Psychology in Spain, 2002, Vol. 6. No 1, 56-60

FAMILY INTERVENTION PROGRAMME IN SCHIZOPHRENIA: TWO-YEAR FOLLOW-UP OF THE ANDALUSIA STUDY

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Following two years of monitoring of the Andalusia Study, this article presents the results of a programme of family intervention in schizophrenia based on reduction of Expressed Emotion, reduction of Family Stress and increase in relatives' knowledge about schizophrenia. The programme had already shown its effectiveness on a one-year follow-up. Twenty-five families participated in the present study (an attrition rate of 4% with respect to the first year of monitoring). The relapse rate in the experimental group was 0% versus 40% in the control group. The effectiveness of the programme over the two-year period can, therefore, be sustained. The data from this study are compared with those of other family intervention programmes in schizophrenia that report on monitoring over two years.

Se presentan los resultados tras dos años de seguimiento del estudio de Andalucía, un programa de intervención familiar en esquizofrenia basado en la reducción de la Emoción Expresada, la disminución del Estrés Familiar y el aumento del nivel de conocimientos sobre la esquizofrenia por parte de los familiares que ya mostró su eficacia tras un año de seguimiento. Participan 25 familias (una muerte experimental del 4% sobre el primer año de seguimiento). La tasa de recaídas en el grupo experimental es del 0% frente al 40% del grupo control. Se comprueba, así, que la eficacia del programa se mantiene durante dos años. También se comparan los datos de este estudio con los de otros programas de intervención familiar en esquizofrenia que informan de seguimiento de dos años.

The 1980s saw the emergence of a series of studies which, using family intervention in schizophrenia, attempted – mostly successfully – to reduce the relapse rate in such patients. All of these studies were based on Zubin and Spring's (1977) stress-vulnerability theory, and the majority on the Expressed Emotion construct (Brown, Birley and Wing, 1972; Vaughn and Leff, 1976). Expressed Emotion (EE) is a form of interaction between a schizophrenic's relative and the schizophrenic him/herself, involving, on the part of the former, some or all of the following characteristics: criticism of the patient's behaviour (in content or tone of voice), generalized hostility towards or rejection of him/her as a person, and emotional over-involvement (overprotection, self-sacrifice, desperation or intense emotional reactions). When one family member presents EE, the whole family is considered as being high-EE. Today it is admitted that a schizophrenic who lives with a high-EE family has four times more probability of relapse than a patient whose family is low-EE.

According to the stress-vulnerability theory, EE is a stressor capable of producing relapse in a vulnerable subject (and a recovered schizophrenic is such a subject). The objective of the family intervention is that of reducing EE as a way of controlling the level of stress the subject suffers and thus avoiding relapse. Studies that have successfully used family intervention in schizophrenia are:

The Ventura Study (Goldstein, Rodnick, Evans, May and Steinberg, 1978): This study developed a crisis-oriented therapy, informing the family about the illness and its relationship with stress and teaching it to detect possible stressors and how deal with them. Its methodology is similar to that of Problem-Solving, but it is unstructured. It does not take into account EE. Its results six months after patients' discharge were: 0% of relapses in the experimental group versus 48% in the control group.

The Camberwell Study (Leff, Kuipers, Berkowitz, Eberlein-Vries and Sturgeon, 1982; Leff, Kuipers, Berkowitz, Eberlein-Vries and Sturgeon, 1983; Leff, Kuipers, Berkowitz, Eberlein-Vries and Sturgeon 1985): After four in-home information sessions with the families, they were invited to sessions of groups of families (without the presence of the patient) in order to talk about the problems of living with a schizophrenic and how to deal with them. Strategies used were an increase in the family's social support network and a decrease in feelings of family isolation. Sessions were also organized with individual families (with the patient present),

The original Spanish version of this paper has been previously published in *Apuntes de Psicología*, 2001, No 3, 421-430

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though with a highly unstructured format. The results of this study nine months after patients' discharge were: 8% of relapses in the experimental group versus 50% in the control group.

The California Study (Falloon, Boyd and McGill, 1984, Falloon, Boyd, McGill, Razani, Moss and Gilderman, 1982; Falloon, Boyd, McGill, Strang and Moss, 1981): After a few educational sessions for the whole family the programme began. A structured problem-solving method was used, in the family home with each family member individually and with the patient present. The results after patients' discharge were: 6% of relapses in the experimental group versus 44% in the control group.

