

The Economic Impact of Schizophrenia

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Although schizophrenia afflicts 1.1% of the U.S. population, it imposes a disproportionately large economic burden due to expenditures for hospitalization, treatment and rehabilitation, and lost productivity. Cost-of-illness studies, using a variety of methodologies to calculate direct and indirect costs, have estimated that in 1990 the total economic burden of schizophrenia was \$32.5 billion. Of this total, \$17.3 billion was attributable to direct medical costs. By comparison, in the same year the total and direct medical costs for anxiety disorders, which are more than 10 times more prevalent than schizophrenia, were \$46.6 billion and \$10.7 billion, respectively. For affective disorders, almost 10 times more prevalent than schizophrenia, the total and direct costs were \$30.4 billion and \$19.2 billion, respectively. Effective treatments used early in the course of schizophrenia can help reduce the costs associated with this illness.

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The 2.6 million people aged 18 to 64 years in the United States with schizophrenia¹ comprise a comparatively small proportion of those suffering from all mental illnesses: the 1-year prevalence in this age group for anxiety disorders is 15.2 million persons, and for affective disorders, 12.3 million persons.² As a group, however, people with schizophrenia consume a disproportionately large share of resources. Schizophrenia is costly in medical care, treatment and rehabilitation, and reduced or lost productivity. Although its prevalence in the general population varies by gender and age, schizophrenia is most prevalent during highly productive periods—25 to 34 years of age in women and 18 to 24 years of age in men (Figure 1).¹ Thus, the economic burden imposed by this disease needs to be examined both as a single entity and in relation to other chronic conditions, and comprehensive, research-based strategies formulated to use the resources available as effectively as possible.

Understanding cost-of-illness studies requires consideration of numerous conceptual issues (Table 1)¹ and estimation issues (Table 2)¹, as well as the sources of data used in estimating direct and indirect costs. The following discussion covers several issues in the calculation of direct and indirect costs of schizophrenia and the results of an

Alcohol, Drug Abuse and Mental Health Administration (ADAMHA) cost-of-illness study for 1985 with estimates updated to 1990.

CALCULATION OF DIRECT AND INDIRECT COSTS

In cost-of-illness studies, direct costs (i.e., medical expenditures) are estimated as the product of number of services and unit prices or charges. Direct costs involve mental health organizations (e.g., federal, state, and local psychiatric residential treatment centers), short-stay hospitals, office-based physicians, other professional services, nursing homes, prescription drugs, and support costs (e.g., net cost of insurance; costs of research, training, and program administration).

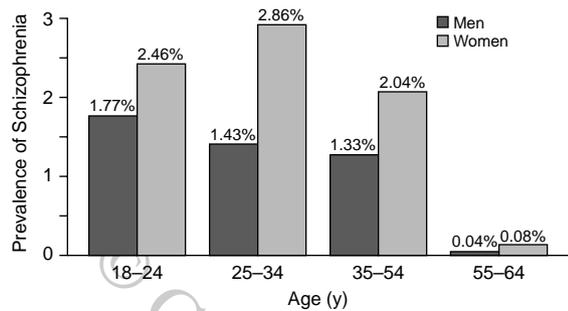
Indirect costs (i.e., morbidity and mortality costs) involve the value of lost output due to illness, disability, or death. Morbidity costs are the value of reduced or lost productivity. Morbidity costs developed in the ADAMHA study² were estimated as a percentage of income lost based on calculations of a variety of factors, including the size of the population, the prevalence rate of the illness, average income for persons without the disorder, and impairment rates for persons with the disorder.

Mortality costs are the discounted expected lifetime earnings (adjusted for sex and age) of an individual who has died prematurely. Although important, "present value of lifetime earnings" is a complicated concept to calculate in cost-of-illness studies. Essentially, calculations take into account life expectancy, earnings, labor force participation rates (by age and gender), and the imputed value for housekeeping services with a discount rate (i.e., estimate of present value of future earnings) applied to the calculations. Although discount rates of 3% to 5% are used today,

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Figure 1. Prevalence of Schizophrenia, by Gender and Age, 1985*

*Data from reference 1.

