Impact of community mental health services on users' social networks

PRiSM Psychosis Study 7

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Background   Social networks are important for people with severe mental illness, and services need to assess whether they succeed in improving social contacts.

Method   In a prospective controlled study, social network data were obtained in an epidemiologically representative sample of people with psychotic disorders both before (Time 1) and two years after (Time 2) the introduction of two sectorised community mental health services in south London (one intensive service with two specialist teams, one standard service with a generic team).

Results   There were significant baseline differences between sectors with social networks being smaller in the sector later served by the intensive service. Social network size increased within the intensive service sector, but not in the standard service sector. There was a significant sector effect for the network component of relatives (intensive > standard) and in the other ('non friends') component (standard > intensive) after adjusting for baseline differences.

Conclusions   The findings suggest that the intensive sector community mental health service enhanced people's social networks with their relatives, relative to the standard service. The reverse is the case for other contacts.

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Social networks have been described as "... all or some of the social units (individuals or groups) with whom a particular individual or group is in contact" (Bott, 1957). A more ambitious definition by Mitchell (1969) refers to "...a specific set of linkages among a defined set of persons, with the additional property that the characteristics of these linkages as a whole may be used to interpret the social behaviour of the persons involved". More modestly, differences have been described in size and some qualitative aspects of social networks between people with psychotic disorders and healthy probands. Networks of the former are smaller, include a greater proportion of relatives, more dependent contacts, and tend to decrease in size in the course of the illness (Hammer et al, 1978; Beels et al, 1984; Buchanan, 1995). In schizophrenia, having fewer friends is related to poorer outcome (Strauss & Carpenter, 1972), and living alone is associated with earlier relapse (Hare, 1956). Community mental health services attempt to ensure that people have a basic social support network, and improved social networks are associated with better social functioning (Thornicroft & Breakey, 1991).

SERVICE USE AND SOCIAL NETWORKS

Relationships have been established between social networks of people with psychiatric illnesses and their utilisation of mental health services (Becker et al, 1997a). The available evidence suggests that larger social networks and adequate social supports are associated with a reduced likelihood of hospitalisation. Also, some data suggest a positive effect of social support on outcome (Becker et al, 1997a). Analyses of Time 1 data of the present study resulted in a decrease of the likelihood of hospitalisation with an increase in network size, while

the number of types of (non-in-patient) service used by people grew as social network size increased (Becker et al, 1997b).

The PRiSM Psychosis Study examines the effects of the establishment of sectorised community mental health services in south London in a random sample of epidemiologically representative cases of functional psychosis on the basis of a two-year follow-up. At the time of the baseline (Time 1) interviews, two types of sectorised community mental health service were set up. Each provided secondary psychiatric in-patient, out-patient and day care for a population of about 42 000: in the Nunhead (intensive) sector two specialised teams were set up, and the number of hospital beds was reduced; in the Norwood (standard) sector one generic community mental health team was introduced, and there were slightly more hospital beds (Becker et al, 1998a, this issue). At the time of follow-up (Time 2) interviews these services had been in place for about two years. Social network size and composition were among the outcome variables used.

In the present paper, the following questions will be addressed:

(a) Was there a baseline difference in social network size (and social network components) between the intensive and standard sectors?

(b) Did changes in social network size (and network components) occur in the two sectors when comparing Time 2 with Time 1 data?

(c) To what extent can these changes be attributed to differences in the two service models?

The specific hypothesis of interest is that the intensive service would lead to enhanced social networks, and is tested using ANCOVA models.

METHOD

Annual period prevalence of all psychotic disorders was established on the basis of a case identification exercise in two catchment areas in south London with catchment area populations of about 42 000 each (the 12-month period being referred to as index year). In identifying cases a wide range of hospital and community sources were used: psychiatric case records, social services, general practitioners, sheltered accommodation, clergy, services for the homeless, and prisons. Inclusion was on

the basis of address of residence irrespective of whether treatment was received in the index year or whether a person had ever been in contact with mental health services. Possible cases comprised all those who had a clinical diagnosis of any psychotic disorder at any time in their lives. Definite cases included all those with an affective or non-affective functional psychotic disorder as assessed by OPCRIT (Operational Criteria Checklist) version 3.2 (McGuffin et al, 1991), a standardised procedure applied to lifetime patient history to produce ICD–10 diagnosis which was applied to case notes and/or other pertinent information (World Health Organization, 1992b). Information was collected on socio-demographic details, psychiatric history, and all contacts with mental health services during the index year, as well as past in-patient and out-patient service utilisation. Full details of the study method are given in Thornicroft et al (1998), paper 1 in this issue.

