Routine outcome monitoring in clinical practice: service and non-service costs of psychiatric patients attending a community mental health centre in Italy

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Abstract

Background There is a paucity of economic studies carried out in the routine clinical practice of psychiatric services. This study estimated service and non-service costs in a random sample of patients attending a community psychiatric mental health centre in Italy. Costs of different diagnostic subgroups and variables associated with service and non-service costs were calculated. *Methods* A randomly selected sample of patients identified during one week of routine clinical activity was enrolled. Information was collected using the Italian-language checklist *Questionario Economico per l'attività clinica dei Servizi Psichiatrici* (QESP). Costs were classified in two categories: service costs (from the provision of services) and non-service costs (loss of productivity and informal care). *Results* One hundredand twenty patients were included. In patients suffering from schizophrenia the monthly service cost per patient was nearly double that for patients with other diagnoses. Non-service costs associated with patients' lack of job opportunities were more than three times higher for patients with schizophrenia, accounting for a total monthly non-service cost per patient more than three times higher [than that for patients with other diagnoses delete?]. Non-service costs associated with patients' and caregivers' time off work were similar in the two groups. In the multivariate analysis being unemployed was associated with higher service costs. Younger age, length of illness and diagnosis of schizophrenia were determinants of higher non-service costs. The latter three independent variables were also associated with overall (service and non-service) costs. *Conclusion* The present study estimated service and non-service costs under routine circumstances to provide information on costs that community psychiatric services, patients and care-givers sustain when dealing with psychiatric problems.

Introduction

In everyday clinical practice patients attending community psychiatric services are treated with a heterogeneous range of interventions which include hospital admissions, drug therapy, outpatient consultations, day-care services, admissions to residential facilities and home visits. Moreover, psychiatric disorders impose burdens on families and on the wider society. Costs are incurred at different levels, either directly through expenditure or unpaid time spent on providing health and social care support, or indirectly in terms of lost opportunities such as for leisure or work (Knapp et al., 1999). Description of patterns of service uptake or utilisation, and estimation of the associated costs are instrumental to a comprehensive assessment of the resource consequences of mental health disorders and their treatment.

At a local level there are several reasons for collecting information about costs, including:

- to evaluate psychiatric service activities in terms of possible links between costs, needs and outcome measures;
- to track the costs of support for the purposes of internal management (for example, to look at issues of equity in access to treatment between different patient groups);
- to provide information to help manage the internal budget (to identify where there are particular pressures on the service or differential resource use by clinicians);
- to study the links between the pattern of service or resource utilisation and the costs for informal care or family burden.

Numerous studies of patterns of care and associated costs for people with mental disorders have been conducted in different countries, but there is a paucity of available empirical evidence for service and non-service costs estimated in routine clinical practice (e.g. Amaddeo et al., 1997; Rice and Miller, 1998; McCrone et al., 1998; Knapp et al., 2002). This paucity of evidence can in part be explained by the methodological difficulties of collecting cost-related information in the routine work of a community psychiatric service and in estimating non-service costs in monetary terms. Such data can highlight important practice issues, for example, where the costs of routine care for patients suffering from schizophrenia and related disorders might be substantially higher than those of patients suffering from other psychiatric disorders (Fattore et al., 2000).

This study had three aims. First, to adapt for use in clinical practice a research methodology for collecting costs information. Second, to estimate service and non-service costs in a random sample of patients attending a community psychiatric facility in Italy. Third to provide empirical evidence on the support costs of different diagnostic subgroups and to identify the variables associated with service and non-service costs.

Methods

Study Area and Magenta CPS

The Magenta Community Psychiatric Service (CPS) is the public agency which provides adult psychiatric care for 160,000 residents in a suburban area near Milan. It belongs to the Department of Mental Health of the Hospital of Legnano. The Magenta CPS catchment area consists of two main sub-areas: the Magenta area (130.76 Km^2 and about 100,000 residents) and the Abbiategrasso area (202.62 Km^2 and about 60,000 residents).

