

Economic Losses Associated with Chronic Mental Disorder in a Developing Country

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Summary: This study was undertaken in a society without psychiatric services to assess the economic losses associated there with major mental disorder. Such data are important in assessing the cost/benefit of services for major mental disorders.

A survey was conducted in 27 representative villages of Laos, each containing about 200–300 people; 35 mentally ill subjects were identified. Data were obtained on expenditure for treatment, loss of productivity, and other economic losses (eg., destruction of property); demographic data and clinical rating scales were also obtained, and compared with economic variables.

The data show wide variability in expenditures for treatment, but losses of productivity were consistently high; acute losses, while impressive due to their suddenness and obvious wastefulness, were comparatively small relative to others. Demographic data were not associated with loss in productivity. Certain psychopathological parameters, ie., more psychopathology, less productivity, were inversely correlated with productivity. Psychosocial function scales were strongly and directly correlated with productivity.

The economic costs of psychiatric disorder are becoming increasingly important. Developing countries have become aware of the prolonged and widespread disability associated with major mental illness (Lin, 1953; Leighton, Lambo, Hughes *et al*, 1963; Dube, 1970), and there are now few without some psychiatric services (Bowman, 1956; Neki, 1973). Recently, the developed countries, where extensive psychiatric resources already exist, have become more concerned about the costs of various health problems (Hartunian, Smart, Thompson, 1980), the correlations between treatment outcome and treatment costs (Schroeder, Showstack, Schwartz, 1981), and economic comparisons of various treatment approaches (Bertera, Bertera, 1981). Some social scientists and psychiatrists have suggested that psychiatric services in developed countries induce or exacerbate disability among the mentally ill and that outcomes are better in developing countries with *laissez faire* approaches to mental disorder (Goffman, 1961; Laing, 1960; Szasz, 1963; Waxler, 1974). By extrapolation, these observations suggest that chronic mental disorder in a developing society may lead to little or no loss of productivity and no losses incident upon treatment, family crisis, property destruction, or assault.

This study was undertaken in a society without psychiatric practitioners or hospitals, to assess the economic losses associated with major mental disorder uncomplicated by modern treatment. The hypotheses were that:

1. Expenses associated with major mental disorder in a society without psychiatric care are minimal.
2. In the mentally disabled, productivity continues due to the ever-present need for labour-intensive, unskilled, or semi-skilled work.
3. Losses incident to mental disorder, such as lost work time for family members to care for their relative or repair of property destroyed by the mentally disordered person, comprises the greatest economic drain.

One final hypothesis was also tested in the course of this study. It had not been suggested by previous observations on mental disorder in developing societies, but rather grew out of the typical clinical outcome of chronic mental disorder in industrial societies (Gunderson and Mosler, 1975):

4. Severity of psychopathological symptoms is negatively correlated with productivity, while better psychosocial functioning is positively correlated with productivity.

Method

Sample

Thirty-five subjects were located in 27 Lao villages in Vientiane province, during early 1978; the average population in these villages was 200–300 people. Subjects were obtained by inquiring from village headmen and elders whether any inhabitants had the social label of *bā*, meaning crazy or insane. This method of collecting subjects emphasises prevalence

rather than incidence data of psychiatric disorder, and it can be expected to include more chronic cases and fewer acute, self-limited cases.

Five subjects were able to provide consistent information regarding themselves. Most data were obtained from family and neighbours—an average of 6.9 informants per subjects. Interviews were conducted by the author in the Lao language; six to eight hours were spent in each village to supplement and validate these interview data with first-hand observation.

These 18 males and 17 females ranged from 15 to 68 years of age; most were in their twenties to forties. Eighteen were single, nine separated or divorced, five married, two common law spouses, and one widowed. Diagnoses made by the author (and largely supported by a reliability study involving four other clinicians [Westermeyer and Wintrob, 1979]) included schizophrenia or affective disorder ($n = 24$), organic psychosis ($n = 9$), and other disorders ($n = 2$). Duration of the disorder was two years or more in 29 cases, and less than two years in six cases. Other characteristics of this sample have been previously described (Westermeyer and Kroll, 1978; Westermeyer, 1969; Westermeyer and Wintrob, 1979; Westermeyer and Wintrob, 1979; Westermeyer and Sines, 1979; Westermeyer, 1980; Westermeyer, 1980; Westermeyer and Pattison, 1981; Westermeyer, 1981; Westermeyer and Neider, 1981; Westermeyer and Zimmerman, 1981).

