

# Cost-Outcome of Anxiety Treatment Intervention in Primary Care in Hungary

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## Abstract

**Aim of the Study:** The purpose of this paper is to estimate the changes in health utilization and indirect costs of anxiety and affective disorders in primary care patients after initiation of mental health treatment.

**Method:** This study was conducted in 12 general practices for the primary care of adult populations in Budapest, Hungary. Among 2,000 eligible patients aged 18 to 64 years, 1,815 gave written informed consent to participate in the study. The Hungarian version of the Diagnostic Interview Schedule (DIS) for anxiety and mood disorders was used to generate psychiatric diagnoses. For all patients, health care utilization data for the previous 12 months was collected including number of visits, specialist consultations, days spent in hospital, sick days in the last year and prescribed medication. Among the first 1,000 attenders, 151 patients were given DIS/DSM-III-R diagnoses of current anxiety and/or mood disorder or uncomplicated bereavement. Fifty-one patients who agreed to psychiatric treatment were assigned to the treatment group. After the first 1,000 participants, 75 patients were given DIS diagnoses and were considered as controls. In the treatment group, five psychiatrists administered treatment on an outpatient basis for one year. Patients in the control group received "as-usual treatment" from their primary care physicians. After one year, health care utilization data for the study period was collected. For the purposes of this study, the direct costs considered were limited to health care expenses and the indirect costs were limited to lost workdays. Statistical significance was calculated using a paired-samples T-test procedure comparing the means of two variables for a simple group.

**Results:** In the treatment group, the total cost of prescription drugs increased sharply due to psychiatric drug treatment, thus increasing the direct overall costs of care. In this same group the cost of non-psychiatric drugs showed a 37% decrease, suggesting that a reduction in general medical treatment partially offset the costs of anxiety and depression treatment. The number of hospital days showed marked decrease in the treatment group and a slight, insignificant increase in the control group. Absenteeism fell sharply in the treatment group (-56%) and in the group of patients who received psychiatric treatment elsewhere (-62%). In the control group, there

was a large upturn (+182%) in the number of days spent on sick leave.

**Discussion:** Among primary care patients diagnosed with anxiety or affective disorders, psychiatric treatment led to higher direct costs, but this was offset by a decline in indirect costs due to reduced absenteeism compared with ordinary primary care.

**Limitations:** Patients were not assigned randomly to the different groups because of ethical concerns. There were also significant differences in the baseline characteristics of the groups. Differences in the severity of illness and reasons not attributable to treatment effects may play a role in the change in the rate of service use.

**Implications for Health Policy:** Limiting anxiety patients' access to psychiatric treatment causes an increase in absenteeism, thus resulting in higher indirect costs.

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## Introduction

In recent years several studies have addressed the economic aspects of mental health care. These studies have demonstrated that mental disorders pose a great economic burden on the patient and on society. However, the contribution of anxiety and affective disorders to the overall costs of mental illness has been overlooked. Some reports estimate that in the USA anxiety and mood disorders account for more than 50% of the total costs of mental illness.<sup>1,2</sup> A number of studies have shown that costs can be reduced by initiating mental health treatment.<sup>3-7</sup>

In the 1980s, two major human-capital, approach-based cost-of-illness studies were conducted to estimate the costs of mood disorders.<sup>1,8</sup> In these studies the human capital approach was used to calculate cost measures of mental disorders. The human capital approach divides the total cost of an illness into direct and indirect costs. Direct costs reflect the resources used, whereas indirect costs show the amount of resources lost. In human capital theory, lost resources are defined as economic output missed because of the illness. This measure is known as lost earnings.<sup>9</sup>

In Hungary, few studies have focused on the economic issues of mental health care. One paper estimated that the direct cost of schizophrenia in Hungary is between 8 and 11.2

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Table I. Demographic characteristics of the study population.

