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Cost Evaluation of Chronic Schizophrenic Patients During the First 3 Years After the First Contact

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Abstract

This study was performed in Italy, where mental health care is largely provided by the Government-financed Italian National Health Service (INHS). Since 1978, outpatient services and psychiatric beds in general hospitals have replaced psychiatric hospitals, which have not been permitted to admit new patients. The direct costs of three cohorts of 20 chronic schizophrenic patients were evaluated according to incidence data for a 3-year period. The analysis focused in particular on services provided by public institutions. The average cost per patient during this period following first contact–admission was $9,612 (1989 U.S. dollars), which is low compared to costs in other countries. The cost distribution between inpatient and outpatient services was different from other studies and showed that, in Italy, hospital expenses covered approximately 50 percent of total direct INHS costs. The length of time between onset and first contact–admission showed a significant association ($p < 0.01$) with INHS costs during the 3 years. A significant association ($p < 0.05$) also was found between the Scale for the Assessment of Positive Symptoms (SAPS) global symptom "delusions" evaluated after 5 to 7 years and the average INHS costs during the 3 years of the study.

This study evaluates the direct costs of treatment for chronic schizophrenic patients in Italy. Public mental health care is provided free by the Italian National Health Service (INHS), nationally financed by taxes. Since the Reform Act of 1978, mental health care has been managed by district health units, which are responsible for providing and administering health care for a catchment area of 50,000 to 300,000 inhabitants. The 20 regional health authorities allocate financial resources among district units and regulate regional health planning.

Public psychiatric hospitals have not been allowed to admit new patients since 1978. Patients are referred to the public psychiatric services of the district health unit, which include psychiatric beds in general hospitals, psychosocial centers, day centers, and sheltered homes. There is marked regional variation in the provision of community services as an alternative to psychiatric hospitals; the most comprehensive services are in north and central Italy. An extensive study on the reallocation of financial resources from psychiatric hospitals to community services has not yet been performed (Mangen 1989).

Psychiatric care is also delivered by *convenzionati* clinics (private clinics that have periodically renewable contracts with the INHS, which covers room-and-board expenses). There are also private clinics, outpatient services, and professionals who charge on a fee-for-services basis. Private health insurance is not widely available and does not cover mental illness.

In this study, costs are evaluated using the incidence data method (Hartunian et al. 1980; Andrews et al. 1985; Hall et al. 1985) and an attempt is made to draw, retrospectively, a detailed picture of public, *convenzionati*, and private services consumption and of the direct costs of three cohorts of schizophrenic pa-

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tients during the 3 years following first contact–admission with area services and also during the period between the onset of illness and first contact–admission. The patients were from a 200,000-inhabitant catchment area (District Health Units 17 and 18) in Milan.

Materials and Methods

Psychiatric services in the considered catchment area are the following: one psychiatric ward of 15 beds in S. Carlo General Hospital; two psychosocial centers; one day center; and one sheltered home (which was not included in this study because none of the selected patients used this service).

The year of incidence (1983, 1984, or 1985) was considered the first admission to the psychiatric ward of the S. Carlo Hospital or the first contact with one of the two psychosocial centers.

On the basis of hospital and psychosocial center records, 78 schizophrenic patients (ICD-9 295; World Health Organization 1978) less than 45 years of age during the year of incidence were selected.

At the beginning of 1990 it was possible to contact only 35 patients. These were interviewed and rediagnosed according to *DSM-III-R* (American Psychiatric Association 1987). Patients with organic disease and drug addiction were excluded, as were patients whose first contact was with public services in a different catchment area. Twenty-one patients with a *DSM-III-R* diagnosis of chronic schizophrenia were selected, a homogeneous and high resource-consuming group. One patient whose consumption of resources was considerably higher than that of the others was eliminated. The evaluation was performed on a final group of 20 patients.

Consumption of public services in the catchment area was evaluated on the basis of the patients' records and confirmed by psychiatrists, psychologists, and nurses who had treated them during the 3 years.

Consumption of public services in other catchment areas, from *convenzionati*, and from private sources was evaluated by means of interviews with the patients and, separately, with their relatives. These interviews were also a source of information on the consumption of *convenzionati* and private services during the period between onset and first contact–admission.

The average age of onset for the 20 patients was 24.6 ± 6.8 (SD) years and 32.5 ± 6.6 years at the time of the interview. The period between onset and first contact–admission was 19 ± 22.7 months. The patients had attended school for a mean of 11.1 ± 3 years. At time of onset two (10%) were unemployed, two (10%) were intermittently employed, three were students (15%), eight (40%) were white-collar workers, and five (25%) were blue-collar workers. In 1990, 11 (55%) were unemployed, 2 (10%) were intermittently unemployed, 5 (25%) were white-collar workers, and 2 (10%) were blue-collar workers.