The Magenta CPS consists of one psychiatric ward in a general hospital (PWGH), one psychiatric residential rehabilitative centre (PRRC), a community mental health centres in each sub-area and two unstaffed apartments.

The Magenta CMHC, from which we drew patients for this study, has a catchment area comprising various small-size towns located in a mainly rural territory; population density is 772.75 inhabitants/km^2. The main economic activities are farming and traditional manufacturing. The CMCH serves 85,800 adult residents (total population is 101,000). The socio-demographic characteristics of the Magenta population are shown in Table 1.

Patient selection

During a randomly chosen week of routine clinical activity in January 1999 we identified all patients with at least one contact with the CMHC. These patients were stratified according to five ICD-10 diagnostic categories: schizophrenia, schizotypal and delusional disorders (F2 diagnosis), mood disorders (F3 diagnosis), neurotic, stress-related and somatoform disorders (F4 diagnosis), disorders of adult personality and behaviour (F6 diagnosis), and other diagnoses (patients not included in F2, F3, F4, or F6). 50% of patients in each stratum were randomly selected and included in the present study (Table 2). For the purposes of the analysis, patients were grouped in two

categories: schizophrenia and related disorders (F2 diagnosis) and patients with other diagnoses.

Data collection

Information was collected using the *"Questionario Economico per l'attività clinica dei Servizi Psichiatrici" (QESP).* This Italian-language checklist was developed from the Client Service Receipt Inventory (CSRI) (Beecham and Knapp, 2001) to collect cost-related information retrospectively over a three month period of routine clinical practice (Percudani et al., 2001). The QESP includes the following domains and variables: socio-demographic data, information related to the psychiatric illness, accommodation, employment and income, caregiver, service receipt and patient / caregiver burden. The questionnaire was completed by a member of the CMHC staff using several sources: patient and care-giver interviews, clinical records and administrative data.

Cost methodology

Traditionally cost-of-illness studies distinguish between direct and indirect costs yet these terms are not used consistently across the literature (Gold et al., 1996; Drummond et al., 1997). For the purposes of this study we distinguish "service costs" (incurred through the use of services) and "non-service costs" associated with loss of productivity and care provided by unpaid caregivers. All data are presented in Euros and refer to 1999. Italian Lire were converted into Euro (€) according to the rates that went into effect in January 1999 (1,936.27 Italian Lire for 1 €).

Service costs

Service costs included CPS costs, drugs, GP costs, emergency services, and out-of-pocket expenditures.

CPS costs

Cost estimation followed a two-step procedure: 1) recording all health care services provided to patients and 2) assigning a monetary value to each service. The following service units were used in the study: day in the PWGH, day in the PRRC, and the four components of the Magenta CMHC: outpatient services, domiciliary services, rehabilitation services and day-care. We calculated service costs according to a full cost accounting procedure based on information collected from the CPS and from the

administrative sections of the Magenta Health Authority. Full cost refers to a methodology of cost accounting that identifies and measures in monetary terms all resources used to achieve an objective (e.g., per hospital day, psychiatric visit, rehabilitative group intervention). They comprise both costs directly attributable to the provision of services and a "fair" share of overheads. Other details on the unit costs of services provided by the Magenta CPS have been previously presented (Fattore et al., 2000).

Costs per hospital day and per day in the PRRC accounted for € 209.2 (PWGH) and € 145.1 (PRRC). Psychiatric visits and psychologist consultations cost € 54 and € 55, respectively. Nurse domiciliary interventions cost € 40, while the unit cost of social worker services ranged from € 20 to € 111. On average, rehabilitation group therapies had a total cost of € 103 per interventions (€ 17 per client).

Drugs, GP costs, emergency services and out of pocket expenditures

Drug costs were taken from the price list of the Italian National Formulary. Unit costs for emergency intervention and GP consultation were derived from the Italian National Health Service (NHS) fee schedule. Out-of-pocket expenditures include all costs not covered by the NHS: private practice consultation, transport to and from the health provider, and other medical expenditures.

