A Cluster Analysis of Patients With Schizophrenia in Community Care

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In a sample of patients with schiz-ophrenia, four clusters were iden-tified and service use and rela-tives' satisfaction analyzed. In the first cluster, patients' severity of illness was mild and their use of services low. In the second, pa-tients' disability was more severe; psychiatric symptoms were low in severity, family burden was mod-erate, and use of community serv-ices was more intensive. In the third cluster, patients had serious disability and severe positive symptoms; their families suffered distressing burdens, and their use of hospital and community servic-es was intensive. In the fourth cluster, patients' disability was very severe, negative symptoms were prominent, and relatives' burden was moderate; use of hos-pital services was frequent, and use of community services was less so. (*Psychiatric Services* 52: 682–684, 2001)

One of the principal research questions in community care is whether use of resources by different patient groups is aligned with the pa-tients' clinical and psychosocial needs. Data from the information sys-tem database of the Desio Depart-ment of Mental Health in Desio, Italy, show that resources are directed primarily toward patients with schizo-phrenia and related syndromes. Be-cause a diagnosis of schizophrenia alone cannot explain differences in severity of illness among patients or their variable needs for resources, we focused our study on what variables combine to determine different class-es of severity for schizophrenia.

Using variables that are widely dis-cussed in the literature on communi-ty care (1), we identified different clusters of patients on the basis of the severity of psychopathology, disabili-ty, and family burden. The key issues we analyzed were whether the pa-tients' use of resources and their rela-tives' satisfaction with the care pro-vided varied between clusters.

Methods

To create a study sample, we con-ducted a one-day prevalence study of patients who were in contact with the facilities of the Desio Department of Mental Health on December 31, 1994. The department comprises a 15-bed psychiatric ward in the gener-al hospital, two community mental health centers, a 12-bed residential facility, and two day centers. Our sample was composed of 203 patients 15 to 64 years of age who lived in the northern outskirts of Milan in the area served by the Desio Department of Mental Health and whose *ICD-10* diagnosis was of schizophrenia and related disorders.

Patients were evaluated for disabil-ity with the Disability Assessment Schedule II (2) and for psychiatric symptoms with the 24-item expanded Brief Psychiatric Rating Scale (3). Family burden, including relatives' satisfaction with services provided, was evaluated with the Questionnaire for Family Problems (4). Data on out-patient, hospital, and residential care contacts during the year before evalu-ation were collected from the depart-ment's information system.

For each area—disability, psychi-atric symptoms, and family burden—a principal components analysis and factor rotation were performed. Eleven factors were retained as ex-planatory variables (5) and used to cluster the 203 patients by means of the Ward hierarchical method using Euclidean distances. The classifica-tion was validated with the regular-ized discriminant analysis classifica-tion method.

Results

Table 1 summarizes data for each cluster on sociodemographic charac-teristics, service use, and relatives' satisfaction with services. Patients in the first cluster (43 patients, or 21 percent) had satisfactory functioning and mild problems in affective rela-tionships and in employment, and the severity of their symptoms was low. Their relatives were satisfied with the services received, and the burden on them was mild. The patients tended to use community facilities, though not intensively, with a median of 15 community contacts per patient. One in ten patients were admitted to the psychiatric ward, and only one in 20 to residential facilities.

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Table 1

Demographic and clinical characteristics, family burden, and relatives' satisfaction with services for four clusters of patients with schizophrenia

Variable	Cluster 1 (N=43) N, mean, or median	%	Cluster 2 (N=94) N, mean, or median	%	Cluster 3 (N=25) N, mean, or median	%	Cluster 4 (N=41) N, mean, or median	%	Total (N=203) N, mean, or median	%
Demographic characteristics										
Male	15	35	68	72	13	52	21	51	117	58
Mean±SD age (years)	43±12		39±11		41±9.9		47±13.2		41±11.7	
Married or with a partner	26	60	12	13	6	24	11	27	55	27
Employed	17	40	21	22	5	20	12	29	55	27
Attended secondary school	10	23	16	17	5	20	7	17	38	19
Mean±SD year of first psychiatric contact	1983±8.2		1982±8.4		1980±9.1		1979±10.3		1982±8	
Service use in the previous year										
Admitted to a hospital	4	9.3	11	12	11	44	11	27	37	18
Involuntarily hospitalized	0	—	2	2	2	8	3	7	7	3
Admitted to a residential facility	2	5	9	10	5	20	6	15	22	11
Mean±SD number of days spent in the hospital	0.9±3.2		5.2±21.1		51±91.9		12±28.1		5.7±24	
Mean±SD number of days spent in a residential facility	1.8±8.5		5.6±29		16.5±37.8		15±48.8		4.9±23.1	
Median number of community service contacts	15		25		32		26		23	
Psychopathology, disability, family burden, and relatives' dissatisfaction										
Disability Assessment Schedule, global evaluation[1]	2.8±.7		4.2±.8		4.9±.7		5.1±.8		4.1±1.1	
Brief Psychiatric Rating Scale, global mean score[2]	1.3±.2		1.8±.4		2.5±.9		2±.5		1.8±.6	
Questionnaire for Family Problems, family burden global mean score[3]	1.4±.2		1.8±.4		2.6±.5		2.2±.5		1.9±.6	
Questionnaire for Family Problems, relatives' mean level of dissatisfaction[4]	1.8±.5		2.1±.5		2.4±.6		2.3±.6		2.1±.6	