The heads of the patients' families had attended school for an average of 6.5 ± 2.6 years. At onset of the patients' illness 14 (70%) were blue-collar workers, 4 (20%) were white-collar workers, and 2 (10%) were retired. Eight (40%) were widows at the time of patients' onset. This information might suggest that the majority of these families were at a lower socioeconomic level.

The following definitions were used for the cost and consumption assessment:

- **Hospitalization:** admission to a public psychiatric ward in a general hospital, a *convenzionati*, or a private clinic.
- **Visit:** 1 hour of individual counseling with a psychiatrist.
- **Individual psychotherapy:** 1 hour with a psychiatrist at least once a week for at least 6 consecutive months.
- **Domiciliary visit:** 1-hour visit at a patient's home (for this group of patients these visits were made by nurses only).
- **Group therapy:** 2-hour sessions twice a week with one psychiatrist and one psychologist and about five patients.
- **Family group:** 1½-hour sessions with one psychiatrist and one psychologist and about 10 parents of patients.
- **Other groups:** groups of about seven patients managed by a psychologist for activities such as painting, clay modeling, cooking, and newspaper reading.
- **Drugs:** drug consumption in outpatient care.

These categories of services were divided by public, *convenzionati*, and private deliverers.

Costing Mental Health Care Services

Direct treatment costs were calculated according to INHS for public and *convenzionati* services and on a fee-for-service basis for private services.

Cost accountancy in the Italian health sector is still in its infancy; therefore, all items refer to current expenditures only. For hospital ad-

missions in particular, very little information was obtained from clinical records. All costs were converted into 1989 U.S. dollars (average exchange rate, US$1 = Lit1,288 [lira]) using the inflation rate for each period.

Cost of personnel is based on the national labor contract; cost of drugs is derived from market prices (discounted 50% to hospitals and public institutions).

Nationally published rates were used for laboratory tests, and psychiatrists' fees were based on market rates. Principal items were calculated as follows:

- Public hospital admission per day: 20 medical records were analyzed for consumption of drugs and laboratory tests. Inpatient and staff costs were attributed equally to each hospitalization day, dividing the total annual days of hospitalization in the psychiatric unit (table 1).
- *Convenzionati* and private hospitals: based on charges.
- One-hour psychiatrist visit: $28 (gross personal income/hour) + $18 (cost of time spent in meetings with colleagues, nurses, for traveling between the different centers, etc., during the service) = $46.
- One-hour psychologist consultation: $19 (derived from the budget of the day center).
- Domiciliary visit: $15 (gross nurse income/hour).

Results

Among 21 schizophrenic patients analyzed, 1 absorbed an especially large amount of resources during the 3 years after first contact-admission: a total of $108,066. The patient was considered an outlier and excluded from the analysis. Analysis of consumption and cost of mental services for the 20 patients have been divided into two periods: onset to first contact-admission and 3 years after first contact-admission.

The average length of the onset to first contact period was 19 ± 22.7 months. During this period, 10 of the 20 patients used private mental services at a total cost of $15,821, 44 percent for *convenzionati*, and 56 percent for private services. There was one admission to a *convenzionati* hospital ($6,987) and another to a private hospital ($6,987); eight patients consumed a total of 72 visits to private offices at a total average cost per patient of $489 ± $440; one patient had private psychotherapy at a cost of $1,358.

The total direct cost for the 20 patients during the 3 years after first contact or first admission was $203,918—82.9 percent to public institutions, 11.4 percent to *convenzionati*, and 5.7 percent to private services (figure 1). Inpatient services accounted for 47.6 percent of the cost and outpatient services for 52.4 percent.

Average total cost per patient for public and *convenzionati* services during these 3 years, reported in table 2, is $9,612 (range ± $2,434; $p < 0.05$). Only five patients used private services, for a total cost of $11,676. The average cost per patient was $2,335 (half of the total cost is attributable to one patient whose psychotherapy cost $6,707).

It is interesting to note that costs of public and *convenzionati* services for patients with an onset to first contact period longer than 6 months were more than double the costs for patients with shorter onset to first contact durations: $12,283 versus $5,606 ($p < 0.01$).

More detailed information on consumption and cost is presented in tables 2 and 3.

