignment	Falloon	Discharge from the 1st hospitalization for a DSM-III-R schizophrenia or related disorder, age 15-26, cohabitation/close contact with relatives, no alcohol/drug abuse	18 sessions in 12 months, in outpatient facilities	Project staff	12 months: patients' relapses, suicide, symptoms, patients' relapses and in drug compliance and relatives' EE	No difference between the two interventions in patients' relapses, patients' relapses and in relatives' EE level
Buckremer <i>et al.</i> , 1997; Hornung <i>et al.</i> , 1999 (Germany)	Drug Management Training (DMT) (32) vs. DMT + Cognitive group Therapy (CT) (34) vs. DMT + Key-person Counselling (KC) (35) vs. DMT+CT+KC (33) vs. Control group (57), random assignment	Falloon	DSM-III-R schizophrenia, at least 2 psychotic episodes in the past 5 years, at least 4 weeks of clinical stabilization, no psychiatric comorbidities	DMT = 10 sessions; CT = 15 sessions; KC = 20 sessions; in outpatient facilities	Trained mental health centre staff	12, 24 and 60 months: patients' symptoms, re-hospitalizations, disability, drug doses	Significant differences in social functioning between treated and control groups. No differences between treated groups and control in patients' symptoms, drug doses and re-hospitalizations
Tomaras <i>et al.</i> , 2000 (Greece)	MPFI + IPI (20) vs. IPI (20), even assignment	Hogarty	DSM-III-R schizophrenia or schizoaffective disorder in clinical remission, age 19-40, in antipsychotic treatment	13 sessions in 12 months, in rehabilitation units	Project staff	12 and 36 months: patients' relapses, hospitalization, symptoms, disability; family EE	In MPFI: significant reduction in patients' relapses at 36 months. No differences in patients' symptoms, hospitalization, disability and in relatives' EE
Malm <i>et al.</i> , 2003 (Sweden)	Integrated care (IC) (51) vs. rational rehabilitation (33) (both including IPI), random assignment	Falloon	DSM-IV schizophrenia in clinical stable conditions	For 24 months, in mental health centre	Trained mental health centre staff	24 months: patients' symptoms, disability, side effects and satisfaction for care	In IC: significant improvement in patients' disability and satisfaction for care

Table abbreviations: IPI = Individual Psychoeducational Family Intervention; MPFI = Multiple Psychoeducational Family Intervention; IPI = Individual Psychosocial Intervention; HEE = High Expressed Emotions; LEE = Low Expressed Emotions

an intensive psychological supportive intervention combined with relatives' psychoeducational sessions. At discharge, they were randomly assigned to receive a patient-oriented intervention alone or in combination with a PFI. The integrated intervention was provided by skilled therapists for 12 months. In this study, the overall relapse rate was low (16%), and the addition of the PFI did not yield any significant clinical advantage to the individual one.

In Germany, Buchkremer *et al.* (1997) and Hornung *et al.* (1999) compared psychoeducational management training for patients, cognitive group psychotherapy, and key-relatives counselling in different combinations vs. a control group of non-specific interventions. The interventions were administered by therapists who were trained and supervised over the study period by the project staff. Two-year follow-up assessments revealed a lower but not statistically significant re-hospitalisation rate among the overall experimental group vs. the control one (38% vs. 50%), and a 26% lower hospitalisation rate in the most intensively treated group. Patients' social functioning was better in the treated group than in the control one, while psychopathological status did not differ between the two groups. At five years, no significant difference was detected between treated cases and controls in any of the explored variables.