	Females n=1,164	Males n=651	Total n=1,815
Age (y, min-max)	40.5 (18-61)	39.5 (18-65)	40.2 (18-65)
Marital status (%)			
married	46.4	50.8	48.0
previously married	24.3	13.1	20.3
never married	29.1	36.1	31.7
Education (%)			
≥8 y	12.4	11.2	12.0
8-12 y	51.3	50.4	51.0
13≤ y	36.3	38.4	37.0
Employment (%)			
employed	66.7	73.0	69.0
unemployed	4.0	4.6	4.2
economically inactive*	29.3	22.4	26.8

\* Student, retired, home duties

billion Hungarian forints (HUF) and the total cost is between 14.5 and 25.6 billion HUF.<sup>10</sup> The other found that community outpatient service providers are the most cost-efficient for schizophrenia, compared with services provided by outpatient clinics in hospitals and social care homes. This study also suggested that schizophrenia alone costs society some 26.5 billion HUF. However, no major studies have thus far been conducted to estimate the cost of anxiety and mood disorders and the effects that psychiatric treatment may have on these costs.

The purpose of this paper is to estimate the changes in health utilization and the indirect costs of anxiety and affective disorders in primary care patients after initiation of mental health treatment, as well as the cost of treating these conditions.

## Methods

The study was conducted in 12 general practices for the primary care of adult populations in Budapest, Hungary. Twenty-five general practitioners (GPs) reviewed the protocol and were invited to participate, and 12 of them accepted. During the enrollment process (September 1, 1998 to March 1, 1999), lay interviewers, after one week of intensive training, visited each GP's office once a week. All patients between 18 and 64 years who visited the GP's offices on given days were asked to participate in the study, independently of the physician's suspecting or knowing whether the patient had had any psychopathology. Of 2,000 eligible patients, 1,815 (91%) gave written informed consent to participate in the study (**Table 1**).

The Hungarian version of the Diagnostic Interview Schedule (DIS) for anxiety and mood disorders<sup>11</sup> was administered to generate psychiatric diagnoses. The DIS is a fully structured and standardized questionnaire, developed by Robins *et al.*<sup>12</sup> for the Epidemiological Catchment Area (ECA) project in order to attain computerized diagnoses using algorithms based on DSM-III-R criteria. After completing the structured interview, the patients filled in the Beck Depression Self-Rating Inventory (BDI) for the assessment of the severity of depressive symptoms (brief version - 9 points),<sup>13</sup> and the Quality of Life in Depression Scale (QLDS) for the judgment of the impact of depression from the patients' perspective.<sup>14</sup>

Of the first 1,000 attenders, based on computer analysis of the questionnaires, 151 patients were given DIS/DSM-III-R diagnoses of current anxiety and/or mood disorder or uncomplicated bereavement. From this group, six patients had only mild agoraphobia and 10 were being treated by other psychiatrists. Hence, a psychiatric service was offered to 135 persons, of whom 55 appeared at the outpatient clinic and 51 accepted the recommended psychiatric treatment. After the first 1,000 participants, 75 patients were given DIS diagnoses and were considered as controls (**Figure 1**).

At the time of the enrollment visit the GPs also completed a questionnaire with the following questions about their patients:

- (i) Present complaints
- (ii) GP's present diagnoses
- (iii) GP's diagnoses in the last year
- (iv) Number of visits in the last year
- (v) Specialist consultations
- (vi) Number of days spent in hospital in the last year

