British Journal of Psychiatry (1987), **150**, 640–644

The Nithsdale Schizophrenia Survey

VI. Relatives' Expressed Emotion: Prevalence, Patterns, and Clinical Assessment

R. G. McCREADIE and A. D. T. ROBINSON

A review of all known schizophrenics ($n = 142$) in Nithsdale, Scotland, found 50% were living with relatives or friends. Of these, 32% had high contact with a relative showing high expressed emotion (EE); put another way, 87% of all Nithsdale schizophrenics were not living in a high contact/high EE family. Parents were more critical than spouses, and more showed emotional over-involvement. A retrospective review showed a trend, not of statistical significance, towards a higher admission rate to in-patient care in patients from high EE homes. Of relatives believed by a consultant psychiatrist to be neither critical nor hostile, 80% fell into the low EE category, but only 44% thought hostile or critical belonged to the high EE category; that is, the clinician had a wider view of high EE than the Camberwell Family Interview. Relatives' scores on a short patient-rejection scale were higher in high EE than in low EE relatives, but the wide scatter of scores suggested the scale could not be used to identify an individual relative with high EE.

Reports over 25 years from the MRC Social Psychiatry Unit in London have suggested the prognosis of schizophrenic patients discharged from hospital may depend on their living arrangements. Patients living with relatives who show high expressed emotion (EE) are more likely to relapse, especially if face-to-face contact between patient and relative is high and the patient is unprotected by maintenance antipsychotic medication (Brown *et al*, 1962, 1972; Vaughn & Leff, 1976). These findings have become of increasing clinical relevance in recent years as in both the UK and USA family therapy which includes education, relatives' groups and family sessions has been shown to reduce contact and lower EE, and thus substantially reduce relapse rates (Leff *et al*, 1982, 1985; Falloon *et al*, 1982, 1985).

Both the UK and USA studies examined patients in an urban setting. A study in Chandigarh, Northern India found different levels of expressed emotion (Leff, 1986); whether this was due to rural or cultural factors is not certain. The present study is the first to examine schizophrenics living in a rural area in the West. It is also the first to assess the *prevalence* of high EE in a community; in contrast with previous studies it does not confine itself to patients recently admitted to in-patient care. By assessing prevalence the amount of work likely to face a NHS clinician willing to embark on prophylactic family therapy can be estimated. The study also describes patterns of EE in different types of relative, and examines, retrospectively, rates of admission to in-patient care in patients living on their own, and with different categories of relative.

If clinicians are prepared to carry out family therapy they must be able to recognise high EE. EE is currently assessed by the Camberwell Family Interview (CFI), which cannot be used without specialised training and is time consuming; it is therefore not suitable for use in everyday clinical practice. Are there any shortcuts in the assessment of EE? The present study examines two possibilities, firstly an experienced clinician's hunch, and secondly a short 'patient rejection' scale administered to relatives by a community psychiatric nurse.

Method

Patients

Patients were drawn from Nithsdale, a rural, historically ancient and geographically discrete part of Dumfries and Galloway Region, Scotland. Those included were all in-patients, day-patients and out-patients of Crichton Royal Hospital, Dumfries, who on the census date (1 July 1985) had a firm case record diagnosis of schizophrenia and whose home address was in Nithsdale. Also, all general practitioners in the area replied to a questionnaire which identified other schizophrenics known to the practice and receiving treatment but not known to the hospital. The census identified 142 schizophrenics; as the population of Nithsdale is 56 000, this gives a point prevalence of 2.53

https://doi.org/10.1192/bjp.150.5.640 Published online by Cambridge University Press

per 1000 of the total population. Sixty-eight per cent fulfilled the Feighner criteria for 'definite' or 'probable' schizophrenia (Feighner *et al*, 1972).