The Pittsburgh Study (Anderson, Reiss and Hogarty, 1986; Hogarty, Anderson, Reiss, Kornblith, Greenwald, Javna and Madonia, 1986): After a short but intensive period in which families are informed about the illness, the family is provided with a series of techniques to improve its emotional climate by means of a highly structured programme, emphasising reduction of stress, reduction of guilt feelings, widening of social networks, gradual increase in the patient's responsibilities, and so on. Results nine months after patients' discharge were: 9% of relapses in the experimental group versus 28% in the control group.

The Salford Study (Barrowclough and Tarrier, 1990; Tarrier, Barrowclough, Vaughn, Bamrah, Porceddu, Watts and Freeman, 1988): After a brief period of education about the illness, families are trained in the planning of goals and in behavioural coping techniques designed to reduce stress. Results nine months after patients' discharge were: 12% of relapses in the experimental group versus 53% in the control group.

The Birmingham Study (Mentioned in Tarrier and Birchwood, 1995): As a criterion for selecting families, this study uses not high family EE but subjective family burden. This intervention is psychoeducational, and focuses on relief of family burden and resolution of parents' feelings of loss. No data are available for relapse rates, but they are not statistically different between the groups. It would appear that the dependent variable of this study is subjective perception of burden, which was reduced in the experimental group after the programme.

The Andalusia Study (Muela and Godoy, in press). This is based on the reduction of Expressed Emotion (EE) and Family Stress, as well as on the increase of knowledge about the illness on the part of family members as a means of reducing relapse rates in schizophrenics. The techniques used were, among others, problem-solving, relaxation, modification of irrational thoughts, development of communication skills and family counselling. In the follow-up one year after the start of the programme, the relapse rate in the experimental group was 20%, compared to 63.3% in the control group.

In longer follow-ups, except that of the Ventura Study (see Goldstein and Kopeikin, 1981) and the Birmingham Study (no data), all the projects mentioned obtained significantly lower relapse rates in the experimental group than in the control group (this issue is treated in more depth in the Discussion section). In the present study we examine the effectiveness of the Andalusia Study after two years' monitoring of the original sample.

METHOD

Subjects and Groups

Participants in the research were the families that had formed part of the Andalusia Study (all parents of patients, except for one, the wife of a patient): the fifteen from the experimental group and ten of the eleven from the control group (it was impossible to locate one control group family due to a change of residence). Their characteristics are shown in Table 1.

Procedure

The Andalusia Study consists of four phases:

- Phase 0 (*Evaluation*): selection of participants in the programme. Those selected for the experimental passed to the next phase; those of the control group to Phase III (Follow-up). Assessment of the families was made by means of the Camberwell Family Interview (CFI) in its Spanish version by Gutiérrez (1986); family EE level was assessed using a questionnaire on knowledge about schizophrenia designed for this study and Álvarez and Gutiérrez's

Table 1
Characteristics of the subjects in the Andalusia Study (taken from Muela, 1999)*

VARIABLES	EXPERIMENTAL GRP	CONTROL GRP.
Number of families	15	10
Sex of patient	10 male, 5 female	8 male, 2 female
Age	30.73 yrs.	31.03 yrs.
Educational level (1)	*a*: 0% *c*: 60% *b*: 13.33% *d*: 26.66%	*a*: 18.19% *c*: 36.36% *b*: 45.45% *d*: 0%
Years since first diagnosis	6.467	7.073
Months since last admission	22.545	18.53
Number of admissions	2.33	2.24
Course over last two years	9 re-admissions 6 changes of medication	8 re-admissions 2 changes of medication
Type of schizophrenia	11 paranoid 4 non-paranoid	6 paranoid 4 non-paranoid
Age at onset	24.267 yrs.	24.55 yrs.
Family size	2.867 members	3.55 members
Medication (mg chlorpromazine)	295.386	401.091
Type of family	15 parental	9 parental, 1 marital

* These data are as presented at the start of the programme.
(1): *a* = no education, *b* = primary, *c* = secondary, *d* = university.

(1989) Spanish version of the Family Stress Scale.