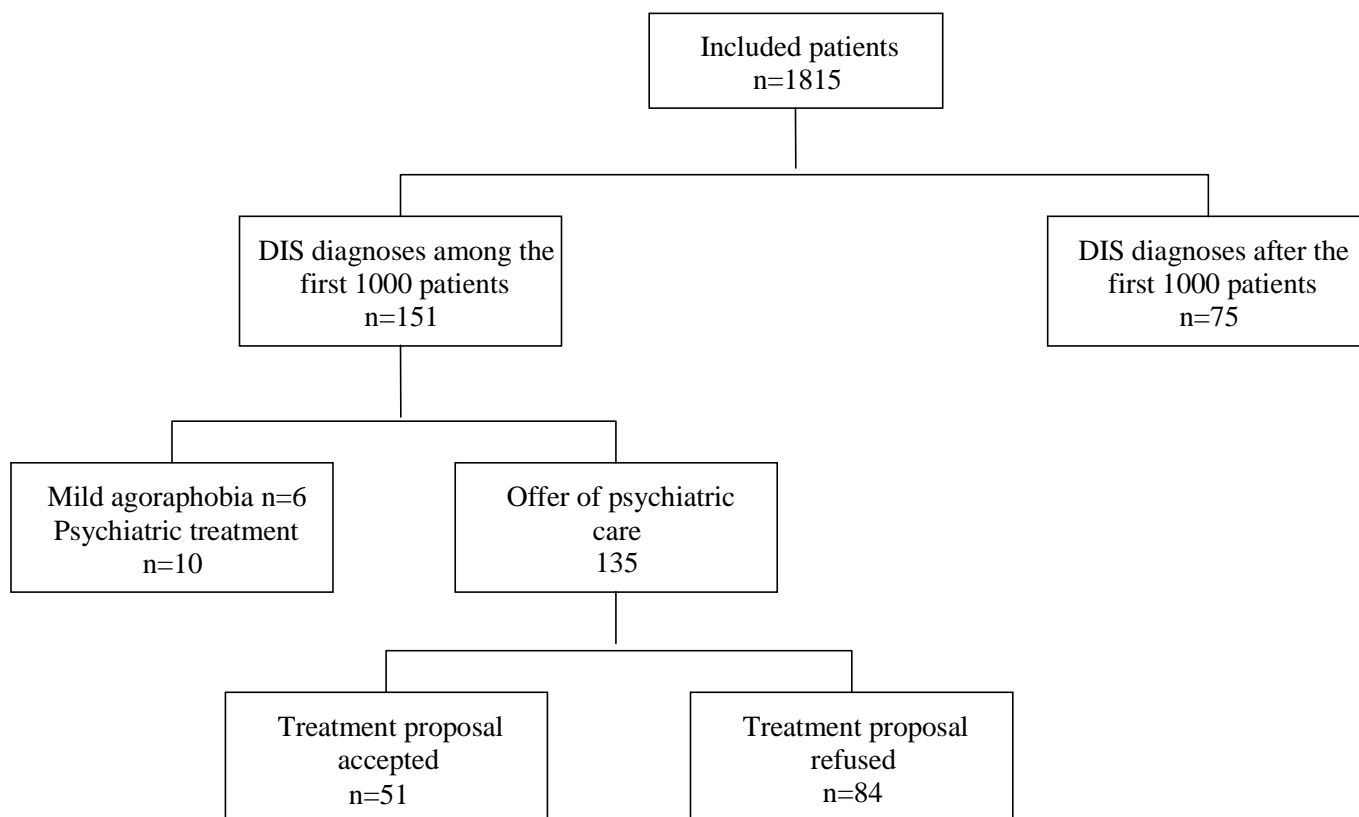


Figure 1. Study population

- (vii) Number of sick days in the last year
- (viii) Treatment costs in the last year.

In the treatment group, five highly qualified psychiatrists treated the patients for one year on an outpatient basis. Patients in the control group received “as-usual treatment” by their primary care physicians. A group of patients were already under treatment by psychiatrists at the time of the DIS interview. In the statistical analysis this group was handled separately. After one year, the GPs were asked to complete a questionnaire about all patients who had a current DIS diagnosis (regardless of whether they had received psychiatric treatment), and the same patients were asked to redo the QLDS.

Two types of costs were estimated-direct and indirect costs. Of all direct costs, only health care expenses were estimated, due to the difficulty of calculating travel and other personal expenses, family costs and other social service costs. Health care services were priced according to the official rates during the study period. Prescription drugs were quantified on the basis of their lowest retail prices. Of all indirect costs, only lost workdays were counted in this study.

### Data Analysis

The statistical analysis was carried out using SPSS 9.0 software. Descriptive statistics were reported and the statistical significance calculated using a Paired-samples T Test

Table 2. Number of health care visits excluding psychiatric care.

	Year one outcome		Year two outcome	
	Mean	SD	Mean	SD
Treatment group (N <sub>1</sub> =48, N <sub>2</sub> =49)	9.72	12.56	5.77	4.91
Control group (N <sub>1</sub> =59, N <sub>2</sub> =72)	4.03	3.55	5.09	4.72
Treatment refusal group (N <sub>1</sub> =100, N <sub>2</sub> =93)	6.38	8.92	5.26	6.15
Receiving treatment elsewhere (N <sub>1</sub> =20, N <sub>2</sub> =21)	10.10	7.77	6.57	5.51