[1] Possible scores range from 1 to 6, with higher scores indicating more severe disability.

[2] Possible scores range from 1 to 7, with higher scores indicating more severe psychopathology.

[3] Possible scores range from 1 to 4, with higher scores indicating more severe family burden.

[4] Possible scores range from 1 to 4, with higher scores indicating greater dissatisfaction.

In the second cluster (94 patients, or 46 percent), disability was more severe, and work functioning and affective relationships were inadequate. Psychopathological symptoms were moderate in severity. The family burden was moderate, and relatives were satisfied with the services provided. One patient in ten was admitted to the psychiatric ward or the residential facility, and the use of community facilities was more intensive, with a median of 25 community contacts per patient.

Patients in the third cluster (25 patients, or 12 percent) had severe disability in aspects ranging from self-care and participation in household activities to work and sexual roles. In this group, unlike patients in the other clusters, patients had a high level of friction in interpersonal relationships and thus had a high risk of aggressive behavior. Symptoms in this cluster, particularly positive symptoms, were the most severe. The burden on the family was heavier, and relatives were not satisfied with the services provided. These patients used the hospital ward intensively; half had been admitted during the year before evaluation, one in ten involuntarily—the highest rate for all clusters. The use of community and residential facilities was also more intensive for this group.

Patients in the fourth cluster (41 patients, or 20 percent) had severe disability, particularly in areas related to self-care and household activities, sexual-affective and work roles, and relationships in the social context. Negative symptoms were predominant among these patients. The family burden was moderate, and relatives' satisfaction with the services provided was low. Patients used the hospital ward frequently and used residential and community facilities less intensively, at a level similar to that of patients in the second cluster.

Discussion

Patients in the first cluster were "well-functioning" patients in the community, and those in the second presented more problems and suffered difficulties, both within families and in society. In the third and fourth clusters, patients' illness was more se-

vere, much like that of "difficult-to-place patients" in the study by the Team for the Assessment of Psychiatric Services in London (6). In the third cluster, disability was linked with severe positive symptoms; patients showed high levels of tension and aggressive behavior, and the burden on the family was high. In the fourth cluster, serious disability both in social roles and daily living skills was associated with negative symptoms; this mix constituted an important cause of family burden.

Patients in the third cluster required more intensive care than the others. In the fourth cluster, the absence of a relationship between the intensity of care and the severity of illness suggests that profoundly disabled patients risk being excluded from community care.

These results have both public policy and practical implications. Relatively few studies have been published that characterize patients with schizophrenia not only on the basis of the severity of psychopathological symptoms but also on the basis of psychosocial problems. Use of cluster analysis has been limited to the identification of psychopathological syndromes in schizophrenia (7). For public policy, we submit that cluster analysis might be useful in the construction of severity groups that could be used in evaluating outcomes and specific costs (8) and in constructing a case-mix classification for funding cases on the basis of severity.

The practical implications of our findings are that new strategies are required for patients in the third and fourth clusters, at the level of both patient and service. At the patient level, those who have resistant psychotic symptoms should be treated with atypical antipsychotic drugs, whereas very disabled patients need more intensive special rehabilitation in residential facilities or through home visits. Relatives suffering a greater burden would benefit from psychoeducational activities.

At the service level, we should ask whether results could be improved by implementing specific new services into routine clinical settings, such as assertive community treatment teams, or whether, given the findings of the PRiSM study (9), it might be better to work on improving the effectiveness of existing clinical services with more efficient interventions in the continuity of care.

Conclusions

Patients with schizophrenia, and in particular those with more severe illness, present a challenge in attempts to evaluate the community care model. Improving responsiveness to the needs of the most seriously ill patients and their families is the central issue that requires further study and practical implementation. ♦

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