At the time of the census 20% were long-stay in-patients, 28% lived alone or in lodgings, and 2% lived with relatives under 18 years of age. Fifty per cent ($n=72$) were living with adult relatives or significant others and it was these on whom the present study focused. Forty nine per cent of such patients were male (mean age 42 years, s.d. 12 years, range 21–66 years; mean length of illness, as estimated from first psychiatric hospital contact, 14 years, s.d. 10 years, range 1–40 years) and 51% female (mean age 50 years, s.d. 13 years, range 27–79 years; mean length of illness 18 years, s.d. 12 years, range 2–48 years).

Scrutiny of case records identified all Nithsdale schizophrenics admitted to psychiatric in-patient care in the year preceding the census, 1 July 1984–30 June 1985.

Relatives

The type of relative with whom the 72 patients were living is shown in Table I. More males than females were living with parents (χ^2 6.75: $P<0.01$). Relatives of 12 patients were not interviewed: six patients had refused to take part in any of the previous Nithsdale surveys; a general practitioner refused access to a seventh patient; three patients refused access to relatives; and two relatives refused to be interviewed. Of the 12 patients, two had had no previous psychiatric admissions and the mean time from the census to the previous admission in the remaining ten was 12 years (s.d. 8 years, range 2–26 years).

TABLE I
Patients' living arrangements

Patient lives with: %	*Total* ($n=72$)	*Male* ($n=35$)	*Female* ($n=37$)
Parents	41	57	24
Spouse	42	34	49
Child(ren)	4	0	8
Other relative	6	6	5
Friend	7	3	14

Assessment

One of us (A.D.T.R.), trained in the use of the CFI by Dr Christine Vaughn, carried out all interviews which on all but three occasions took place in the patients' homes over a 3-month period following the census. Interviews were taped and an assessment made from the recordings of the five main components of EE, namely criticism, hostility, emotional over-involvement, warmth and positive comments. The amount of face-to-face contact between relative and patient during a typical week was also assessed through the construction of a time budget; more than 35 hours per week indicates high contact (Vaughn & Leff, 1976). The husband or wife of a married patient was always seen; where an unmarried patient lived with both parents, both mother and father were interviewed. In all, 70 relatives or friends were seen. A relative fell into the high EE category if he had a score of 6 or more critical comments, any degree of hostility, or a rating of 3 or more on emotional over-involvement (EOI) (Leff *et al*, 1982).

At the same time as the CFI ratings were made the consultant psychiatrist (R.G.McC), responsible for the patients' clinical management and blind to the ratings, made his own assessment of expressed emotion through the use of a simple 4-point global scale:

> I think this relative (i) is probably neither critical nor hostile (group 1 relatives), (ii) is possibly neither critical nor hostile (group 2), (iii) is possibly critical and/or hostile (group 3), (iv) is probably critical and/or hostile (group 4).

To make the assessment as simple as possible, no attempt was made to rate EOI. Over the same period, community psychiatric nurses visited relatives in their homes and asked them to complete a patient rejection scale (PRS) (Kreisman *et al*, 1979*). This is a 24-item questionnaire containing such statements as "I am very disappointed in my . . ."; "I wish my . . . had never been born". The relative is invited to respond to each statement in one of seven ways ranging from "I feel this way 'always'" through 'sometimes' to 'never'. Each item is scored 1–7 and a grand total obtained (range 24–168); a lower score indicates less hostility.

Results

Prevalence and patterns of high EE

At the time of the survey 58% ($n=35$) of the 60 patients were living with low EE relatives, 42% ($n=25$) with at least one high EE relative, and 32% ($n=19$) with at least one high EE relative with whom they were in face-to-face contact for more than 35 hours each week. Thirty relatives showed high EE. The breakdown by type of EE was as follows: criticism, as evidenced by a score of 6 or more critical comments, without EOI, as evidenced by a rating of less than 3, was shown by 10% of relatives ($n=7$), criticism and EOI by 21% ($n=15$) and EOI alone by 11% ($n=8$). Hostility, as evidenced by a score of 1 or more, shown by 8% ($n=6$) was never found without criticism. Sixteen of 21 mothers (76%) interviewed showed high EE, three of six fathers (50%) (that is, 70% of parents showed high EE); one of nine wives (11%), four of 14 husbands (29%) (that is, 22% of spouses); four of nine other first degree relatives (44%); two of three more distant relatives (67%); none of eight friends showed high EE. Parents had significantly higher scores when compared with spouses in mean number of critical comments (5.67 (s.d.4.79) vs 2.82(2.29): *t*-test, $t=2.60$, $P<0.02$), and also more showed EOI (63% vs 13%: $\chi^2=10.89$; $P<0.001$). There were no statistically significant differences in the percentage showing hostility (11% parents ($n=3$) vs 4% ($n=1$)) but the numbers in each group were very small.