Non-service costs

Although most completed cost-of-illness studies have employed the human capital approach to measure non-service costs, other methods have been suggested including the "friction costs" and "willingness-to-pay" approaches (Rice and Miller, 1998). In this study the human capital approach was used to estimate non-service costs due to illness. Wages were used to value losses of production due to morbidity on the assumption that earnings reflect productivity. Adjustments were made for those who were not employed, for unpaid work, and for leisure time. More specifically, patients who were too sick to work were defined as unemployed and were considered as following the same labour market experience as the general population.

Production losses

Patients' and caregivers' time off paid work was valued by using the average annual wages corresponding to the specific sectors (e.g. industry, agriculture, public

administration, commercial services) they worked in (Tarricone et al., 2000). This implied values of € 22,826 for employees in industry, € 26,407 in public administration, € 17,477 in agriculture, and € 22,598 in commercial services. The cost calculation assumed 220 working days per year.

Lack of job opportunities

The local unemployment rate was 2% (Table 1); the unemployment rate in our sample was 22.5% (38% in schizophrenia and 11.4% in patients with other diagnoses). We calculated the excess unemployment rate in our sample, which accounted for 18 subjects with schizophrenia and related disorders, and for 6.6 subjects with other diagnoses. In each diagnostic category, the cost for the lack of job opportunity was calculated by attributing to these patients a generic annual wage of € 22,601.

Informal care

The 1992 National Agreement for Home Labour Services provides a minimum monthly wage of € 457 for live-in employees working 55 hours a week. By taking into account social security contributions, fringe benefits and the inflation rate we estimated a net hourly income of € 3.41 to value care-givers' leisure time forgone to supervise patients (Cavallo and Fattore, 1997).

Statistical analysis

Non-parametric tests were conducted on cost differences between two or more independent groups of patients. Mann-Whitney was performed to test service cost differences by gender (male, female), diagnosis (schizophrenia, other diagnoses), length of illness (10 years, >10 years), education (8 years, >8 years), accommodation (alone, not alone), employment (yes, no) and care-giver (yes, no). Kruscal-Wallis was used to test service cost differences by age groups. Linear regression analysis was run to assess the associations between, first service costs and, second, non-service costs and the following independent variables: gender (female = 0, male = 1), age (years), accommodation (not alone = 0, alone = 1), employment (yes = 0, no = 1), diagnosis (other = 0, schizophrenia = 1), length of illness (10 years = 0, > 10 years =1), care-giver (no = 0, yes = 1). A nonparametric bootstrap method of statistical accuracy was used, assuming that the observed distribution of the present sample was a good estimate of the true population distribution (Efron and Tibshirani, 1986).

Results

Out of 241 subjects with at least one contact with the CMHC during one week of routine clinical activity, 50 patients suffering from schizophrenia and related disorders and 70 patients with other diagnoses were randomly selected (Table 2).

Patient characteristics

The socio-demographic and clinical characteristics of the sample are presented in Table 3. In the schizophrenia group the proportion of females was lower than in the other diagnoses group. Patients suffering from schizophrenia and related disorders had a mean age of 44.5 years (SD 12.9), and patients with other diagnoses had a mean age of 44.9 years (SD 14.8). More patients in the schizophrenia group were single, living alone, had a low educational level and a higher unemployment rate. Patients with schizophrenia had longer periods of illness and contact with the CPS.

Service utilisation

The services provided by the Magenta CPS during the three-month period are presented in Table 4. Patients in the schizophrenia group spent more days in PRRC and in day-care facilities, were less frequently admitted to PWGH but spent slightly more days in this facility in comparison with patients in the other group. Rehabilitative group interventions were more common in the schizophrenia group; in contrast, emergency interventions, GP visits and private practice consultations were more frequently used by patients with other diagnoses.