Instruments

Informants provided data on the amount of money spent on all forms of treatment, whether traditional or modern. They were asked to include all expenses, such as travel to a treatment facility, donations to Buddhist monks for performing rituals, purchasing medication, etc. Since data were collected in a group setting, it was possible to discuss the amounts, and settle on a sum to which all agreed.

Current disability, and disability since onset of the *bā* condition, were assessed. Subjects able to perform as much gainful work independently as before the onset of their condition were classified as productive. Those able to continue some work, part-time or under close supervision, were categorised as partially productive; examples of this were carrying water, weeding gardens, weaving straw mats, and gathering firewood. Unproductive people did not work, either part-time or under supervision. Next, each subject's personal financial resources were computed (1) at the onset of the *bā* condition and (2) at the time of interview. Finally, financial losses directly related to the *bā* person's condition were assessed. These related to damages incurred from assaultive destructive, or similarly problematic behaviour.

To assess the influence of psychopathology on productivity, several clinical scales were used; these included the Hamilton Scales for anxiety (Hamilton, 1958) and depression (Hamilton, 1967), the Nurse's Observation Scale for Inpatient Evaluation (NOSIE) (Honigfeld and Klett, 1965), the Brief Psychiatric Rating Scale (BPRS) (Overall and Gorham, 1962), and the Rockland Pollin Mental Status (RPMS) (Rockland and Pollin, 1965). In addition, social function was assessed by means of the Global Assessment Scale (GAS) (Endicott, Spitzer, Fleiss, Cohen, 1976), the Social Dysfunction Rating Scale (SDRS) (Linn, Schulthorpe, Evje, Slater, Goodman, 1966), and an eleven-item Psychosocial Scale for Laos (PSL), devised specifically to assess social function Lao in villages (Westmeyer and Pattison, 1981).

Results

Expenditures for treatment

There was considerable variability in amounts spent for treatment, as follows:

<i>Amount in U.S. \$</i>	<i>Number of subjects</i>
0–999	19
1000–1999	1
2000–2999	2
3000–4999	2
5000 or over	3
unknown	8
	35

The median amount spent on treatment was \$180, and the mean was \$420 (standard deviation \$100).

At one end of the scale, no expenditures were made for treatment in three cases; two of these families were quite poor, since the father-husband was not present in the home (due to separation in one case, death in the other). At the other end of the spectrum, over \$5,000 was spent in three cases. One of these subjects was a religious leader whose adherents had spent large sums for almost two decades, mostly to traditional healers. Another was a man who became mentally ill overseas and had to spend his accumulated savings (earned overseas) on psychiatric care. The third was a 19-year-old girl whose father, a well-to-do merchant, had spent large sums over several years on both traditional healers on Laos and neurologists and psychiatrists in Thailand.

The largest amount of funds were expended on traditional healers, including herbalists and spiritual healers. This was due to the number of healers consulted (ie., when the subject was not responding to treatment) and the frequency of repeated treatments. Consultation with doctors in Laos was only a small part of the total expenditure, since subjects saw them only once in the typical case. Several subjects ($n = 8$) were

seen by psychiatrists in Thailand; their families made large expenditures for travel and food away from home.

Expenditure for treatment efforts in typical cases were as follows: \$47: traditional healing ceremony at home; \$160: travel to medical facility, medication; \$330: three traditional healers, one Buddhist monk, medical and laboratory fee at hospital; \$670: five traditional healers, a local dispenser, a medical evaluation at a Laotian hospital, and a psychiatric visit in Thailand; \$2600: ten traditional healers, a lengthy stay at a Buddhist temple, two psychiatric consultations in Bangkok; \$10,000: repeated ceremonies at home over several years, more than 20 traditional healers, a medical evaluation in Laos, psychiatric consultation in Thailand.

In a country where the average wage was \$1 per day, and the per capita national income at the time of the study was \$80 per year, these were large sums—well beyond the resources of most nuclear families. Typically, the extended kin network bore this financial burden, although the greatest contributions generally came from the nuclear family. In only two cases did non-kin members contribute to the cost of care.

Patterns of expenditure were variable. Most families spent all of their treatment funds in the first year or two of the disorder; they then discontinued these payments, when no observable benefit was produced. A few families continued seeking out and paying for treatment over several years, and up to two decades in one case.

In eight cases, the amount spent on care was unknown. These were cases in which the psychotic person both received care many years previously, and there were no informants available to provide information.

The amount spent for care was not correlated with the following variables: age, gender, marital status, psychiatric diagnosis, current productivity, current psychopathology, or duration of disorder.