Table 1. Studies Analyzing Cost of Illness: Conceptual Issues***Prevalence Versus Incidence Issues**

One of the following approaches is generally used:

Prevalence-based cost approach: Estimates the direct and indirect economic burden incurred in a period of time (usually 1 year) resulting from a disease or illness. This approach is appropriate if the results of the analysis are to be tied to cost control, since it identifies the major components of current expenditures and identifies possible targets for economy.

Incidence-based cost approach: Represents the lifetime costs resulting from a disease or illness. These costs refer to the total lifetime costs of all cases with onset of disease in a given base year. This approach is appropriate if the analysis is aimed at making decisions about which treatment or strategy to implement, because it provides the basis for predictions about the likely savings from programs that reduce incidence or improve outcomes.

Human Capital Versus Willingness-to-Pay Issues

Economists generally use one of the following approaches to calculate the value of human life:

Human capital approach: Views the individual as producing a stream of output that is valued at market earnings, and the value of life is the discounted future earnings. This approach is more commonly used in cost-benefit and cost-effectiveness analyses and was used in the study of cost of schizophrenia discussed in this article.

Willingness to pay approach: Values life according to what individuals are willing to pay for a change that reduces the probability of illness or death. This is more difficult to measure since it takes into account perceptions of pain and suffering associated with a condition.

*From reference 1.

the ADAMHA study applied a rate of 6% to allow for appropriate comparisons with other data in use at the time of the study.¹

ECONOMIC BURDEN OF SCHIZOPHRENIA

The ADAMHA study found that during 1985, schizophrenia imposed an estimated \$22.8 billion burden on the U.S. economy, about 3% of total personal health care spending for all illnesses.² The costs of schizophrenia were updated to 1990 employing economic data and indices with known relationships to mental illness costs. Direct costs in 1990 totaled \$17.3 billion, or about 53.2% of the

Table 2. Studies Analyzing Cost of Illness: Estimation Issues*

Many important determinants of cost of illness cannot be measured easily and require estimation:

Psychosocial costs (e.g., pain and suffering)

Reduced productivity (e.g., output losses)

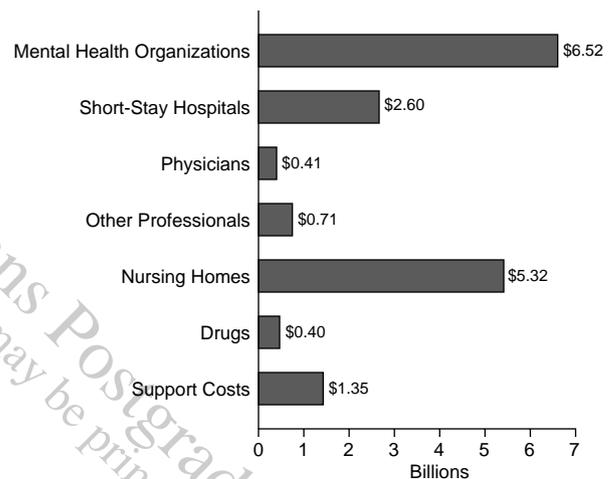
Nonmarket activities (e.g., value of caregiving services provided by families of schizophrenia patients that ordinarily would be purchased in the marketplace)

Non-health related costs (e.g., transportation to providers, criminal justice expenditures, incarceration)

Transfer payments (e.g., welfare, disability, and other benefit payments that constitute a reallocation of resources), not used in the study of the cost of schizophrenia discussed below

Other estimation issues include accounting for consumption, costs versus charges, estimation of lifetime earnings, comorbidity, and the discount rate. The issue of comorbidity is of particular interest since schizophrenia as a comorbid condition may account for additional hospital days of care.

*From reference 1.