Service costs

These service patterns resulted in higher costs associated with residential care, rehabilitative services and day-care services for patients suffering from schizophrenia and related disorders, yielding an overall monthly service cost per patient nearly double that for patients with other diagnoses (Table 5). The distribution of service costs by diagnosis shows less variation around the median for non-schizophrenic than schizophrenic patients (Figure 1).

Non-service costs

Non-service costs associated with patient's time off work were similar for the two groups, but the costs associated with caregivers' time off work were slightly higher for patients with schizophrenia (Table 6). Non-service costs associated with patient's lack of job opportunities were more than three times higher in patients with schizophrenia, leading to an overall monthly non-service cost per patient which was more than three times higher than that for patients with other diagnoses.

Determinants of service and non-service costs

Bivariate and multivariate analyses of variables associated with service and non-service costs, are presented in Table 7 and Table 8. Table 7 shows that higher service costs appeared to be associated with a diagnosis of schizophrenia, length of illness of more than ten years and being unemployed. Higher non-service costs appeared to be associated with being male, a diagnosis of schizophrenia and length of illness. Non-service costs were higher for the younger age group, albeit at borderline significance.

In the linear regression analyses, being unemployed was associated with higher service costs. Being younger, having more than 10 years of illness and having a diagnosis of schizophrenia were each significantly linked to higher non-service costs. The latter three independent variables were also associated with overall (service and non-service) costs (Table 8).

Discussion

Monitoring community psychiatric services has been suggested as a possible way of supporting and guiding everyday clinical practice (Marks, 1998; Black, 1999; Knapp et al., 1999; Percudani et al., 2002). In the present study an Italian community psychiatric service was monitored under routine circumstances to generate information on costs that psychiatric services, patients and care-givers incur when responding to psychiatric problems.

Variables associated with costs

Diagnosis and duration of illness, which were significantly associated with service costs in the bivariate analysis, lost their significance in the multivariate analysis, where only unemployment remained a determinant of service costs. Age, length of illness and diagnosis of schizophrenia were associated with higher non-service costs and higher overall costs.

Previous studies have suggested that individual characteristics (age, accommodation, marital status, unemployment, duration of illness, length of the period in contact with the psychiatric service) are associated with service and non-service costs in homogeneous populations of carefully selected schizophrenic patients. (Tarricone et al., 2000; Garattini et al., 2001; Knapp et al., 2002). The present study, carried out in a non-selected population of typical schizophrenic and non-schizophrenic patients, replicated the association between unemployment and service costs and that between age and duration of illness with non-service costs. In addition, we found that a diagnosis of schizophrenia was significantly associated with non-service costs, probably reflecting the high proportion of subjects with schizophrenia who lack job opportunities.

The finding that lower non-service costs were associated with later life must be interpreted carefully. Non-service costs include items such as patients' time off work and patients lack of job opportunities, yet it is not always easy to make a clear distinction between, for example, unemployed and retired patients. Patients over the official retirement age are unlikely to incur employment-related costs as, by definition, they have legally been excluded from the employment market. Unemployed older people with psychiatric problems usually receive disability pension. Although this also bars them from work, this exclusion is due to their ill-health so production losses have been incurred.

Study implications: service costs

In comparison with other studies the present analysis found lower rates of service [missing word?]. This was mainly explained by a low use hospital admissions, which accounted for only 11% of total service costs in schizophrenia, and for only 22% of total service costs in patients with other diagnoses. These figures can probably be explained by the fact that most of the patient population had been in contact with the service for a long time, and 80 % of people had been ill for more than three years. It is therefore likely that they represented a clinically stable sample of patients, requiring outpatient and residential care more than acute inpatient care.

In the "other diagnoses" group, the distribution of service costs, presented in Figure 1, showed some variability around the median. Unfortunately, sample size limitations precluded any stratification by diagnostic category, and it is therefore difficult to explain statistically such variability. However, descriptive data collected in the Magenta area have provided some evidence that high cost people in the "other

diagnoses" group were those suffering from affective and personality disorders (Percudani et al., 2001).