Admissions to Public Hospitals. Fifteen patients had an average length of stay per patient during the 3 years of 21.5 ± 14.7 days (median 18.0) and an average of 1.9 ± 1.3 admissions (median 1.0). The average length of stay of each admission was 10.4 ± 6.0 days. The cost per patient was $4,916 ± $3,361. Seven of the 15 first admissions were obligatory treatments.

Admission to *Convenzionati* Hospitals. Four patients were admitted for a total of 9 admissions (mean 2.3 ± 1.1). The average length of stay was 50 ± 41.2 days. For each admission, the average length of stay was 22.2 ± 7.8 days, with an average cost per patient of $5,822 ± $4,801.

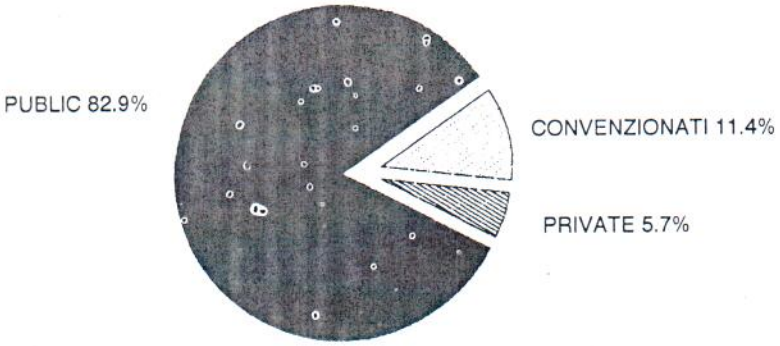
It is important to note that in Italy the length of stay in the psychiatric unit of a public hospital is relatively

Table 1. Average hospital costs per day for a schizophrenic patient, 1989 in 1989 U.S. dollars (based on patients admitted to S. Carlo Hospital)

	Staff[1]	Inpatient[2]	Laboratory tests[3]	Drugs[3]	Total
Mean	160	57	8	3	228
SD	0.0	0.0	±2.0	±1.7	±2.7

[1]Total medical staff cost/total hospital days: $67; total nursing staff cost/total hospital days: $93.
[2]Accommodation (meals, laundry, etc.), cleaning, administrative costs, general maintenance.
[3]Based on medical records.

Figure 1. Percentages of total costs during 3 years, by provider



short; for example, in the Lombardy Region in 1986 the average length of stay of a schizophrenic patient was 14 days.

Psychosocial Centers. Each of the 20 patients was referred to a center at some time. Four patients required a significant amount of resources, including psychotherapies with an average cost of \$6,521 ± \$2,601. Seventeen patients had visits at a center, at an average cost of \$1,238 ± \$1,116. Seven patients had domiciliary visits, with an average cost of \$205 ± \$183. Total cost for services delivered by the centers was \$56,218, with an average cost per patient of \$2,811.

Table 2. Costs of mental care services for 20 patients during 3 years after first contact in 1989 U.S. dollars

			Psychosocial centers				Day centers			
	Public hospital hospitalizations (n = 15)	*Convenzionati*[1] hospitalizations (n = 4)	Visits (n = 17)	Psychotherapy (n = 4)	Domiciliary visits (n = 7)	Drugs (n = 15)	Group therapy (n = 6)	Family groups (n = 6)	Other groups (n = 4)	Total (n = 20)
Total	73,744	23,290	21,054	26,084	1,437	7,643	19,451	5,887	13,648	192,238
Mean	4,916	5,822	1,238	6,521	205	402	3,241	981	3,412	9,612[2]
SD	±3,361	±4,801	±1,116	±2,601	±183	±342	±1,904	±595	±2,958	±5,077

[1]Private hospitals publicly financed on a daily room-and-board basis.
[2]Range ±2,434 ($p < 0.05$).

Table 3. Consumption of mental care services by 20 patients during 3 years after first contact

	Public hospitals (n = 15)		*Convenzionati*[1] (n = 4)		Psychosocial centers			Day centers		
	Admissions	Days	Admissions	Days	Visits (n = 17)	Psychotherapy (n = 4)	Domiciliary visits (n = 7)	Group therapy (n = 6)	Family groups (n = 6)	Other groups (n = 4)
Total	29	322	9	200	452	560	98	2,063	632	2,117
Mean	1.9	21.5	2.3	50.0	26.6	140.0	14.0	343.8	105.3	529.3
SD	±1.3	±14.7	±1.1	±41.2	±24.0	±55.9	±11.1	±201.9	±63.9	±514.7

[1]Private hospitals publicly financed on a daily room-and-board basis.