- Phase I (*Psychoeducational*). The family members in the experimental group, in groups of around five families, received information over 15 weekly 2´5 hour sessions about the illness (symptoms, etiology, treatment, etc.), about what the family can do (role of stress in the course of schizophrenia, how to cope with the illness, etc.) and about practical procedures related to the illness (relaxation, assertive behaviour, modification of irrational thoughts and problem-solving).
- Phase II (*Individual intervention*). Fifteen weekly sessions of 15 hours duration with each family (including the patient) individually. The aim was the application of what had been learned to concrete, everyday cases. In this phase a list was drawn up by consensus of aspects and behaviours that should be modified in order to improve family climate and reduce family stress, considering how to achieve such modification with the help of appropriate techniques (family counselling, behavioural contract, etc.).
- Phase III (*Follow-up*). This phase began after the previous phase in the experimental group and after selection in the control group, and lasted one year. It was carried out by means of telephone calls every 15 days, in which families reported on the state of the patient, taking of medication, hospital admissions and changes of medication. Moreover, experimental group families gave information on the use of the techniques learned. After the year of follow-up, a new evaluation of the control variables of the study was made (Muela, 1999; Muela and Godoy, in press).

A year after the follow-up of the Andalusia Study families, and no contact having been made with them in the interim, we proceeded to locate these families so that they could report on what had occurred during this second year.

Contact was made by telephone and by mail in all cases (some families requested this, and in other cases it was impossible to meet family members personally for a variety of reasons). The majority of the relatives that reported on the events during this second year of follow-up participated actively in the programme, though not all of them were those who had been interviewed at the beginning of it. Furthermore, in four cases (three of them in the control group) the family members had had no previous contact with the research team. Given this situation, it was decided not to evaluate the components of the programme (Expressed Emotion, Family Stress and level of knowledge about the illness) that had shown their change, after the first year of follow-up, in the experimental group.

Also, given that these relatives could only provide information on re-admissions (not being able to find or not knowing about reports on changes of medication), it was decided to adopt, as relapse criterion, re-admission of the patient, which had already been found to correlate significantly with relapse rate in the first year of follow-up.

Table 2
Relapse rate in second year of follow-up

		Relapses
Experimental group	0/15	(0%)
Control group	4/10	(40%)

RESULTS

During the second year of follow-up there were no re-admissions among the fifteen experimental group families. However, among the ten control group families there were four re-admissions (one of these four subjects was re-hospitalized on three different occasions). The differences are statistically significant according to Fisher's Exact Test (p=0.017). These results can be seen in Table 2.

DISCUSSION

Re-admission is not the most appropriate indicator for measuring relapse, so that the conclusions of this work should be accepted with caution. If we decided to adopt it as a definition of relapse it was because of the impossibility of obtaining reliable data on the other part of the relapse definition during the first year of follow-up: increase in medication due to exacerbation of symptoms. During the second year the periodical contact with families was lost, and while hospitalization is easily remembered, a change of medication may be forgotten if it is not preceded by important behavioural alterations in the patient (moreover, family members tend to keep admission reports, whilst changes of medication are usually reflected only on prescriptions, which are often thrown away). Therefore, admission was accepted as the best definition of relapse among those available.

Despite this shortcoming, it should be borne in mind that at the one-year follow-up of this same study the correlation between relapse and re-admission was statistically significant, as it was also in other studies, such as that of Brown, Birley and Wing (1972), up to the point that the results would be identical if, instead of the definition of relapse adopted by these authors, they had made their calculations using the re-admissions indicator. Moreover, in the two-year follow-up of the Salford Study (Tarrier, Barrowclough, Vaughn, Bamrah, Porceddu, Watts and Freeman, 1989), re-admission of patients was taken as the basis for the definition of relapse, since it was impossible to repeat with relatives the PSE ("Present State Examination"), the test with which relapse was defined during the first follow-up period.