Patient sample

A simple random sample of cases was selected for interview. Subjects, formal carers and informal carers were interviewed using a range of instruments: first, prior to the establishment of community mental health services in both sectors and, second, about two years later (when these services had been operating for about two years). Instruments used at both time points were: the PRiSM Socio-Demographic Rating Scale (available from the authors upon request), the Social Network Scale (SNS; Dunn et al, 1990; Leff et al, 1990), the Brief Psychiatric Rating Scale (BPRS; Overall & Gorham, 1962; Ventura et al, 1993), the Social Behaviour Schedule (SBS; Wykes & Sturt, 1986), the Global Assessment of Functioning scale (GAF; American Psychiatric Association, 1987), and the Client Service Receipt Interview (CSRI; Beecham & Knapp, 1992). At the baseline interview ICD–10 diagnoses were established using the Schedules for Clinical Assessment in Neuropsychiatry (SCAN; World Health Organization, 1992a,b).

The sample size was reduced following the exclusion of people with diagnoses of non-psychotic disorders. In some exceptional cases where OPCRIT rating proved problematic and, therefore, a clear psychotic OPCRIT diagnosis could not be established at case identification, a subsequent SCAN diagnosis of a functional psychotic disorder was accepted as fulfilling inclusion criteria.

Five hundred and fourteen patients were initially identified in both sectors, and 320 patients were randomly chosen for interview. Of the latter, 302 met selection criteria; 210 (70%) of those meeting selection criteria were interviewed either at Time 1 or Time 2; 129 (61%) of these patients had complete data at both time points, and the main analyses are based on this 'complete pairs' group, with sensitivity analyses carried out where possible on the larger group. There were few differences between the group analysed and those completing at Time 1 only, or at Time 2 only. There were 92 patients (of the 302) who did not provide any interview data. When compared with those who provided data on at least one time point, the non-completers were more likely to be women (60%), married or cohabiting (24%), older (mean age 45 years), and more disabled at Time 1 (mean GAF 55; BPRS total score 52, severe behaviour score 2.0). There were 59 who completed the SNS interview at Time 1, and 22 who completed it at Time 2 only. Their total network sizes were very similar to those for the complete pairs (means 11.5 at Time 1 and 16.1 at Time 2, respectively).

Data analysis

The data on complete Time 2–Time 1 pairs were analysed using SPSS-PC version 6.0. The results are presented from two points of view. First, the changes over the follow-up period are considered for each sector separately. This essentially descriptive approach is followed by an analysis of covariance (ANCOVA). This analysis estimates the difference between the social networks in the two sectors, following the intervention, for given initial levels of social networks and for given values of several other variables at Time 1: age, gender, ethnic group (White or non-White), marital status (married or not married), SBS total score (severe behavioural symptoms) and BPRS total score.

The assumption of normality held approximately for total network size, but was less reasonable for the network components. In order to check the sensitivity of the results, paired t-tests were confirmed using Wilcoxon matched pairs signed ranks test, and the significance at $P=0.05$ and direction of sector effects were confirmed by repeating the analyses of covariances using square-root transformed data and also omitting extreme outliers. A further discussion of other sensitivity checks and also the general approach is given in paper 1 of this issue (Thornicroft et al, 1998).

RESULTS

All patients interviewed were in contact with general adult mental health services; none had dementia. The sample with complete Time 1–Time 2 data comprised 129 subjects and is described in Table 1. Among the 49 non-White subjects 37 were of Black Caribbean and seven of Black African origin. Twenty-four per cent of the patients had been hospitalised in the six-month period before the Time 1 interview. Staff described at least one sign of severe behavioural impairment in 48% of the sample.

Table 2 shows Time 1 and Time 2 means, as well as differences in means over time, for total social network size and the components of relatives, friends and other contacts (or non-friends, e.g. acquaintances, shopkeepers, health or social or other service staff). These three network components each included approximately one-third of the total social network at Time 1. Total network size and all the network components were larger in the Norwood sector at Time 1 ($P < 0.05$ in all cases). There were significant increases over time in total social network size and in the individual components in the Nunhead patient group ($n=64$). The same applied to the overlapping category of confidants (who might be friends, relatives or others; $P < 0.01$). Significant (Time 2–Time 1) differences were not observed in the Norwood sector ($n=65$).