Table 3. Number of days spent in hospital

	Year one outcome		Year two outcome	
	Mean	SD	Mean	SD
Treatment group (N <sub>1</sub> =50, N <sub>2</sub> =50)	2.60	5.89	1.78	5.56
Control group (N <sub>1</sub> =74, N <sub>2</sub> =74)	0.81	3.29	1.76	9.03
Treatment refusal group (N <sub>1</sub> =94, N <sub>2</sub> =94)	1.12	3.94	1.34	5.54
Receiving treatment elsewhere (N <sub>1</sub> =21, N <sub>2</sub> =21)	7.86	15.42	4.86	9.48

procedure comparing the means of two variables for a simple group. The test computed the differences between values of the two variables for each case and determined whether the average differed from 0. Simple cross-tabulation was used to investigate the association between the sociodemographic characteristics and the diagnoses. The odds ratios (ORs) and 95% confidence intervals (CIs) were determined to show the strength of association.

## Results

### Study Sample

The groups differed in terms of mean age and sex ratios. The mean ages for the treatment group, control group, and treatment-refusal group were 46.3 years, 36.1 years, and 39.5 years respectively. The respective sex ratios (female:male) were 1:0.7, 1:0.78 and 1:0.67. These differences were corrected in the statistical analysis.

### Health Care Visits Excluding Psychiatric Treatment

In the year prior to the study, the average number of health care visits was significantly higher for those assigned to the treatment group and for those patients already in psychiatric treatment elsewhere than for the control group ( $P<0.05$ ). During the second year, the number of health care visits did not differ significantly from one group to another.

In the treatment group, the number of health care visits

decreased significantly ( $P<0.03$ ) compared with the year prior to treatment. In the group of patients undergoing psychiatric treatment elsewhere, the number of visits also went down, but not by a significant degree (**Table 2**).

This was also true for the group of patients refusing psychiatric treatment. In the control group, there was a slight increase in the number of visits.

### Hospital Days

The number of days spent in the hospital is shown in **Table 3**. The number of hospital days in the first year was significantly higher for those receiving psychiatric treatment elsewhere than for the other groups. This difference decreased in the second year.

In terms of the number of hospital days prior to versus during the study year, no group showed a significant difference, although a slight decrease was seen in the treatment group and a slight increase in the control group.

### Days Spent on Sick Leave

During the first year, there was a significant difference in the number of days spent on sick leave between those refusing treatment and those treated elsewhere.

A significant decrease was found in the treatment group ( $P=0.02$ ), whereas the decrease was only marginally significant in those receiving treatment elsewhere ( $P=0.07$ ). In the refusal group, there was no significant change in the number of days spent on sick leave. The control group showed

Table 4. Number of days spent on sick leave.

	Year one outcome		Year two outcome	
	Mean	SD	Mean	SD
Treatment group (N <sub>1</sub> =49, N <sub>2</sub> =49)	15.75	29.72	6.87	18.71
Control group (N <sub>1</sub> =59, N <sub>2</sub> =74)	11.79	31.78	21.50	63.53
Treatment refusal group (N <sub>1</sub> =100, N <sub>2</sub> =93)	8.85	23.34	7.89	23.25
Receiving treatment elsewhere (N <sub>1</sub> =20, N <sub>2</sub> =21)	31.25	63.08	4.42	13.44

Table 5. Cost of non-psychiatric prescription drugs (in HUF).

	Year one outcome		Year two outcome	
	Mean	SD	Mean	SD
Treatment group (N <sub>1</sub> =43, N <sub>2</sub> =48)	30,038	39,285	19,862	30,745
Control group (N <sub>1</sub> =56, N <sub>2</sub> =74)	9,902	23,210	15,021	32,416
Treatment refusal group (N <sub>1</sub> =89, N <sub>2</sub> =92)	33,688	91,325	23,819	42,441
Receiving treatment elsewhere (N <sub>1</sub> =18, N <sub>2</sub> =21)	75,271	55,816	63,860	82,516

an increase, but not of a significant extent. It is important to note that in this case the SD values were high (Table 4).

### Pharmaceutical Costs

In the treatment group, there was a significant decrease in the cost of non-psychiatric pharmaceuticals. The treatment refusal group showed a non-significant decrease. The control group showed an increase in the cost of prescribed drugs. For patients who were under psychiatric treatment elsewhere, the cost of drugs went up in both period I and period II. Table 5 shows the cost of non-psychiatric drugs in the different groups.