Also, if we compare the relapse rates of the studies reporting on two-year follow-ups with those of the Andalusia Study, we find that there are no statistically significant differences between them. Thus, the Camberwell Study (Leff, Kuipers, Berkowitz, and Sturgeon, 1985) found, after two years of follow-up, relapse rates in the experimental and control groups of 14% and 78%, respectively. In the California Study (Falloon, Boyd, McGill, Williamson, Razani, Moss, Gilderman and Simson, 1985) the percentages were 17% and 83%, in the Pittsburgh Study (Hogarty, Anderson and Reiss, 1987), 32% and 66%, and finally, in the Salford Study (Tarrier, Barrowclough, Vaughn, Bamrah, Porceddu, Watts and Freeman, 1989), 33% and 59%. All of these differences are statistically significant within each study.

If we compare the data of all the experimental groups (including that of the Andalusia Study), we obtain a chi-squared of 7.78 with four degrees of freedom for a p=0.1. Comparison among control groups gives us a chi-squared of 6.604 with four degrees of freedom for a p=0.158. That is, there are no differences between the experimental groups of all the studies, nor between the control groups. This supports the choice of re-admission as relapse criterion. The data discussed can be seen in Table 3.

On not having contact with family members throughout the whole second year of follow-up, there is no guarantee of the strict criterion of patients' fulfilment of the medication regime that was adopted in the first year of follow-up. Nevertheless, relatives stated that the patients had not given up their medication at any time, or that, if they had, they had gone no longer than ten days without taking it (as far as they recalled).

It would have been interesting to check whether the reductions in Expressed Emotion and Family Stress and the increase in the family's knowledge about the illness achieved by the end of the first year of follow-up were maintained now, after the second year. Unfortunately, with the majority of the experimental group families and with all those of the control group it was only possible to make contact by telephone and mail, so that this form of contact was adopted in all cases (with three control group families and one experimental group family, the contact was even with a person who had had no direct relationship with the research team during the first year of follow-up).

On the other hand, given that the Andalusia Study clearly separates the intervention from the follow-up (which no other study does, since the follow-up period begins not at the end of the treatment but at the beginning of it), it was possible to compare the relapse rate of its experimental group over 19 months (the 12 of follow-up plus the seven for which the programme lasted) with those of the experimental groups of studies that have carried out two-year follow-ups (from the beginning of the respective programmes). The control group of the Andalusia Study had a one-year follow-up, and given that it did not carry out the programme, it is comparable with neither the 19-month follow-up of that study's experimental group nor with the two-year follow-up of the control groups of the other studies.

Thus, in the Andalusia Study, 27% of the patients in the experimental group relapse in this period (from the beginning of the programme until the end of the one-year follow-up), versus 32% in the Pittsburgh Study, 33% in the Salford Study, 14% in the Camberwell Study and 17% in the California Study. There are no statistically significant differences between any of the five groups (a chi-squared of 2.309 with four degrees of freedom for a p=0.679).

Taking into account the different forms of carrying out the follow-up in the different studies, Table 4 shows the percentage of relapses (at different points of the follow-up) for the experimental groups of each of the studies mentioned.

This indicates that the intervention programme used in the Andalusia Study is effective in the long term, to the same extent as those used in the other mentioned studies. Currently, the effectiveness of Family Intervention in schizophrenia is unquestionable. Bearing in mind the results of the five cited studies, it can be affirmed that the effects of these programmes are maintained for at least two years.

Table 3
Comparison of experimental and control groups of studies reporting two-year follow-ups

	Relapses by groups				
Studies	Relapses Experimental Groups		Relapses Control Groups		p
Camberwell	1/7	(14%)	7/9	(78%)	0.02
California	3/18	(17%)	15/18	(83%)	<0.001
Pittsburgh	7/22	(32%)	23/35	(66%)	0.013
Salford	8/24	(33%)	17/29	(59%)	0.05
Andalusia	0/15	(0%)	4/10	(40%)	0.017
p	0.1		0.158		

Table 4
Percentage of relapses in the experimental groups of the different studies with different follow-ups (measured from start of study)

	9 MONTHS	12 MONTHS	19-24 MONTHS
CAMBERWELL	8%	---	14%
CALIFORNIA	6%	---	17%
PITTSBURGH	9%	19%	32%
SALFORD	12%	---	33%
ANDALUSIA	---	20%	27%

ACKNOWLEDGEMENTS

This work was supported in part by the grants from the Spanish Ministry of Education and Culture (DGICYT, PB 94-0820) and the Junta de Andalucía (CTS 0267).

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