Patients living in high EE homes, in low EE homes or on their own did not differ in: sex distribution, length of illness, and number of previous admissions. Patients living on their own were older than those living in high EE homes

*The questionnaire has been expanded somewhat since the first version was published (full details on request to Dr D. Kreisman, New York State Psychiatric Institute, New York, 10032)

https://doi.org/10.1192/bjp.150.5.640 Published online by Cambridge University Press

(mean 51 years vs 43 years; *t*-test: $t=2.65$, $P<0.02$). More patients in high than in low EE homes lived with parents (68% vs 14%; χ^2 15.88; $P<0.001$).

Admissions to in-patient care

Scrutiny of case records showed that all Nithsdale schizophrenics admitted to in-patient care in the year preceding the census ($n=27$, 24% of all non long-stay in-patients) did so as a result of an exacerbation of a chronic schizophrenic illness or a fresh episode. There was no difference between admissions and non-admissions in: age, sex distribution, marital status and length of illness. Admissions had had more previous admissions than non-admissions (mean 7.3 vs 4.9; *t*-test: $t=2.12$, $P<0.05$).

TABLE II
Admission of Nithsdale schizophrenics to in-patient care in previous year

Living arrangement	*Total number of patients*	*Number of patients admitted*	*Percentage of patients admitted*
Lives alone	42[1]	9	22
No medication	14	4	29
Receiving medication	27	5	18
Low EE family	35	9	26
No medication	14	6	43
Receiving medication	21	3	14
High EE family	25	9	36
No medication	6	1	17
Receiving medication	19	8	42
High EE/high contact family[2]	19	7	37
No medication	4	1	25
Receiving medication	15	6	40

1. Medication unknown in one patient.
2. More than 35 hours per week in face-to-face contact.

Patients were then grouped on the basis of domiciliary status and whether they had received maintenance anti-psychotic medication in the year preceding the census or at least until the time of hospital admission (Table II). Admission rates for the three main groups (patients living on their own, in low EE homes and in high EE homes) ranged from 22% to 36%; the trend, not statistically significant, was towards a higher admission rate in patients from high EE homes. Admission rates for patients in high and low contact with high EE relatives were virtually the same. There were no significant differences between relatives of patients admitted and not admitted in mean number of hours face-to-face contact with patients and mean scores on criticism, hostility, emotional over-involvement, warmth and positive comments sub-scales. A trend in patients living on their own or in low EE homes was that admission rates were lower in patients on anti-psychotic medication (Table II); in contrast the trend in high EE patients was that admission rates were higher in patients on medication. No trend, however, reached statistical significance.

Comparison of CFI with consultant's assessment and PRS

The consultant psychiatrist rated 54 of the 70 relatives; he believed his knowledge of the remainder was so slight that an assessment could not be attempted. He assigned 17 relatives to group 1 ("probably neither critical nor hostile"), 12 to group 2, 14 to group 3 and 11 to group 4 ("probably critical and/or hostile"). When groups 1 and 2 were combined, it was found that 23 out of 29 relatives (80%) fell into the low EE category as assessed by the CFI; when groups 3 and 4 were combined, 11 out of 25 (44%) fell into the high EE category. Concordance rates were only marginally or not improved when relatives in groups 1 and 4 were compared respectively with those in low and high EE categories, and when groups were compared with relatives categorised by the criticism and EOI sub-scales of EE. The number of relatives showing hostility on the CFI ($n=4$) was too small to warrant examination of concordance rates but two fell into group 3 and two into group 4.