In Greece, Tomaras *et al.* (2000) explored the effectiveness of a group PFI combined with intensive individual psychosocial treatment vs. individual psychosocial treatment alone in patients with chronic schizophrenia attending two community rehabilitation units. Both the interventions were provided by skilled therapists for one year. In the experimental group, relapse rate was significantly lower at one year follow-up assessment (0 vs. 25%), but the difference dropped to a non statistically significant level at two year follow-up (21% vs. 25%). Relatives' EE level was not significantly affected by the intervention.

c) Studies comparing different family intervention strategies

The Treatment Strategies in Schizophrenia study, carried out by Schooler *et al.* (1997), Bellack *et al.* (2000) and Mueser *et al.* (2001), examined the effects of two family intervention programs and three different antipsychotic dosage strategies on patients' relapses and social functioning and on their relatives' burden and attitudes. The study was carried out in outpatients with a schizophrenia spectrum disorder, who were randomized to 1 of 3 medication strategies (moderate, low or targeted dose), and to 1 of 2 family psychoeducational interventions

(group vs. individual) in addition to case management. Patients and families were treated for 2 years. The intervention phase was preceded by an intensive training programme for ordinary staff carried out by the project staff in each of the five participating centres. At follow-up, patients who had received targeted dose of anti-psychotics had the shortest time to rehospitalization than those receiving the other two medication strategies. The two family treatment strategies did not yield any significant effect on patients' rehospitalization rates, while they had a positive significant effect on patients' social functioning. Family burden did not change in relation to family intervention. However, relatives who had received the more intensive family treatment showed a lower level of rejecting attitudes towards the patients.

In Spain, Montero *et al.* (1999; 2001; 2005; 2006) explored the effects of a group and of an individual PFI on clinical status and disability of outpatients with schizophrenia in stable conditions and on stress and EE of their relatives. The interventions were provided by ordinary staff who had received two-month formal training in family intervention and weekly supervision over the 1-year duration of the study. At one and five-year follow-up assessments, no difference between the two groups was detected in patients' hospitalisations and relapse rate (individual family psychoeducational intervention: 33% vs. relatives' group: 22%; 22% vs. 38% in 71 re-assessed cases at five years). However, only in the individual PFI group, the one-year follow-up assessment revealed a significant improvement of patients' delusions and thought disorders. Patients' disability, which globally improved in both the groups, changed in more areas among those who had received an individual PFI. While EE were significantly reduced in both the groups, the levels of relatives stress did not change over time. In this study, the percentage of family non-adherence to intervention was high (40%), and significantly lower among those receiving the individual PFI than in those assigned to the multi-family group. Non-adherence to treatment was found to be associated with patients' older ages, higher number of previous hospitalisations, living in small families and with relatives having a lower level of knowledge of schizophrenia at intake.

A study carried out by Berglund *et al.* (2003) in Sweden compared the effects of an individual PFI and of conventional family support on the burden and attitudes of relatives of patients who had relapsed for schizophrenia or schizoaffective disorder. Both the family interventions were provided from the first 24 hours of hospital admission until discharge. Relapse rates in the year following the discharge were significantly lower in the indi-

Table III. – Studies comparing different family intervention strategies.