### Costs of Laboratory and Diagnostic Tests

The total cost of laboratory and diagnostic tests decreased in all groups. This change was significant ( $P < 0.05$ ) for those refusing treatment or treated somewhere else. A marked but non-significant decrease ( $P = 0.07$ ) was seen in the treatment group. (Table 6).

### Discussion

The demographic characteristics of our sample were comparable to those in similar studies. The sample consisted of primary care patients with anxiety and mood disorders seeking help in general practitioners' offices. In the sample we found considerable comorbidity between anxiety and mood

disorders, with 39% of patients presenting with both conditions.

In the treatment group, the total cost of prescription drugs increased sharply due to psychiatric drug treatment, thus increasing the direct overall costs of care. In this same group the cost of non-psychiatric drugs showed a 37% decrease between period I and period II, suggesting that a reduction in general medical treatment partially offset the costs of anxiety and depression treatment. In the control group, non-psychiatric drug costs increased. The number of hospital days showed a marked decrease in the treatment group and a slight increase in the control group. These changes, however, were not significant. The mean baseline for number of hospital days in both groups was low with high SD values, indicating that a larger sample size would be needed to evaluate the change in this aspect. The cost of laboratory and diagnostic tests decreased in all groups, but the change was not significant at a 95% confidence interval. The data showed that prescription drugs accounted for the largest share of total direct costs. The steep rise in direct costs after psychiatric treatment is explained by the psychotropic drugs prescribed by psychiatrists.

Absenteeism fell sharply in the treatment group (-56%) and in the group of patients who received psychiatric treatment elsewhere (-62%). In the control group, there was a large upturn (+182%) in the number of days spent on sick leave.

### Limitations

The methodology used in this study is open to criticism with regard to factors such as the discrepancies between

Table 6. Cost of laboratory and diagnostic tests (in HUF).

	Year one outcome		Year two outcome	
	Mean	SD	Mean	SD
Treatment group (N <sub>1</sub> =49, N <sub>2</sub> =48)	2,498	2,204	1,376	4,384
Control group (N <sub>1</sub> =59, N <sub>2</sub> =74)	1,836	6,835	969	1,488
Treatment refusal group (N <sub>1</sub> =100, N <sub>2</sub> =92)	2,249	3,880	914	1,799
Receiving treatment elsewhere (N <sub>1</sub> =21, N <sub>2</sub> =21)	2,357	2,572	1,180	1,549

baseline characteristics in the different groups and the naturalistic study design; for that matter, methodologies for the assessment of illness costs are the subject of intense discussion the world over. Several limitations should be borne in mind when interpreting these data. First, patients were not assigned randomly to the different groups because of ethical concerns. Due to the assignment process, there were significant differences in the baseline characteristics of the groups. Potential group differences in severity of psychiatric illness might have resulted from the fact that the treatment group was recruited from the first 1,000 attenders, with an oversampling of patients with greater disease burden and health service utilization. Thus, differences in the severity of illness and reasons not attributable to treatment effects may play a role in the change in the rate of service use. Second, we did not consider broader perspectives (such as mortality costs, work productivity or marital stability) in the factors held to influence costs. Our estimates were based on standard health service prices, whereas actual general medical treatment might cost more; therefore, the results might overestimate the extent to which drug costs made up the largest single component of direct costs. Also, the differences between the treatment and control groups might have been narrowed by the fact that patients in the control group also received some kind of treatment for their mental disorder by their general GPs or other specialists. The 12-month period could underestimate the long-term effects of psychiatric treatment on absenteeism, which could imply a further decrease in indirect costs for the treatment group and a possible increase for the control group. Evaluation of quality of life changes was strongly distorted by the fact that large numbers of patients in all groups failed to complete the DLQS, making it impossible to compare results.

### Policy Relevance

In Hungary, as in other countries in the region, rapid societal changes in the last decade have created growing tension in the health care sector. Increasing costs create major problems for the health care authorities and the government. These problems are often addressed by efforts to cut back on direct medical costs. Since anxiety disorders affect a large portion of the population and the direct cost of psychiatric medication is relatively high, "cost-saving programs" often target psychiatric care expenditure. However, limiting anxiety

patients' access to psychiatric treatment causes an increase in absenteeism, thus resulting in higher indirect costs. Better availability of cost-effective outpatient treatment might reduce the economic burden of anxiety disorders.

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