Fifty-eight relatives completed the PRS; the remainder were not known to the community psychiatric nurses. Mean scores on the hostility questionnaire for different categories of relative as determined by the CFI are shown in Table III. Although there were statistically significant differences between mean scores in different EE categories, there was such a wide scatter of scores in high EE relatives (see standard deviations in Table III) that it was not possible to determine a cut-off point on the PRS above which most high EE but few low EE relatives would be found.

TABLE III
Scores on patient rejection scale

Type of relative as determined by Camberwell Family Interview	*Number of relatives*	*Rejection score* *Mean score*	*s.d.*	*Student's 't'*	*P*
High expressed emotion	25	68	27	2.05	<0.05
Low expressed emotion	33	56	18		
Hostile[1]	5	93	11	3.61	<0.001
Not hostile	53	58	21		
Critical[2]	17	76	25	3.40	<0.01
Not critical	41	55	19		

1. Any degree of hostility on CFI
2. Six or more critical comments on CFI

Discussion

Relatives of 12 patients were not interviewed and some might belong to the high EE category. However, either patients had no history of admission to a psychiatric hospital or had not been admitted for many years. If there is a relationship between high EE, relapse and subsequent in-patient care it is likely few of these relatives fell into the high EE category.

The study, the first prevalence survey of high EE, found that in a community of schizophrenics 50%

https://doi.org/10.1192/bjp.150.5.640 Published online by Cambridge University Press

were living with relatives or friends and of these, 32% lived in high contact with high EE relatives, the family structure believed by Leff and colleagues to be most conducive to schizophrenic relapse. However, put another way, 87% of all Nithsdale schizophrenics were *not* living in a high contact/high EE family. In terms of absolute numbers, therefore, it is unlikely that at any given time many Nithsdale schizophrenics have to face this sort of family life. If these results obtain in other parts of the country, and if NHS clinicians wish to embark on prophylactic family therapy with schizophrenics at risk, then the amount of work involved is not likely to be great. It is possible of course that within an individual the level of EE fluctuates over time and that a higher or lower prevalence of high EE might have been found on another date. However, with highly enmeshed families (high EE, high contact), EOI in one study barely changed in relatives where no therapeutic intervention took place, at least over a 9-month period (Leff *et al*, 1982). Criticism appears less stable; a considerable reduction occurred over 9 months in some relatives where patients markedly improved (Brown *et al*, 1972).

A common family structure in Nithsdale is the male schizophrenic living with elderly parents (McCreadie, 1982); such a patient may be at high risk as the present survey found parents were more critical and over-involved than spouses. Why this should be so is not clear. It has previously been suggested that more emotion is expressed by those with low rates of contact with friends and relatives (Brown *et al*, 1972). Perhaps parents are more isolated than spouses, most of whom were born and brought up in Nithsdale and possibly had other supportive contacts more readily available outside the nuclear family.

Comparison of the present findings with other studies is very difficult, firstly because the Nithsdale survey examines prevalence while the others examined relatives of patients recently admitted to in-patient care, and secondly because different cut-off points in the subscales of criticism and EOI were used at different times to determine the presence or absence of high EE. At the suggestion of Dr Leff (pers. comm.), the fairest comparison is to use a cut-off of 6 for criticism and 4 for EOI (although 3 has been used in this and later studies); and to consider only relatives of Nithsdale schizophrenics recently admitted to in-patient care, that is, during the previous year. The recalculation of results suggests the prevalence of high EE in rural Nithsdale (50%) might be similar to that in urban London (57%) but much higher than in Chandigarh, (23%; cut-off of 3 for EOI) and lower than in California (67%).