Study and (country)	Type of intervention, number (N) and assignment of cases	Family intervention model	Inclusion criteria	Sessions, duration and location of the intervention	Intervention providers	Follow-up assessments and outcome measures	Main results
Schooler <i>et al.</i> , 1997 (USA)	Supportive Group Family Management (SGFM) + Standard Dose Medication (SDM) (55), SGFM + Low Dose Medication (LDM) (52), SGFM + Targeted Medication (TM) (49) vs. SGFM + IPFI + SDM (52), SGFM + IPFI + LDM (54), SGFM + IPFI + TM (51), random assignment	SGFM: Hogarty IPFI: Falloon	A DSM-III-R schizophrenia spectrum disorder, age 18-55, 4 hours x week contact with relatives, psychiatric hospitalization or relapse in the past 3 months; no substance dependence, pregnancy, epilepsy, severe liver disease or organic brain syndrome	SGFM: 24 monthly sessions in 2 years IPFI: weekly sessions for 3 months, biweekly sessions for 6 months, and monthly sessions for 3-6 months + SGFM, in outpatient facilities	Trained mental health centre staff	6, 12, 18 and 24 months: patients' relapses and rehospitalizations	No impact of family treatments on outcome measures
Bellack <i>et al.</i> , 2000 (USA)	SGFM (34) vs. SGFM + IPFI (43), random assignment					12 months: family problem solving and communication skills	No impact of treatments on outcome measures
Mueser <i>et al.</i> , 2001 (USA)	SGFM (256) vs. SGFM + IPFI (272), random assignment					24 months: patients' disability; family burden and attitudes	In IPFI: improvement in patient's social functioning and family atmosphere. No effect on family burden
Montero <i>et al.</i> , 1999; 2001; 2005; 2006 (Spain)	Relatives' group (RG) (41) vs. IPFI (46), random assignment	RG: Leff IPFI: Falloon	A DSM-III-R schizophrenia, age 15-45, clinically stable conditions, at least one psychotic relapse in the previous year, cohabitation with a relative for the last 3 months, no substance abuse	Weekly sessions x 6 months, biweekly sessions x 3 months, the last 3 months, at home	Trained mental health centre staff	12 and 60 months: patients' relapses, disability, re-hospitalization, symptoms, medication dose; relatives' EE and stress	In IPFI: at 12 months, improvement in patient social functioning and reduction in antipsychotic dose; no difference in patients' relapses and hospitalizations. Significant reduction in EE between RG and IPFI
Shimodera <i>et al.</i> , 2000 (Japan)	Short family Education Sessions (SES) (17) vs. IPFI + SES (13), random assignment	Leff	DSM-IV or ICD-10 schizophrenia, age 15-65, hospital admission at intake, living with the family for 3 months before admission	Biweekly sessions for 9 months, at home	Project staff	9 months: patient relapses, symptoms and drug compliance	In IPFI: lower, but not significant, relapse rates
Berglund <i>et al.</i> , 2003 (Sweden)	IPFI (14) vs. family support (17), even assignment	Falloon	DSM-IV schizophrenia or schizoaffective disorder, hospital admission at intake, regular contact with relatives	From the first 24 hours of hospital admission until discharge	Project staff	Discharge: family burden and attitudes; 12 months: patients' relapses	In IPFI: improvement in family burden and attitudes; lower patients' relapse rate
Chien & Chan, 2004 (China)	MPFI (33) vs. Mutual Family Support (MFS) (32) vs. SC (31), random assignment	McFarlane	DSM-IV schizophrenia for no more than 5 years, age ≥ 18, living with one relative, no comorbid mental disorder or substance abuse	12 biweekly sessions in 6 months, in outpatient facilities	Trained mental health centre staff and relatives	6 and 18 months: patients' disability, use of mental health services and rehospitalization	In MFS: improvement in re-hospitalization and social functioning without increase of services' use

Table abbreviations: IPFI = Individual Psychoeducational Family Intervention; MPFI = Multiple Psychoeducational Family Intervention; SC = Standard Care

vidual PFI group than in the conventional family support group (7% vs. 76%). At discharge, families who had received PFI showed a lower level of burden and more positive attitudes towards the patient than those in the other group.

In Hong Kong, Chien & Chan (2004) compared the effectiveness of a mutual relatives' group, a group PFI and standard care on social functioning, use of mental health services and rehospitalisation of patients with schizophrenia. Both the family interventions were provided by psychiatric nurses who received formal training in family intervention by the research staff. Compared to the other two interventions, the relatives' support group was found to be associated with lower hospitalisation rate, greater improvements in patient social functioning, and regular use of mental health services by the treated patients.

d) Implementation studies

In 1994, an international collaborative study, the Optimal Treatment Project (OTP), was launched by Falloon *et al.* (2004) to promote the routine use of evidence-based treatments for schizophrenia on a large scale. This was a 5-year cost-benefit study which was carried out in 14 centres from 10 countries. In each participating centre, a multidisciplinary team was set and intensively trained in the integrated management of schizophrenia. This included strategies aimed at: a) providing optimal doses of antipsychotic drugs; b) improving users' and their relatives' coping skills towards environmental stress; c) providing assertive home-based management of critical conditions. Following the training phase, professionals registered all cases of schizophrenia in stable conditions who were treated in their centres.

Cases treated for at least two years showed significant improvements in patients' disability and carers' stress. In particular, 35% of treated cases vs. 10% of those in the control group met the criteria of full recovery (no significant disability or impairment). These results were even more striking in the recent onset group in which 43% vs. 6% of patients showed a pattern of substantial recovery, and in the four centres in which cases were randomly assigned to OTP or control group.