Analysis of covariance results are shown in Table 3. There was no evidence at $P=0.05$ for a sector difference in the total network size adjusting for the Time 1 values. However, Time 2 values, adjusted for differences at Time 1, were higher ($P < 0.05$) on average for the number of relatives in Nunhead, and for the number of 'other' contacts in Norwood. This latter difference could not be interpreted in terms of a relative excess frequency of staff contact in Norwood since at Time 2, the number of community psychiatric nurse contacts and psychiatrist contacts per patient over six months was higher in Nunhead than in Norwood (mean 32 v. 9, and 6 v. 4, respectively). Furthermore, the weak

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Table 1 Patient sample[1]

Characteristic	Present
Sector (n=129)	
Nunhead (n(%))	64 (50)
Norwood (n(%))	65 (50)
Gender (n=129) (n male (%))	71 (55)
Marital status (n=129) (n married or cohabiting (%))	24 (19)
Diagnosis (n=129)	
Functional non-affective psychosis (n (%))	91 (71)
Affective psychosis (n (%))	20 (16)
Other psychosis[2] (n (%))	18 (14)
Ethnic group (n=129) (n White (%))	80 (62)
Employment status (n=108) (n employed (%))	19 (18)
Accommodation (n=125) (n in supported accommodation (%))	21 (17)
Age in years (mean (s.d.)) (n=129)	40.5 (14.4)
Contact with services in years (mean (s.d.)) (n=125)	17.2 (12.6)
Global assessment of functioning score (mean (s.d.)) (n=110)	58.7 (14.7)
Brief Psychiatric Rating Scale total score[3] (mean (s.d.)) (n=120)	34.6 (10.8)
Total network size (mean (s.d.) (range)) (n=129)	12.8 (9.0) (1–56)

1. Maximum 129 complete Time 1–Time 2 pairs out of 210 selected for interview; characteristics at case identification or at Time 1 interview as available.
2. SCAN diagnosis where available; otherwise case note OPCRIT.
3. Adjusted for non-response on individual items.

Table 2 Social Network Schedule changes from Time 1 to Time 2 in each sector

	Mean[1]		Difference	95% CI	P[2]
	Time 1	Time 2			
Nunhead n=64					
Total network size	9.1	14.3	5.2	2.9–7.5	<0.01
Friends	3.1	4.5	1.4	0.1–2.7	0.03
Others (non-friends)	2.5	4.0	1.5	0.2–2.8	0.02
Relatives	2.9	5.0	2.1	1.0–3.1	<0.01
Norwood n=65					
Total network size	16.4	17.8	1.4	−1.6–4.3	0.36
Friends	5.4	6.5	1.1	−0.7–3.0	0.22
Others (non-friends)	5.7	6.9	1.2	−1.0–3.4	0.27
Relatives	4.9	4.5	−0.4	−1.3–0.5	0.36

1. Pooled within sector SDs at time: 8.2 (total); 4.8 (friends); 4.7 (others); 3.4 (relatives).
2. Matched pairs t-test; P > 0.05 confirmed using Wilcoxon matched pairs signed ranks test.

Table 3 Estimated effect of the intensive service, adjusting for initial level[1]

	n	R²	Adjusted difference	95% CI	P	Notes
Total network size	120	0.19	−1.40	−4.6–1.9	0.41	
Friends	120	0.19	−0.93	−3.4–1.5	0.45	
Others (non-friends)	120	0.13	−3.10	−5.3–0.85	<0.01	Norwood higher
Relatives	120	0.31	1.91	0.5–3.3	<0.01	Nunhead higher

1. Nunhead minus Norwood, adjusting for Time 1 Social Network Schedule network size, age, gender, marital status, ethnic group, total and severe behavioural impairment scores, number of years in contact with mental health services; based on ANCOVA (significance and direction of effects confirmed using square-root transformed data). Complete Time 2–Time 1 pairs (with complete data on other covariates) only.

correlation between frequency of staff (community psychiatric nurse and psychiatrist) contacts and the total number of other contacts cited was negative.

Network size at Time 2, adjusted for Time 1, was significantly higher among women than men for relatives (P=0.01). It was higher for married compared with single subjects for total network size (P=0.01) and others (non-friends) (P=0.03). Total contacts (P=0.04) and friends (P=0.07) at Time 2, adjusting for Time 1, were positively correlated with the severe behaviour score of the SBS (with a similar degree of association in the two sectors).

DISCUSSION

Factors affecting social networks

The analysis of each sector separately indicates a clear-cut increase in social network size within the group of intensive sector subjects in Nunhead. Such change was not found in the standard sector (Norwood). However, after adjusting for Time 1 values in an analysis of covariance, the only significant differences at Time 2 were for relatives, where they were estimated to be higher for the intensive service, and for 'other' contacts (non-friends), where the reverse was the case. The analysis of covariance also showed gender and marital status to be significant covariates, with women as well as married or cohabiting patients experiencing a more marked increase in network size over time. The SBS severe behaviour score was also a prognostic factor for increased social networks.

Quality of social networks

The lack of more detailed qualitative social network data could be considered a shortcoming. Obviously, it is not only numbers of contacts that count, and people vary widely in terms of their needs for social contact and company. Analyses of social network and quality of life data, in the present study, suggest that linear associations do not adequately describe relationships between the two domains (Becker et al, 1998b). Quality of life appraisal tends to improve with an increase in social networks but such increases may level off to an optimal level of network size. Undifferentiated numerical network enhancement cannot be regarded a reasonable target for community mental health services as all interventions should be tailored to people's needs.