The results of the retrospective review must be treated very cautiously because, as discussed above, EE may in some cases fluctuate over time and if relatives had been assessed at the time of the patients' admission more might have shown high EE than in the prevalence survey. Nonetheless the retrospective results are of some interest. Although in the year previous to the survey there was a trend towards increased admission rates among schizophrenics living in high EE families there were no statistically significant differences in admission rates between patients living on their own or with relatives, between patients living with high and low EE relatives and between patients having little or much contact with high EE relatives. This contrasts sharply with relapse rates over 9 months in the prospective studies reported by Vaughn & Leff (1976). In these studies, 13% of patients discharged to low EE homes but 51% of patients discharged to high EE homes relapsed. Also, medication in the present study did not appear to exert a prophylactic effect in patients living with high EE relatives; in contrast, in the studies of Vaughn & Leff, 92% of patients discharged on no medication to high contact/high EE homes relapsed. However, the numbers of patients in the different Nithsdale subgroups are perhaps too small to warrant serious statistical analysis (for example there were only four patients in the high contact/high EE/no medication group).

It may be that other more important determinants of relapse swamp the contribution of family life in a community of schizophrenics. Patients admitted over the preceding year had had more previous admissions than patients who were not admitted; this may simply reflect severity of illness. Also, life events which are not assessed by the CFI can affect relapse rates (Leff & Vaughn, 1980). Alternatively, might there be protective factors in a rural community such as Nithsdale which do not exist in an inner-city area such as Camberwell? Most schizophrenics in Nithsdale were born and brought up in the area and many still have some contact with acquaintances, friends and more distant relatives outside the nuclear family home. Also, there is a well developed community psychiatric nursing service, a considerable number of patients are regular attenders at the day hospital, and most attend out-patient clinics. Perhaps such contributions outside the home are more widespread and better developed than in an urban area; advice, encouragement and support from these people may help to protect against the hostility, criticism and over-involvement of close relatives.

Neither the clinician's hunch nor the PRS proved to be an adequate shortcut to the assessment of high EE. If the consultant believed a relative was neither hostile nor critical, then it was highly likely that the

https://doi.org/10.1192/bjp.150.5.640 Published online by Cambridge University Press

relative fell into the low EE category as determined by the CFI. However, he had less success in determining which relatives had high EE. He appeared to have a much wider concept of hostility and criticism than that determined by the CFI and thus assigned many low EE relatives to the high EE category. If on the basis of his clinical hunch he and his team were to embark on family therapy for schizophrenics living with high EE relatives a substantial number of low EE families would find themselves in treatment—perhaps no bad thing.

The PRS completed by relatives certainly distinguished in a statistical sense between high and low EE categories. However, because of the wide scatter of scores on the questionnaire in the high EE category, there was no clear cut-off point above which the clinician could confidently assert most high EE but few low EE relatives would be found. The PRS, therefore, may be of use for research purposes but is not appropriate in an everyday clinical setting where the purpose is to identify an individual relative with high EE. Statistical probability does not yield precise prediction.

As an important by-product of the study, valuable insights were gained into the families of the Nithsdale schizophrenics and we would like to conclude by recording some of our more vivid impressions. Interviewing the family and friends of a given patient was a dialogue about the lives of people who have taken on a considerable burden of care with varying degrees of willingness. The impression left was of people struggling, but often succeeding in coming to terms with a major change in a child or spouse, a change that left that person unpredictable, sometimes dangerous. One father said that his world had shrunk to the small but chaotic world of his daughter. The most contented homes were often the group homes; it is surprising that in place of the expected emotional blunting there was warmth and positive regard. While many experiences were adverse, humour was not lacking, which was to be expected from a couthie people such as live in Nithsdale. Where a schizophrenic was married, the overall impression of the marriages was of stability with the offspring well cared for. Maybe the stigma helps to draw a family together to withstand any external threat. Any adverse effect of caring for schizophrenic children did not seem to be reflected in the mothers either. Two were aged over 90; both gave vivid interviews.

To see people in their homes gives an insight rarely gained in the out-patient department and a willingness by a doctor ('busy people') to take an interest in home life was remarked on favourably many times. Advice is needed for next-of-kin and must be greatly helped by knowing home circumstances (Kuipers & Bebbington, 1985).