In the years 2000-2004, the European Commission promoted a study to assess the impact of a standard and an augmented staff training programmes on the implementation and effectiveness of a psychoeducational intervention for schizophrenia (Magliano *et al.*, 2005b).

The study, which involved six countries, was the first European attempt to explore: a) the possibility of providing psychoeducational intervention for schizophrenia in routine settings by trained ordinary staff; b) the difficulties and benefits experienced by the professionals in the implementation process; c) the one-year impact of the intervention on the patients' clinical status and social functioning, and on their relatives' burden, coping strategies and social network.

Both the training programmes included a basic course on individual PFI, and nine supervision sessions in the subsequent year. The augmented programme also included training sessions on the use of communication and problem solving skills by the staff to cope with implementation problems and homework on psychoeducational techniques. The standard training package had a five-day full time format, while the augmented programme consisted in three 2-day monthly modules.

Each national leading centre selected four mental health centres, in which two professionals were randomly assigned to attend one of the two training courses and to implement the intervention in their centres for one year.

Over the follow-up period, the 48 participants reported a significant improvement in their relationships with users and their families (25% at the 1st vs. 70% at the last supervision) and in clinical results (39% vs. 47%). The most frequent difficulties reported by the professionals were work overload (65% at first vs. 43% at the last supervision), difficulty in integrating family work with other responsibilities (64% vs. 65%), and poor allowance of time to run the intervention (53% vs. 40%). No significant difference in trainees' advantages and difficulties related to the attendance of one of the training programmes was observed. The study found differences among the countries in the implementation difficulties, which were mainly related to the level of collaboration among professionals, and the compliance of the users' families.

A total of 55 patients and 118 relatives received the intervention for one year. At follow-up, significant improvements were observed in patients' clinical status and social functioning, as well as in relatives' burden. Moreover, there was a significant reduction in the relatives' use of coercion and resignation as coping strategies, and an increase of relatives' positive communication with the patient and maintenance of social interests. Finally, relatives reported a higher level of professional support at follow-up vs. baseline.

Table IV. – Implementation studies.

Study and (country)	Type of intervention, number (N) and assignment of cases	Family intervention model	Inclusion criteria	Sessions, duration and location of the intervention	Intervention providers	Follow-up assessments and outcome measures	Main results
Falloon <i>et al.</i> , 2004 (Italy, Spain, Turkey, Sweden, Greece, Hungary, Japan, Denmark, New Zealand)	Optimal Treatment (603), consecutive recruitment	Falloon	DSM-IV schizophrenia in clinical stable conditions	For 24 months in mental health centres	Trained mental health centre staff	24 months: patient's mental status and disability; carers' stress	Significant improvement on all measures
Magliano <i>et al.</i> , 2005b (Italy, United Kingdom, Denmark, Spain, Greece, Portugal)	IPFI (55), consecutive recruitment	Falloon	DSM-IV schizophrenia and cohabitation with at least one adult relative for one year	Weekly sessions for 3 months, biweekly sessions for 3 months and monthly sessions for 6 months, in mental health centres and at patient's home	Trained mental health centre staff	12 months: patients' clinical status and disability; family burden, coping strategies and social network	Significant improvement in patients' clinical status and disability; significant reduction in family burden and improvement in relatives' social support and coping strategies

Table abbreviation: IPFI = Individual Psychoeducational Family Intervention

SUMMARY OF FINDINGS AND CONCLUSIONS

From a methodological viewpoint, the studies reviewed above share several key-features of pragmatic trials (Hotopf, 2002; Stroup, 2005). In particular: a) they minimize exclusion criteria and, therefore, they reflect more the heterogeneity of patients with long-term mental health problems; b) they include patients with a wider range of diagnosis than RCT; c) they do not include a placebo group, since the controls receive a different family supportive intervention, or routine case management; d) they use randomisation to allocate cases to different groups; e) they use a study protocol very similar to usual practice; f) they allow the use of concomitant treatments; and g) they examine a broader range of relevant outcomes.

