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Cost of schizophrenia: direct costs and use of resources in the State of São Paulo

Custos da esquizofrenia: custos diretos e utilização de recursos no Estado de São Paulo

ABSTRACT

OBJECTIVE: To estimate the direct costs of schizophrenia for the public sector.

METHODS: A study was carried out in the state of São Paulo, Brazil, during 1998. Data from the medical literature and governmental research bodies were gathered for estimating the total number of schizophrenia patients covered by the Brazilian Unified Health System. A decision tree was built based on an estimated distribution of patients under different types of psychiatric care. Medical charts from public hospitals and outpatient services were used to estimate the resources used over a one-year period. Direct costs were calculated by attributing monetary values for each resource used.

RESULTS: Of all patients, 81.5% were covered by the public sector and distributed as follows: 6.0% in psychiatric hospital admissions, 23.0% in outpatient care, and 71.0% without regular treatment. The total direct cost of schizophrenia was US$191,781,327 (2.2% of the total health care expenditure in the state). Of this total, 11.0% was spent on outpatient care and 79.2% went for inpatient care.

CONCLUSIONS: Most schizophrenia patients in the state of São Paulo receive no regular treatment. The study findings point out to the importance of investing in research aimed at improving the resource allocation for the treatment of mental disorders in Brazil.

KEYWORDS: Health expenditures. Direct services costs. Schizophrenia.

RESUMO

OBJETIVO: Estimar o custo direto da esquizofrenia para o setor público.

MÉTODOS: O estudo foi realizado no Estado de São Paulo, no ano de 1998. Utilizaram-se dados da literatura e de institutos governamentais de pesquisa para estimar o número total de pacientes com esquizofrenia no Estado sob cobertura do Sistema Único de Saúde. Foi construída uma árvore de decisão mostrando a distribuição desses pacientes quanto ao nível de tratamento. Por meio de pesquisa em prontuários de alguns hospitais públicos e serviços ambulatoriais, documentou-se a utilização de recursos por esses pacientes no período de um ano. Foram atribuídos valores em Reais para esses recursos a fim de se calcular o custo direto total médico-hospitalar.

RESULTADOS: Do total de pacientes, 81,5% estão sob cobertura do SUS e encontram-se assim distribuídos: 6,0% internados, 23,0% em tratamento ambulatorial

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e 71,0% sem tratamento regular. O custo direto total da esquizofrenia foi de R$222 milhões (US$191,781,327) (2,2% do total de gastos em saúde do Estado), sendo 11% destinados ao tratamento ambulatorial e 79,2% às internações psiquiátricas.

CONCLUSÕES: A maior parte dos pacientes com esquizofrenia no Estado está sem tratamento regular. Os achados apontam para a necessidade de se investir em pesquisas que possam orientar uma melhor alocação de recursos no tratamento dos transtornos mentais no País.

DESCRITORES: Gastos em saúde. Custos diretos de serviços. Esquizofrenia.

INTRODUCTION

Although schizophrenia affects only 1.0% of the adult world population, the care for this disorder consumes approximately 1.6% to 2.6% of the total health costs of Western developed countries.[11] The largest share of these costs (70% to 80%) is due to psychiatric hospital admissions, while outpatient care is left with less than 10%.[2-4] Schizophrenia also causes a high degree of disability. It was ranked 8th among illnesses bearing the heaviest global burden due to disability among the 15-44-year-old population.[12] Despite its importance, there are few estimates of the cost of this disorder in developing countries.

By 1998, approximately 75.0% of the Brazilian population was covered by the Sistema Único de Saúde (SUS - National Unified Health System). The financial deficit of this program in the country increases the importance of obtaining the first cost estimates of proposed treatments. This should assist government health officials in resource allocation and decision making.

The aim of the present study was to estimate the direct costs of schizophrenia for the public sector.

METHODS

The study was carried out in the State of São Paulo during 1998 which has a population estimated in 38 million and is the major industrial and economic powerhouse of the Brazilian economy.