Tarricone et al. (2000), who conducted a multicentre cost-of-illness study to estimate costs of schizophrenic patients in community psychiatric services in Italy, showed that more than half the total service cost was attributed to CMHC interventions, suggesting a strong commitment to community care. Our data confirmed this finding by showing that around 50% of total service cost was attributed to CMHC interventions in patients suffering from schizophrenia and related disorders; moreover, a similar percentage was estimated in patients with other diagnoses, suggesting that there is a community commitment by Italian psychiatric services not only to those with schizophrenia, but to patients suffering from a wide range of psychiatric problems.

With regard to the pattern of care provided by the community facility (Table 4) it is of interest to note some peculiarities of the Italian system of psychiatric care. Each CPS comprises many units. Each unit is headed by a psychiatrist co-ordinator who also directly manages non-medical staff (psychologists, nurses, social workers, occupational therapists). Each member of the unit staff is directly involved in every patient's programme of care. This explains the very high rates of social worker and nurse interventions. Psychiatrists, in this system of care, do not only have the role of prescribing drugs, and a psychiatric visit includes supportive interventions for patients and family members. Psychologists are more often involved in formal psychotherapies. This could explain the low rate of psychologists' services in patients with schizophrenia and related disorders.

Study implications: non-service costs

Schizophrenia is associated with lack of job opportunities, loss of work days, and poor social functioning. Our estimate of non-service costs in patients suffering from schizophrenia and related disorders supports this viewpoint – 48% of total costs was in fact attributed to non-service costs, mainly patients' lack of job opportunities – is in line with some other studies of the costs of schizophrenia (Knapp 1997; Rice and Miller, 1998) although different definitions of non-service costs and different ways of valuing them led to different patterns (Knapp et al., 2002). For patients who are not schizophrenic, moreover, only 36% of total costs was attributed to non-service costs, which is substantially lower than some previous findings. Rice and Miller (1998) showed that, for patients suffering from anxiety disorder, non-service costs were more

than three times than direct costs, and for patients with depression indirect costs have been estimated to account for the majority of overall costs (Stoudemire et al., 1986; Kind and Sorenson, 1993; Greenberg et al., 1993). One possible explanation for the lower rates of non-service costs in the present study could be because the naturalistic approach adopted determined the inclusion of patients who had been in contact with the service for many years, were clinically stable and who required long-term support to live in the community. These patients, supported over a long period in the Italian context of care, have probably received interventions which have successfully decreased the familial and social burden of psychiatric illnesses. This speculation is supported by the evidence obtained by Magliano et al. (1998), who showed lower levels of family burden among relatives of people with schizophrenia in Italy in comparison with other European countries.

Study limitations

This study has two main limitations. First, although costs were estimated on a randomly chosen sample of psychiatric patients attending the service, the study sample was small; this could have decreased the generalisability of findings and, moreover, could have led to some non-significant statistical associations even where differences could have been present. Diagnosis, for example, was associated with service and non-service costs in the bivariate comparison, but when the analysis was stratified by other independent variables diagnosis was no longer significantly associated with service costs. It is possible that diagnosis was not significantly associated with costs in the multivariate model because too few subjects were included in this analysis.

A second limitation is that information was gathered only on a three-month period. It may be that three months of routine clinical activities does not adequately reflect the typical pattern of resource use and costs, because there might be the possibility of a greater – or lower – resource use during the three months after or before the study period. Although this possibility cannot be completely ruled out, and a longer period of data collection would have increased the study's generalisability, it seems unlikely that non-acute patients with many years of illness and many years of contact with the psychiatric service would dramatically alter the pattern of resource use during the year. In addition, the QESP, a checklist developed specifically to be used in the clinical practice of psychiatric services, collects information retrospectively only on three months. This time frame was selected because the QESP relies on patients' and

care-givers' memory for many items, for example accommodation, employment, income, patient and care-giver burden. Asking patients and care-givers to remember things happened more than three months before would inevitably have produced less reliable data.