The Team for the Assessment of Psychiatric Services (TAPS) study has shown the validity of the information obtained with the SNS by comparing it with data obtained from an observational study of the social life of long-stay patients in a hospital coffee bar at one of the hospitals investigated in that study (Dunn et al, 1990). However, this is a setting quite distinct from the daily life of people with severe mental illness living in the community. TAPS study findings suggest that the SNS can be applied in community settings, and that combining the numerical data it provides (e.g. number of confidants) with sociograms (i.e. a pictorial method of mapping out personal links among a group of people) can be helpful (Dayson, 1992). Thus, there is little doubt that the discussion of the data presented here should be supplemented with qualitative information from similar observational studies which focus on the social life of the group of people included in the present study.

Baseline differences

Significant baseline differences in overall and component network size are crucial to interpretation of the results. One possible explanation for these is rater bias. However, results obtained in two raters who rated substantial number of people at Time 1 and Time 2 did not confirm this. One researcher who had rated 11 people in Nunhead and 18 people in Norwood at Time 1 showed a difference of about 3.5 in total network size (Norwood > Nunhead), and her ratings also showed a clear-cut increase over time of about five in Nunhead patients rated both at Time 1 and Time 2. Differences across sectors were also reflected in the data obtained by a second rater who performed SNS Time 1 interviews in Norwood and SNS Time 2 interviews in Nunhead. It would, therefore, appear that a rater bias does not account for Time 1 network differences between sectors.

Multivariate analysis including sociodemographic and illness-related variables did not account for the baseline differences in network size. The two sectors do not differ widely in terms of Jarman underprivileged area scores (Nunhead: 30.9; Norwood: 29.4). Small Area Statistics of the 1991 Census show some slight differences (Office of Population Censuses and Surveys, 1991). In Nunhead, a somewhat higher proportion of the population lives in a household without access to a car (47.8 v. 41.7%). On the other hand, Norwood has the electoral ward with the highest proportion of population resident in hostels, common lodging houses, miscellaneous establishments or sleeping rough (Thurlow Park: 0.48%; Glover, 1996).

The large baseline differences complicate the interpretation of the apparent increases over time, part of which may be due to regression to the mean. Analysis of covariance has been used to compensate for this but will be successful to the extent that the models employed are realistic. In view of the baseline differences and the non-randomised controlled study design, a conservative approach should be taken in the specific attribution of differences to service provision.

Sector effects

When considering the changes within the intensive sector in isolation, it would appear that the intensive sector teams went some way towards compensating all types of total social network deficits in their user population. The significantly higher increase in network size in people with severe behavioural symptoms in both sectors may also provide further evidence of successful targeting by mental health services (both intensive and standard). Participant observation in the intensive sector of the work of the specialised intensive sector teams would underline that maintaining close ties with users and informal carers was a central component of their routine daily work.

There is little evidence for differential effects between the sectors in total network size, although there is some for individual network components. The increase in contact with 'others' in Norwood is difficult to interpret because it consists of a heterogeneous group of people who are not friends, confidants or relatives and, as has been shown, neither are they entirely staff. A relative advantage, in terms of Time 1–Time 2 comparisons, was observed for the intensive Nunhead sector relative to the Norwood sector where contacts with relatives were concerned. Discussion must be cautious as the difference reflects network size catching up in the intensive sector. However, the sector difference can be considered an important finding since relatives constitute a core network component for people with severe mental illness. Paper 6 in this series (Szmukler et al, 1998, this issue) has shown no evidence for increased burden on relatives following the introduction of the intensive service and therefore this increase may be interpreted as wholly positive.

In summary, the results of the present study suggest that people in the area with more deficient social networks caught up to some extent with those in the comparison sector where social networks were significantly larger at baseline. It is plausible to assume that the work of the intensive sector's specialised teams helped in bringing about this change. The intensive sector team's daily practice, high team cohesion, extended opening hours, good staffing levels, and on-call availability may have been reflected in more relatives in people's social networks.

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CLINICAL IMPLICATIONS

■ Social network size increased among users of an intensive community mental health service, but not among those of a standard service.

■ Adjusting for baseline values, there was an increase of the number of relatives in the intensive sector, while other contacts increased in the standard sector.

■ Social network increase was more marked in women, married users and those behaviourally disturbed.

LIMITATIONS

■ There were significant baseline differences between sectors with social networks being smaller in the sector subsequently served by the intensive community service.

■ Qualitative data on social networks should complement quantitative analysis.

■ More data on environmental and cultural differences between sectors would be helpful in understanding baseline differences.

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