In a first step, it was estimated the number of schizophrenia covered by SUS. From a review of local[1,6] and international[5,9,10] prevalence studies of schizophrenia, it is believed that the prevalence rate range between 0.5% and 1.0% of the adult population in São Paulo. According to the last Brazilian census, about

177,000 patients were estimated for the highest prevalence (0.7%). In order to estimate the percentage of these patients covered by the public sector, national data was reviewed and the attribution rate based on 20 experts interviewed was obtained.

In a second step, it was built a decision tree that showed the distribution of these patients as to the form of care (psychiatric hospital admissions and outpatient care). Thus, it was estimated the number of patients without regular care (this group also included patients without any kind of care). To estimate the number of hospitalized patients and the number of those under outpatient care in the beginning of the year, electronic government data were used (Datasus). The results of a prospective cohort study of schizophrenia carried out in São Paulo[7,*] were used as a reference to estimate the distribution of all hospitalized patients in the State São Paulo after six months of follow-up. One-hundred and thirty five patients from a psychiatric clinic in the State of São Paulo were followed up during 1998 to assess the distribution of the outpatient group after six months. The number of patients without regular care was calculated by the difference between the total number of patients and the number of patients being treated.

In the third step, it was recorded medical and hospital resources (medical appointments, maintenance and/or urgent medication, dental care, diagnostic tests requested, emergency visits, resources used with associated illnesses) used by a sample of these patients in the different care settings. By screening public medical services records, the resource used was recorded and considered as the standard measure for São Paulo. A total of 28 patients studied was hospitalized in a psychiatric hospital, 14 patients in a psychiatric ward of a general hospital, 36 patients in a psychiatric outpatient clinic and 42 day hospital patients. In order to

estimate the resources used by the group of patients without regular care, the attribution rate was obtained based on 20 experts interviewed.

In the fourth step, it was assigned values in Real (the local currency, converted into US dollars using the mean 1998 exchange rate*) for the resources used, so as to calculate the direct medical cost of schizophrenia for the public sector. To determine the cost of medications, the values adopted were government stipulated prices or those of the Brazilian price index for pharmaceutical products. In order to estimate relative costs of professional and administrative services, budgets from psychiatric hospitals and outpatient services were also carefully identified.

The final step consisted of carrying out a sensitivity analysis to estimate the minimum and maximum costs of schizophrenia for the State of São Paulo, according to a lesser or greater utilization of the available health care system.

RESULTS

Taking into account the 0.7% prevalence in the adult population there are estimated 177,163 schizophrenia patients in the State of São Paulo. It was estimated that 81.5% (144,400) of these patients were covered by the public sector in 1998. The Figure shows the distribution of patients covered by the public sector throughout 1998.

At the beginning of the year, 6.0% of the patients were hospitalized (3.7% were new hospital admissions and 2.3% long-stay patients). It was considered that the long-stay patients would remain hospitalized all year around. New hospitalized patients showed the following distribution at the beginning of the second semester: 30.5% remained hospitalized, 47.0% were in outpatient care, 21.0% were without care and 1.5% was deceased. At the beginning of the year, 23.0% were in outpatient care and six months later only 2.7% were hospitalized and 8.0% had dropped treatment. Most of them (89.2%) went on outpatient care throughout the year. The remaining 71.0% were without regular care and after six months only 2.7% of them were hospitalized and 1.0% in outpatient care.

New hospital admissions (short-stay patients) consumed more resources than long-stay patients. For the former group the most frequent procedure was psychiatrist visits, while for the

Table 1 - Estimated one-month medical resource utilization per patient in psychiatric admissions. State of São Paulo, Brazil, 1998.

Resource	New admission	Long-stay patient
Number of psychiatrist visits	16.3	5.0
General clinical evaluation	3.8	0.7
Number of social worker visits	3.5	2.4
Number of psychologist visits	3.5	1.7
Occupational therapist visits	1.7	1.0
Dentist visits	1.6	0.1
Number of group therapy sessions	1.9	5.4
Number of complete blood count	0.1	-
Fasting plasma glucose	0.1	-
Electroencephalogram	0.1	-

latter it was therapy sessions. Laboratory tests and electroencephalograms were little requested. For new hospital admissions, only one out of 10 patients made these tests within a month period. For long-stay patients these tests were not requested.