Economic productivity

Two subjects were fully productive at the time of the interview. One had recovered completely from a recent series of brief psychotic episodes; and the other was in an interval between recurrent bipolar psychotic depressions. Since the onset of their disorders, they had been non-productive less than half of the time. Six subjects were partially productive, at less than half the level of an average adult. Their diagnoses included early schizophrenia, alcoholic dementia, and post-traumatic organic brain syndrome. The remaining 27 subjects had not been productive since the onset of their disorder. It is conservatively estimated that these 35 subjects, considered as a group, were only 10 per

cent productive over their total 221 years of mental disorder.

This loss of productive work was a major burden for the subjects' families. With the exception of three subjects who were over the age of 60, these people were in the prime of their productive years.

Expenditures on food, clothing, shelter

All 35 subjects continued to require food, clothing and shelter. Most of the per capita national income in Laos went to meet these basic needs, so we can assume that each subject continued to require \$80 per year for basic survival. These funds (or their equivalent in local farming produce, etc.) had to be provided throughout the duration of the mental disorder—an average of 6.3 years in this sample.

Among these 35 subjects, seven were not living at home. Another four lived at home, but obtained some of their food outside it. Most of these "foragers" (who have been described elsewhere [Westermeyer, 1980; Westermeyer and Pattison, 1981; Westermeyer, 1981; Westermeyer and Neider, 1981]) obtained their food and other needs from non-kin members, usually merchants, Buddhist monks, or altruistic neighbours. Thus, though not all subjects were currently receiving all of their resources from their families, the resources were provided by someone else than the subjects themselves.

Associated productive loss among family members

In addition to basic survival needs, these subjects required additional services from the family at various times. Especially during the first few years of their disorder, most required protective watching (so they would not get lost or kill themselves, either by design or by accident) and physical restraining. Most families also spent time with lengthy healing rituals at home, and obtaining consultation or providing treatment away from home in Buddhist temples, medical clinics and hospitals, or Thai psychiatric facilities. This took family members away from their productive work in most cases, sometimes for days, weeks or months. In addition, family members usually spent time on a daily basis supervising grooming, eating, and self-care.

This time away from productive work ranged from a few weeks to a few months per year for the typical family. During these times, family members could not engage in economically productive activities, and/or had to pay others to meet economic necessities (e.g., tending farm animals, crops, merchant activities). A conservative estimate is four weeks of productive work lost, per year, per subject—a total of 25 weeks (or one-half year) per subject over the average 6.3 years of their psychiatric disorder.

TABLE I
Personal wealth before and after mental disorder

Category	Number of subjects	
	Before	After
Little or no wealth	3	26
Minimal wealth	4	1
Average wealth	28	8
	35	35

Loss of personal wealth during mental disorder

Personal wealth among the Lao consisted of jewelry such as bracelets, earrings, rings, necklaces (in brass, copper, silver or gold); a wristwatch; and cash. Other forms of wealth were either held in common and belonged to the family or clan (eg., house, farm, water buffalo, cart), or were personal items, but so rare as to not warrant counting (eg., hunting rifle, bicycle). From birth, each person began to accumulate such possessions. For example, an infant might have a brass earring; as teenager, a silver ring and \$1 or \$2 in cash; a young adult, a wristwatch and several dollars; and an older adult, gold jewelry and several hundred dollars in cash. Categories were defined as follows:

little or no wealth: less than \$1 cash and no jewelry;
 minimal wealth: \$1 to \$10 cash, or brass or copper jewelry;
 average wealth: over \$10 cash, silver or gold jewelry, or a watch.

Prior to the onset of their disorder, most subjects (28 out of 35) had average wealth (Table I). Those with no or minimal wealth prior to onset were all in later childhood or early adolescence, when their disorder began. At the time of the research interview, only eight people had average wealth; they had all been mentally disordered for less than two years in most cases. There

was an increase of 23 subjects in the 'little or no wealth' category.

Besides loss of personal wealth, a few subjects had also lost family wealth. For example, a divorced woman had gradually lost extensive land holdings and eventually a large home when she became unable to work and manage her holdings (she became a forager, dependent on others).

Miscellaneous losses

The subjects' behaviour led to other losses, such as destruction in or about homes, or fines, recompense and medical bills from assaultive or destructive behaviour. These arose from the subjects' disorder, for example, paranoid delusions that the food was poisoned or grandiose delusions that the subject was a rich and powerful leader. While all families sustained such losses to a greater or lesser extent, only those losing more than U.S. \$10 are considered here.