Figure 2. Direct Costs of Schizophrenia, by Type of Cost, 1990*

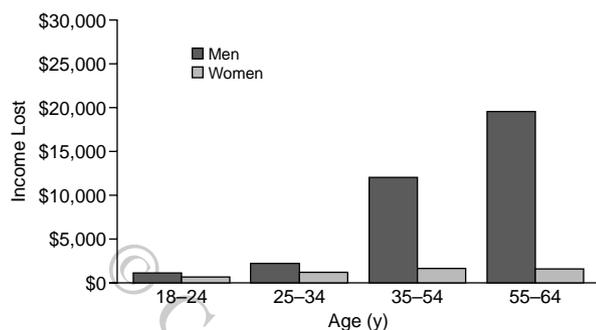
*Data from reference 1.

total cost of \$32.5 billion. Morbidity accounted for 32.9% of total costs, and mortality, 4.0%. Other costs, including those related to crime, social welfare administration, and family caregiving, accounted for 9.9% of the total.

About \$6.5 billion of the \$17.3 billion in direct costs represented expenditures for mental health organizations, and \$2.6 billion for short-stay hospital care. Other treatment costs included \$406 million for office-based physicians, \$710 million for other professional services (e.g., psychologists, social workers), and \$5.3 billion for nursing home expenditures. Prescription drug expenditures were \$397 million, or about 2.3% of the direct costs (Figure 2). Amounts spent for prescription drugs represent a relatively small percentage of total direct costs. This percentage would probably be higher today because of the availability of newer antipsychotic agents.

The impact of "lifelong" sickness substantially affects current income, lowering that of men and women with

Figure 3. Mean Income Loss for Persons With Schizophrenia, by Gender and Age, 1985*



*Data from reference 1.

Table 3. Direct and Indirect Costs of Anxiety Disorders, Affective Disorders, and Schizophrenia, 1990 (Billions)*

| | Anxiety Disorders (12.6%) ^a | Affective Disorders (9.5%) ^a | Schizophrenia (1.1%) ^a |
|--------------|---|--|--------------------------------------|
| Direct costs | \$10.7 | \$19.2 | \$17.3 |
| Morbidity | 34.2 | 2.2 | 10.7 |
| Mortality | 1.3 | 7.7 | 1.3 |
| Other costs | 0.4 | 1.3 | 3.2 |
| Total | 46.6 | 30.4 | 32.5 |

*Data from references 1, 4, 5, and 6.

^aAnnual prevalence.

schizophrenia. Estimates of annual income loss were made by taking into account the age at onset and the duration of this disorder.³ Mean income losses due to schizophrenia are highest during the years when individuals are most productive, and losses reflected in the 1985 study were substantial, ranging from \$649 per year for males aged 18 to 24 years to \$19,064 for those aged 55 to 64 years (Figure 3).

The 1-year prevalence rate for schizophrenia is 1.1%, compared with 12.6% for anxiety disorders and 9.5% for affective disorders.⁴ The estimated costs of schizophrenia may be compared with those for anxiety and affective disorders. In 1990, the estimated total cost of anxiety disorders, affective disorders, and schizophrenia was \$109.5 billion; the estimated direct cost was \$47.2 billion.^{5,6} In

comparison with the direct costs of affective and anxiety disorders, conditions with relatively high prevalence rates in the general population, the direct cost of schizophrenia, a condition with a relatively low prevalence rate, was disproportionately high (Table 3).

CONCLUSION

The burden schizophrenia places on society is high, and although cost-of-illness studies provide estimates of costs, they should be interpreted as the lower limit of the true cost. For example, costs cannot be calculated for pain and suffering. Lost income among homeless and military populations and those under 18 years of age or over 64 years of age is not calculated, nor are capital costs of construction of facilities.

Despite these limitations, cost estimates indicate that substantial potential savings could be realized by the timely and appropriate use of treatment interventions. More attention needs to be directed at comprehensive, research-based strategies to reduce the prevalence and the costs of schizophrenia in the United States.

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