The most frequent procedure for outpatient care was psychiatrist visits with an average of 0.5 appointments/month/patient. Except for social worker visits (average of 0.01/month/patient) no other professional services were requested.

It was assumed that patients without regular care have mainly used resources in two ways: a) emergency care in emergency clinics; and b) the use of over-the-counter medication (irregular care). According to the questionnaire handed out to specialists, it was estimated that a patient without care attends, on average, to 0.45 emergency visits per month.

The psychiatrists who were inquired said that on average 33.0% of the patients without care use over-the-counter medications. In the absence of any fur-
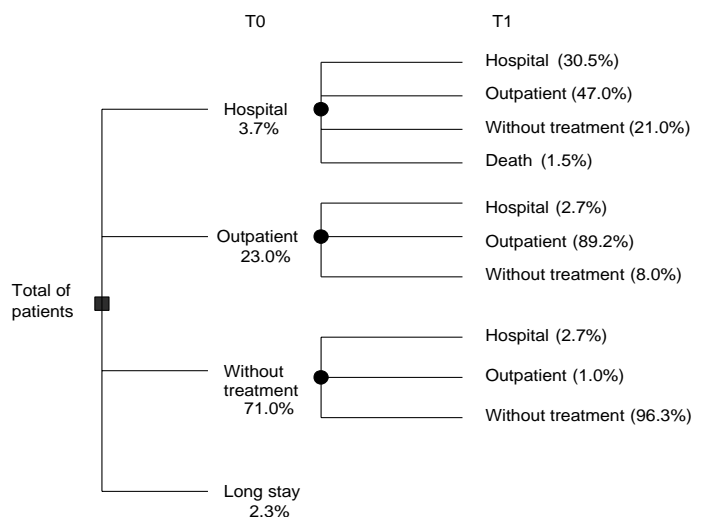

Figure - Distribution of patients covered by the public sector. State of São

ther source of data, it was assumed that these patients use about one-third of the medication consumed by patients undergoing outpatient care.

The direct cost of schizophrenia in the different care modalities is showed in Table 2. Roughly 80.0% of the estimated cost was for psychiatric hospital admissions (48.7% for new hospital admissions and 30.5% for long-stay patients) and only 11.0% was attributed to outpatient care.

The cost of medications and its percentage were calculated separately (Table 3). About 7.2% of the total direct cost referred to the use of medications. In the outpatient sector this represented 42.0% of its costs and in the hospital sector only 1.5%.

The sensitivity analysis for the cost of schizophrenia is showed in Table 4. The scenario 1 represents a situation in the health care network with the largest utilization possible and scenario 2, the least utilization. The estimated total direct costs for the care of schizophrenia varied from US$146,241,268 to US$237,191,306 in 1998.

DISCUSSION

There are only few prevalence studies on schizophrenia in Brazil, which have some methodological limitations as to the size of the sample studied. Therefore it was not possible to precisely determine this disease prevalence in the local population. Despite these limitations, the study findings are in accordance with the international literature, which support the current idea that schizophrenia has a similar prevalence with slight variations throughout the world.

Table 2 - Direct cost (US$) of schizophrenia for the public sector. State of São Paulo, 1998.

Variable	Costs (US$)	%
New admissions	93,344,189	48.7
Outpatient treatment	21,061,550	11.0
Long stay patients	58,537,379	30.5
Without treatment	18,838,209	9.8
Total	191,781,327	100.0

The data available was not sufficient to precisely estimate the number of schizophrenia patients covered by the public sector. Brazil has a segmented health system consisting of the Unified Health System (controlled by the public sector), the private sector (health care plans) and the fee-for-service sector. Trying to determine the clientele of each of these sectors is a difficult task, because some people use the three systems indiscriminately. Based on an extensive national survey on this subject and on the attribution rates given by the psychiatrists inquired, this present study estimates that a minimum of 73.0% and a maximum of 90.0% of schizophrenia patients are covered by the public sector.