Conclusions

Routinely collecting information on the way patients use the various supports and services comprising community care is complex and time-consuming. Clinicians must have an incentive to do it and must acknowledge that these data are useful to their practice and developing the service. Cost estimation adds a further layer of complexity, requiring both skills and dedicated time. However, the value of such an approach is undeniable. We have shown that in the Magenta CPS there are some important patterns in the way patients are treated and that these are related to their circumstances. Moreover, our approach allows us to set these specialist mental health service costs in the context of patients work and leisure lives and the support they use from other non-service sources.

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Table 1. Socio-demographic characteristics of the Magenta CMHC catchment area

Total population	101,045
Population over 14 years	85,809
Population density (inhabitants/ km²)	772.75
% population over 64 years	12.8
Population unemployed *	215.8
Population economically inactive *	4,496.5
Widow, divorced, separated *	1,070.2
Married *	6,049.4
First degree*	247.6
Less 5 years of education *	866.2
Living alone *	761.9

* rates for 10,000 inhabitants over 14 years

Table 2. Patient population in contact with the Magenta CMHC during one week of routine clinical activity and patients enrolled into the study

ICD 10 Diagnosis	CMHC patients during one week		Patients enrolled	
	No.	**%**	**No.**	**%**
F2: Schizophrenia and related disorders	98	40.7	50	41.7
F3: Mood disorders	51	21.1	25	20.8
F4: Neurotic and related disorders	36	14.9	18	15.0
F6: Personality and behaviour disorders	31	12.9	15	12.5
Other diagnoses	25	10.4	12	10.0
Total	241	100	120	100

Table 3. Socio-demographic characteristics of the sample

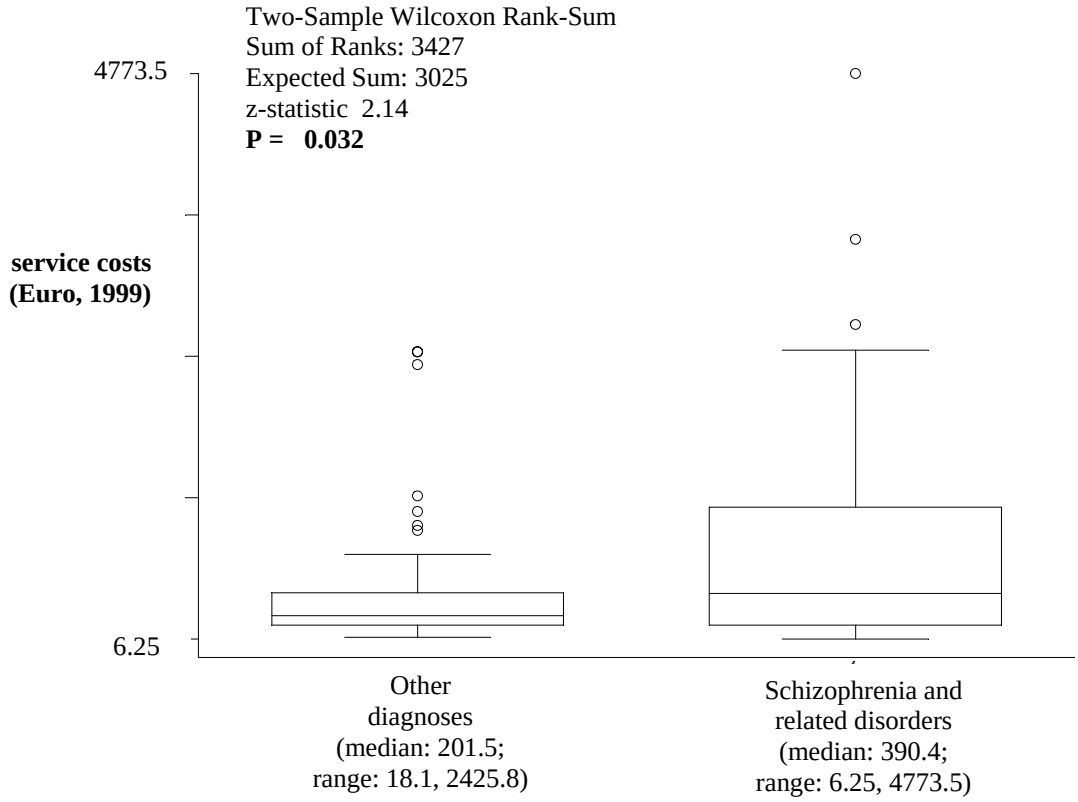
	Schizophrenia and related disorders		Other diagnoses	
	No.	**%**	**No.**	**%**
Gender				
Male	24	48.0	16	22.86
Female	26	52.0	54	77.14
Age				
21-30	5	10.0	14	20.0
31-40	18	36.0	18	25.71
41-50	11	22.0	14	20.0
51 +	16	32.0	24	34.29
Marital status				
Single	32	64.0	26	37.14
Married	11	22.0	32	45.71
Separated	4	8.0	7	10.00
Widowed	3	6.0	5	7.14
Education				
5 years	19	38.0	21	30.00
8 years	23	46.0	22	31.43
> 8 years	8	16.0	27	38.57
Living conditions				
Alone	16	32	14	20
Not alone	34	68	56	80
Employment				
Employed	8	16.0	27	38.6
Sheltered employment	4	8.0	0	-
Retired	16	32.0	18	25.7
Student	0	-	3	4.3
Homemaker	3	6.0	14	20.0
Not employed	19	38.0	8	11.43
Care-giver				
Yes	39	78	35	50
No	11	22	35	50
Length of illness				
< 1 year	1	2.0	6	8.57
1 – 3 years	1	2.0	18	25.71
4 – 10 years	10	20.0	24	34.29
> 10 years	38	76.0	22	31.43
Length of contact with CMHC				
< 1 year	1	2.0	6	8.57
1 – 3 years	2	4.0	22	31.43
4 – 10 years	13	26.0	26	37.14
> 10 years	34	68.0	16	22.86