The results of these studies suggest that PFI reduce patients' relapse rate and hospitalisations, even when provided in routine settings, to samples of unselected patients, and/or by professionals who had received a brief training in their use (Fadden, 1998).

The effects of these interventions in terms of reduction of patients' relapse rates and hospitalisations are much more evident when the control group receives standard care (see section a studies) and tend to be weaker when controls receive intensive individual integrated treatment (see section b studies). It is likely that enriched individual treatments are effective as family interventions in schizophrenia. However, the former are probably too expensive to be applicable routinely in the majority of public health centres, where costs containment makes drug therapy and psychological support for users the standard treatments for schizophrenia (Dixon *et al.*, 2000).

Data from these studies also confirm that PFI have positive effects on patients' social and personal functioning. In studies comparing individual and multiple family intervention formats, a greater impact on patients' disability is reported in the former (see section c studies). This is probably due to the fact that in the individual format, it is easier to set goals with the patient that, if achieved, lead to an improvement in specific functioning areas.

The positive effects of PFI on patients' clinical status and disability tend to disappear over time (Hornung *et al.*, 1999; Tomaras *et al.*, 2000; Montero *et al.*, 2006). This finding suggests the need to provide booster sessions to families after the completion of the intervention to maintain relatives' communication and problem solving skills over time. These recall sessions could be provided in a multi-family format, with a lower investment of professional resources and an indirect reinforcement effect on the family social network.

Although both individual and multiple PFI show significant effects on patients' conditions, the former is

associated with a higher adherence to treatments (Montero *et al.*, 1999). Treatment compliance is a crucial issue in PFI and needs further investigations to clarify which factors, related to patients' clinical history and family socio-demographic and psychological variables, mainly influence the family adherence to treatments.

As far as the effects of PFI on the families are concerned, the results are still unclear. Family burden, the most commonly investigated outcome measure, has been found reduced in some studies (Berglund *et al.*, 2003; Petersen *et al.*, 2005), stable over time in others (Barrowclough *et al.*, 1999; Selwood *et al.*, 2001; McDonnell *et al.*, 2003), and similarly reduced in treated and controls in others (Bradley *et al.*, 2006; Magliano *et al.*). These controversial findings may be related to several factors, such as: a) the complexity of the family burden phenomenon, which is influenced by several variables (such as coping skills, patients' clinical conditions, stigma, and social resources), probably requiring a longer duration of intervention to be perceived as changed (Roland & Torgerson, 1998b; Magliano *et al.*, 2000); b) the assessment instruments whose psychometric properties, especially sensitivity to change, have been only partially tested.

Most of the reviewed studies have been carried out in close collaboration between project and ordinary staff. It is likely that this strategy could facilitate the inclusion of family support among the interventions provided routinely. However, it should be outlined that in most of the reviewed studies, only a limited number of ordinary staff has been specifically trained in PFI. It is likely that professionals selected to be trained were those mostly interested in family work and with positive attitudes towards family involvement in the management of schizophrenia. For these reasons, their compliance to PFI was probably higher than that of fully routine conditions. It should be also outlined that no paper has reported information about the impact of the intervention on standard care after the completion of the study.

The studies summarised above presented several similarities but significant differences as well. Among the former, it should be considered: a) the homogeneity of PFI's methods adopted as a reference model. Falloon's behavioural family therapy is the most common approach in studies in which PFI is provided in an individual format, while the McFarlane therapy represents the most frequently used group model; b) the measurement of the effects of the PFI both on patients and their relatives at the end of its provision and, in most cases, at least one year later.

The differences mainly involved the intensity and the duration of family exposure to the intervention, which vary from 12 to 48 sessions, provided weekly to monthly, and for 6 to 24 months.

Since no study has specifically compared the effects of PFI provided for different lengths of time (9 months vs. two years) or intensity (biweekly vs. monthly sessions), what is the "best exposure dose" of PFI still needs to be clarified.

It is advisable that future studies specifically address these issues in order to facilitate the large-scale provision of these interventions at the most convenient cost-benefit ratio.

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