Drug Consumption. Of 20 patients, 15 patients regularly received drugs in psychosocial centers, with an average cost per patient of \$402 ± \$342. The other patients refused drug treatment or received it in the private sector.

Day Center. Six of the 20 patients came regularly to a day center. All six had group therapy, with an average cost of \$3,241 ± \$1,904; four patients attended "other groups," with an average cost of \$3,412 ± \$2,958. All the parents of these patients attended the family groups, with an average cost of \$981 ± \$595. The total costs for these services was \$38,986, with an average cost of \$6,498.

Seventeen of the 20 patients were extensively interviewed, using the Scale for the Assessment of Negative Symptoms (SANS; Andreasen 1983) and the Scale for the Assessment of Positive Symptoms (SAPS; Andreasen 1984) for evaluating the symptomatology after a period of 5 to 7 years from the year of age of incidence. (The values of interrater reliability of the scales in Italy are shown in Moscarelli et al. [1987].)

Negative symptoms mean global values are the following: affective flattening, 3.1 ± 0.8; alogia, 2.4 ± 1.2; avolition-apathy, 3.4 ± 1.8; anhedonia-asociality, 3.6 ± 0.8; attentional impairment, 2.1 ± 1.2.

Positive symptoms mean global values are the following: hallucinations, 1.2 ± 1.2; delusions, 2.1 ± 1.4; bizarre behavior, 2.0 ± 1.3; positive formal thought disorder, 1.4 ± 1.1. According to SANS and SAPS criteria, 5 patients were negative, 2 were positive, and 10 were mixed (50% positive and negative).

The negative, positive, and mixed subtypes and the global ratings of each symptom on each scale were related to the 3 years' total direct costs per patient. The only significant association ($p < 0.05$) was with delusions: six patients with a score ≥ 3 showed a total cost of \$13,245 and patients with a score < 3 showed a total cost of \$8,245.

Discussion

Results show that the average total cost for each patient during the 3 years was \$9,612 (1989 U.S. dollars), much lower than costs found by Andrews et al. (1985) in Australia (\$8,425—1975 U.S. dollars) for the first year only and much lower than the results of Wiersma et al. (1988) in The Netherlands (\$17,000—1979 U.S. dollars) for 3 years.

The composition of services consumption is also different than in those studies. In this study, hospitalization costs make up about 50 percent of total direct costs (figure 2); in the Andrews et al. and Wiersma et al. studies they constitute 90 to 95 percent.

The difference in costs seems to be a result of the greater number and longer duration of admission in the earlier studies.

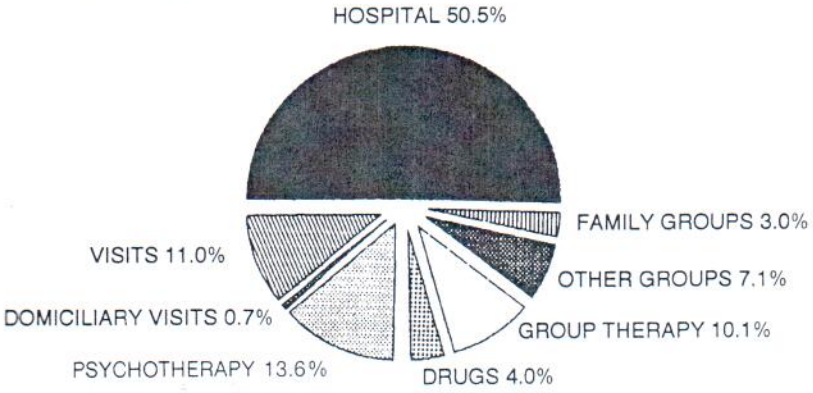
The onset to first contact–admission duration showed a significant association ($p < 0.01$) with the total costs of the 3 following years: patients with a period of less than 6 months from onset to first contact–admission had a total cost of \$5,606; those with a period of 6 months or more had total costs of \$12,283.

Crow et al. (1986) stressed the importance of this period in his study of first episodes of schizophrenia and found that the "duration between onset and first trial prescription was a major determinant of relapse" (p. 120). These data suggest the importance of the assessment of this period in studies of service consumption and cost and the possible economic savings of early diagnosis and care.

The significant association between global ratings of delusions and 3-year costs ($p < 0.05$) suggests the usefulness of carefully monitoring symptoms and disabilities as possible predictors of service consumption and costs.

Further prospective data monitoring studies are needed to evaluate

Figure 2. Percentages of Italian National Health Service costs for 3 years, by service



chronic schizophrenic patient costs after first contact-admission.

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