CMHC = Community Mental Health Centre

Table 4. Services per patient provided by the Magenta Community Psychiatric Service during the 3 months surveyed

	Schizophrenia and related disorders (n. 50)	Other diagnoses (n. 70)
Psychiatric Ward in General Hospital (PWGH)		
admissions	0.1	0.24
days spent in the PWGH	1.28	1.19
Psychiatric Residential Rehabilitative Centre (PRRC)		
days spent in the PRRC	4.84	0
Community Mental Health Centre (CMHC)		
psychiatry visit	2.46	2.33
psychiatry psychotherapy visit	0.4	0.49
psychiatry meeting	0	0
psychologist service	0	1.6
psychodiagnosis test visit	0	0
family therapy intervention	0	0
drug administration	1.12	0.36
days in day-care	5.42	1.84
nurse home visit	2.44	2.36
psychiatrist home visit	0	0
social worker intervention in CMHC	0.68	0.09
social worker intervention at patient's home	0.58	0.47
other social worker intervention	0.32	0.01
occupational therapist intervention	0.12	0.01
rehabilitative individual intervention	0.78	0.39
rehabilitative group intervention	8.02	0.34
work-related-activity intervention	0.2	0
Emergency intervention		
hospital casualty department	0.06	0.24
community casualty department	0.08	0
General practitioner intervention	0.5	1.13
Private practice consultation	0	0.23

Figure 1. Distribution of total service costs by diagnosis



Legend. The horizontal line represents the median, the box extends to cover the interquartile range and the vertical line extends to the extremes unless there are outliers, in which case the length of the whisker is set to one and a half times the interquartile range.