The percentage of schizophrenia patients who are not being treated (patients without regular care) was estimated to be 71.0%, an alarming proportion. However, it is important to note that this figure includes those patients receiving irregular care, such as sporadic visits to emergency clinics. Moreover, those who probably never received care in their lifetime were included in this group. In a widespread, door-to-door, epidemiological study[9] carried out in India in 1986, it was verified that one-third of all individuals with schizophrenia had never received psychiatric care, even though this type of medical care was available

Table 3 - Cost (US$) of medication in the different treatment modalities and its proportion to the total direct cost of schizophrenia. State of São Paulo, 1998.

Variable	Medication (US$)	Total (US$)	Medication/total
New admissions	1,666,862	93,344,189	1.8%
Outpatient treatment	8,851,924	21,061,550	42.0%
Long stay patients	752,090	58,537,379	1.3%
Without treatment	2,546,524	18,838,209	13.5%
Total	13,817,400	191,781,327	7.2%

Table 4 - The total direct medical cost for schizophrenia for larger and smaller utilization scenarios of the health care network. State of São Paulo, 1998.

Variable	Scenario 1		Scenario 2	
	%	Costs US$	%	Costs US$
New admissions	4.9	123,617,980	2.5	63,070,398
Outpatient treatment	27.4	25,090,716	18.4	16,849,240
Long stay patients	2.8	71,262,896	1.8	45,811,862
Without treatment	64.9	17,219,714	77.3	20,509,768
Total	100.0	237,191,306	100.0	146,241,268

Scenario 1: Larger utilization of the health care network
Scenario 2: Smaller of the health care network

to the population. Therefore, one can infer that patients without care at any given moment are over a third. In Brazil, there is no epidemiological data about this group. In Holland, based on epidemiological surveys and medical records, it was estimated that in 1990, 25% schizophrenia patients had never been diagnosed or treated.[3] According to this study, if patients without care at any given time were included, even though they had undergone some kind of care previously, this figure would increase to 64.0%, approaching the estimated results for the State of São Paulo (71.0%).

The use of estimated resources for the group of patients without care should be looked at carefully, inasmuch as the only source of information was the rates provided by the group of psychiatrists inquired (attribution rate). Although frequently used in surveys on the economics of health care, the attribution rates should, preferably speaking, be compared to data in other surveys. In the present study, this comparison was not possible due to the lack of available data on the group of patients without care in Brazil.

Another reason for underestimating the total direct costs is that the following costs were not included in the study: transportation of patients and their relatives; interning patients under custody (judicial insane asylums); suicide attempts followed, or not, by death; criminal and judicial surveys and training programs; infrastructure and others. However, because of the methodological difficulties in measuring these costs, they are rarely accounted for in relevant surveys or they are used very conservatively, which does not preclude a comparison between the results obtained and those from existing literature.

As such, the direct costs of schizophrenia estimated

in the study correspond to 2.2% of the total health care expenditures for 1998 in the State of São Paulo. For the estimated direct cost for larger and lesser utilization scenarios of the health care network, this share will range from 1.7% to 2.7%. These figures are in agreement with those obtained in studies[12] carried out in developed countries, which indicate that the direct cost of schizophrenia is equivalent to 1.6% to 2.6% of the total health care expenditures. More recently, a study[15] showed that in Taiwan health care expenditures for schizophrenia account for around 1.2% of total.

However, health care expenditures of developed countries correspond to 7.0% to 12.0% of their gross domestic product[11] (GDP), a far greater rate than 3.1% for the State of São Paulo, which confirms the view that insufficient resources are allocated for health care in the Brazilian scenario.

Outpatient care, which has been associated with a better quality of life for patients at a lower cost, receives only about 11.0% of the resources allocated to treating schizophrenia meanwhile psychiatric hospital admissions consume almost 80.0% of the budget. Studies[12,15] of the overall costs of schizophrenia in other countries confirm the high share of the total that is attributable to inpatient care. In the UK, a study[13] showed that illness relapse is a major factor for high hospitalization rates and costs. Medication non-adherence seems to have a consistent association with greater resource use, and is a key factor in the use of inpatient and external services.[14]

It is very likely that many severe cases of schizophrenia in Brazil have remained untreated for a one-year period, being reasonable to conclude that these patients do not receive adequate psychiatric care.

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