Two women persistently chronically destroyed or threw away food in association with paranoid delusions about being poisoned. Three men caused their families to pay medical and/or legal bills (eg., fines, reparations) in association with an accident (one case), assaults (one case), and repeated theft for which the subject was sometimes severely beaten (one case). These latter were associated with grandiose delusions, one man fancied himself a powerful general who could order soldiers around and take jeeps for his personal use.

Seven subjects caused major damage to their homes and its contents (eg., ripping clothes and bedclothes, breaking furnishings and utensils). This primarily involved manually breaking or ripping things, but three subjects also used fire and one used a knife. Damage to homes included walls being torn down (two cases, a kitchen burned down (one case), and an entire home burned down (one case).

There were losses exceeding \$10 in 17 cases. It was

TABLE II
Current productivity and psychopathology

Current Productivity	Number of Subjects	Mean (and Standard Deviation) of rating scales				
		Hamilton Anxiety	Hamilton Depression	NOSIE*	BPRS*	RPMS*
normal	2	14.0 (5.7)	22.0 (14.1)	18.5 (7.7)	13.0 (2.8)	9.0 (1.4)
partial	6	6.2 (2.5)	19.5 (6.0)	47.3 (10.7)	32.7 (10.8)	47.7 (16.0)
none	27	10.0 (7.8)	24.4 (10.0)	56.2 (13.0)	36.7 (10.4)	60.3 (18.7)
F ratio		F = 1.111	F = 0.658	F = 9.038	F = 5.013	F = 8.205
Probability		P < .35	P < .53	P < .001	P < .01	P < .001

*NOSIE = Nurses' Observation Scale for Inpatient Evaluation, BPRS = Brief Psychiatric Rating Scale, RPMS = Rockland Pollin Mental Status.

High score indicates more psychopathology on all scale.

TABLE III
Current productivity and social function/dysfunction

Current Productivity	Number of Subjects	Mean (and Standard Deviation) of rating scales		
		GAS*	SDRS*	PSL***
normal	2	47.5 (3.5)	50.5 (3.5)	19.0 (1.4)
partial	6	26.7 (6.8)	77.1 (8.3)	7.7 (2.3)
none	27	21.0 (8.6)	77.3 (8.2)	6.4 (2.2)
F ratio		F = 10.149	F = 10.738	F = 30.628
Probability		<.0004	P <.0003	P <.0000

*GAS = Global Assessment Scale; low score is more dysfunctional.

**SDRS = Social Dysfunction Rating Scale; high score is more dysfunctional.

***PSL = Psychosocial Scale for Laos; low score is more dysfunctional.

difficult to assess the market cost of these losses, because families sometimes made their own repairs, or the value of used or homemade items could not be set. In half of these 17 cases, the amounts were in excess of \$500; the average loss in these 17 cases was conservatively estimated at about \$200, or about \$100 on the average for all 35 cases.

Psychopathology and productivity

Greater psychopathology was associated with less productivity on three scales which have been used for assessing psychiatric in-patients (ie., the Nurses' Observation Scale for Inpatient Evaluation, Brief Psychiatric Rating Scale, and Rockland-Pollin Mental Status) (Table II). Two scales employed primarily with nonpsychotic patients in out-patient settings (ie., the Hamilton tests for anxiety and depression) were not related to productivity.

Greater social competence, as measured by three psychosocial function scales (ie., the Global Assessment Scale, Social Dysfunction Rating Scale, and Psychosocial Scale for Laos), was positively correlated with productivity (Table III). Though work is one item on these multi-dimensional scales, the strength of the correlations indicate that other features tapped by them (eg., relationships to others, grooming, communication, leisure time activities, sexuality) also bear a positive relationship to economic productivity.

Demographic characteristics bore no statistical relationship to productivity. These included gender, age, former or current marital status, education, and previous occupation. Age at onset of the disorder and amount spent on treatment were also not correlated with productivity.

Discussion

Findings relating to the initial hypotheses are as follows:

1. *Expenses associated with major mental disorder in a society without psychiatric care are minimal. The*

average subject in this study represented a considerable drain on the financial resources of the family, kin, and in some cases, neighbours and community. Sources and mean amounts of loss per subject, over the average 6.3 years, were:

mean expenditure for treatment	\$420
mean loss in subject's productivity (6.3 yrs. × \$300/yr. × 90 per cent*)	1701
consumption of basic necessities (6.3 yrs. × \$80/yr.)	504
estimated mean loss in productivity of family members (0.5 yrs. × \$300/yr.)	150
estimated miscellaneous losses (eg., destroyed property, fines)	100
	<hr/> \$2875

*90 per cent is based on the earlier estimate that the subjects overall were 10 per cent productive during their psychiatric disorder.