° = outlier

Table 5. Average service costs per month per patient (Euro, 1999)

	Schizophrenia and related disorders (n. 50)		Other Diagnoses (n.70)	
	€	%	€	%
CPS costs:				
Hospitalisation costs	89.2	11.2	85.1	22.4
Residential costs	234.1	29.4	0	-
CMHC costs:				
Outpatient services	62.5	7.85	87.4	23.0
Domiciliary services	57.2	7.2	42.4	11.2
Rehabilitation services	55.8	7.0	5.0	1.31
Day-care	205.2	25.8	63.4	16.7
Total CPS costs	704.0	88.5	283.3	74.6
Drugs	65.2	8.2	50.9	13.4
GP + Emergency services	4.1	0.5	8.1	2.13
Out of pocket expenditures	22.4	2.8	37.1	9.8
Service costs	**795.7**	**100.0**	**379.4**	**100.0**

Table 6. Average non-service costs per month per patient (Euro, 1999)

	Schizophrenia and related disorders (n. 50)		Other Diagnoses (n.70)	
	€	%	€	%
Production losses				
Patient's time off work	13.01	1.80	14.33	6.75
Caregivers' time off work	13.01	1.80	9.78	4.61
Lack of job opportunities				
Patient's lack of job opportunities	678.0	94.1	177.58	83.7
Informal care				
Caregivers' leisure time forgone	16.39	2.27	10.35	4.88
Non-service costs	**720.45**	**100.0**	**212.04**	**100.0**

Table 7. Variables associated with service and non-service costs

	SERVICE COSTS		NON-SERVICE COSTS	
Variables (n.)	mean costs (€)	P value	mean costs (€)	P value
Gender				
Male (40)	772.42	0.216	747.80	**0.008**
Female (80)	441.11		261.92	
Age				
21-30 (19)	698.85	0.132	801.22	**0.065**
31-40 (36)	549.78		580.02	
41-50 (25)	736.41		490.19	
51 + (40)	367.58		62.67	
Diagnosis				
Schizophrenia (50)	795.82	**0.032**	720.45	**< .001**
Other diagnoses (70)	377.06		212.04	
Length of illness				
10 years (60)	362.80	**< .001**	297.85	**0.022**
> 10 years (60)	740.29		549.91	
Education				
8 years (85)	576.32	0.830	473.01	0.199
> 8 years (35)	491.38		304.55	
Accommodation				
Alone (30)	548.89	0.658	219.04	0.224
Not alone (90)	552.43		492.16	
Employment				
Employed (39)	299.39	**0.011**	-	-
Not employed (81)	672.96			
Care-giver				
Yes (74)	678.69	0.132	-	-
No (46)	347.01			

Table 8. Determinants of service and non-service costs: linear regression analysis (bootstrapped 95% CIs, 5000 repetitions)

	SERVICE COSTS (€ per month)		NON-SERVICE COSTS (€ per month)		SERVICE AND NON-SERVICE COSTS (€ per month)	
Explanatory variable	coefficient	Bias corrected 95% CI	coefficient	Bias corrected 95% CI	coefficient	Bias corrected 95% CI
Gender (female = 0, male = 1)	94.79	-138.11, 387.95	250.89	-24.52, 515.67	438.97	-7.89, 912.10
Age (years)	-4.16	-12.73, 3.29	-18.72	**-27.94, -10.78**	-29.77	**-45.94, -14.76**
Accommodation (not alone = 0, alone = 1)	121.93	-143.72, 428.30	-127.34	-367.87, 122.78	-94.21	-526.26, 367.27
Employment (yes = 0, no = 1)	677.66	**317.14, 1135.3**	-	-	-	-
Diagnosis (other = 0, schizophrenia = 1)	48.12	-207.77, 311.33	317.92	**45.11, 579.92**	511.16	**62.58, 987.314**
Length of illness (10 years = 0, > 10 years =1)	263.50	-8.81, 557.81	303.70	**28.98, 590.24**	684.94	**158.01, 1231.4**
Care-giver (no = 0, yes = 1)	117.94	-97.35, 315.71	-	-	-	-
Constant term	298.85	30.41, 588.66	924.80	544.77, 1381.9	1628.40	984.68, 2348.7

CI = Confidence Intervals (CI in **bold** are significant at $p<0.05$)