Acknowledgements

We wish to thank the patients and their relatives for their cooperation; Dr J. Leff and Ms J. Harvey for constructive criticism; Sister R. Love, Sister D. Paterson and Charge Nurse D. Smith for administering the Patient Rejection Scale; and Miss P. Cowan and Mrs M. McCormick for secretarial assistance.

References

BROWN, G. W., MONCK, E. M., CARSTAIRS, G. M. & WING, J. K. (1962) The influence of family life on the course of schizophrenic illness. *British Journal of Preventive and Social Medicine*, **16**, 55–68.

——, BIRLEY, J. L. T. & WING, J. K. (1972) Influence of family life on the course of schizophrenic disorders: a replication. *British Journal of Psychiatry*, **121**, 241–258.

FALLOON, I. R. H., BOYD, J. L. MCGILL, C. W., RAZANI, J., MOSS, H. B. & GILDERMAN, A. M. (1982) Family management in the prevention of exacerbations of schizophrenia: a controlled study. *New England Journal of Medicine*, **306**, 1437–1440.

——, BOYD, J. L., MCGILL, C. W., WILLIAMSON, M., RAZANI, J., MOSS, H. B., GILDERMAN, A. M. & SIMPSON, G. M. (1985) Family management in the prevention of morbidity of schizophrenia. Clinical outcome of a two year longitudinal study. *Archives of General Psychiatry*, **42**, 887–896.

FEIGHNER, J. P., RUBINS, E., GUZE, S., WOODRUFF, R. A., WINOKUR, G & MUNOZ, R. (1972) Diagnostic criteria for use in psychiatric research. *Archives of General Psychiatry*, **26**, 57–62.

KREISMAN, D. E., SIMMENS, S. J. & JOY, V. D. (1979) Rejecting the patient; preliminary validation of a self-report scale. *Schizophrenia Bulletin*, **5**, 220–222.

KUIPERS, L. & BEBBINGTON, P. (1985) Relatives as a resource in the management of functional illness. *British Journal of Psychiatry*, **147**, 465–470.

LEFF, J. (1986) Recent research on relatives' expressed emotion. In *Contemporary Issues in Schizophrenia*, (eds A. Kerr & P. Snaith). London: Gaskell.

—— & VAUGHN, C. (1980) The interaction of life events and relatives' expressed emotion in schizophrenia and depressive neurosis. *British Journal of Psychiatry*, **136**, 146–153.

——, KUIPERS, L., BERKOWITZ, R., EBERLEIN-VRIES, R. & STURGEON, D. (1982) A controlled trial of social intervention in the families of schizophrenic patients. *British Journal of Psychiatry*, **141**, 121–134.

——, KUIPERS, L., BERKOWITZ, R. & STURGEON, D. (1985) A controlled trial of social intervention in the families of schizophrenic patients: two year follow up. *British Journal of Psychiatry*, **146**, 594–600.

MCCREADIE, R. G. (1982) The Nithsdale schizophrenia survey. I Psychiatric and social handicaps. *British Journal of Psychiatry*, **140**, 582–586.

VAUGHN, C. E. & LEFF, J. P. (1976) The influence of family and social factors on the course of psychiatric illness. A comparison of schizophrenic and depressed neurotic patients. *British Journal of Psychiatry*, **129**, 125–137.

*Robin G. McCreadie, BSc, MD, FRCPsych, *Director of Clinical Research and Consultant Psychiatrist, Crichton Royal Hospital, Dumfries DG1 4TG*; Andrew D. T. Robinson, MB, ChB, MRCPsych, *Research Registrar, Crichton Royal Hospital; currently Clinical Scientist, MRC Unit for Epidemiological Studies in Psychiatry, Department of Psychiatry, Royal Edinburgh Hospital, Morningside Park, Edinburgh EH10 5HF*

*Correspondence

https://doi.org/10.1192/bjp.150.5.640 Published online by Cambridge University Press