The total figure of \$2875 (1975 U.S. dollars) does not appear particularly large from the standpoint of inflated 1982 dollars, or from the perspective of industrialized countries. Translated into Laotian fiscal equivalents, however, the amount is a considerable one. It would require the average Laotian worker, working six days per week (as was customary) and earning \$300 per year, over nine person-years of work to make that amount of money, which could easily comprise a lifetime saving after acquiring food, clothes and shelter. From the stand point of the family and society, the loss in terms of per capita income (\$80 per year) was about 35 person-years. These are quite large sums in any country, but especially in a developing country. The line between economic survival and disaster is a thin one in such a setting. Moreover, such regions need maximal productivity to develop sufficient reserves for investment into the economic infrastructure of the country (eg., roads, education, malaria eradication).

Treatment expenses alone were a large item. The average amount expended per subject was the equivalent of 1.4 person-years of work. Of course, it would take much longer to actually accumulate that amount, since most income went for bare survival needs (ie., food, clothing, shelter). The variability in expenditures—in total sums as well as in types of services purchased—was remarkable. Absence of any correlation between these expenditures and productivity suggests that they were not a useful investment of scarce resources, at least from the perspective of therapeutic benefit. These expenditures were no doubt justified by other considerations (such as reducing anxiety or sustaining hope among family members). As has been observed elsewhere in Asia (Lynn, Schulthorpe, Evje, Slater, Goodman, 1966), such expenditures for critical illness are often made on the basis of family and social factors, rather than on that of treatment efficacy.

2. *In the mentally disabled, productivity continues due to the availability of labour-intensive, unskilled or semi-skilled work.* The data do not support the notion that the mentally disordered person in a developing country is productive, or even partially self-sustaining. The cases of two who were episodically productive and six who were partially productive does suggest that a few contribute something, whereas in a highly competitive industrialised society, they might not. Murphy and Raman, in their comparison of schizophrenia in Mauritius and England, have promulgated this latter viewpoint (Murphy and Raman, 1971).
3. *Losses incident upon mental disorder, such as lost work time for family members to care for their relative or repair of property destroyed by the mentally disordered person, comprise the greatest economic drain.* Financial losses which are directly the result of psychotic behaviour—damage, assault, medical bills—often receive much public notoriety. In this sample, however, such events were the least expensive items. Also relatively small were losses due to interrupted productivity among family members. The three largest items—lost productivity by the mentally ill person, consumption of essentials by the mentally ill person, and treatment expenditures—amounted to 90 per cent of the total losses.
4. *Severity of psychopathology and psychosocial impairment are negatively correlated with productivity.* The present study supported this hypothesis. The two scales associated primarily with emotional and somatic symptoms (ie., Hamilton

Scales for anxiety and depression) were not correlated with productivity. Emotional and somatic symptoms, while personally distressing, do not necessarily impair work, unless very severe and constant. By contrast, the scales which measure hallucinations, delusions, memory impairment, and non-adaptive behaviour (ie., BPRS, NOSIE, RPMS) were inversely correlated with productivity. Even in a developing society, cognitive dysfunction undermined the ability to work effectively.

On all three psychosocial scales (the GAS, Psychosocial Dysfunction Scale and a Psychosocial Scale for Laos), greater impairment was correlated with less productivity. Moreover, the statistical correlations were highly significant (.0004 to .0000). This was not anticipated, especially for the first scales, which were developed for use in the United States and which required considerable clinical judgement (as opposed to clinical observation). The Psychosocial Scale for Laos (developed for Laos and based largely on observation and specific quantification) showed the greatest correlation with productive impairment.

Conclusions

These data suggest that major psychiatric disorder comprises a significant economic loss and, for most victims, an incapacitating disorder even in a developing society. This runs counter, not only to the psychoanalytical theories of Laing (1960) and Szasz (1963), but also to the sociocultural observations of Waxler (1974) and Murphy and Raman (1971). However, the discrepancy between these data and the conclusions of others may be due to sampling differences. Laing and Szasz, from developed countries, have primarily worked in clinical facilities outside of hospital settings; Waxler, Murphy and Raman conducted their studies in psychiatric hospitals. These data, on the other hand, were collected in a survey fashion, among people with little or no access to psychiatric facilities. Sampling in clinical facilities can be expected to produce more acute, better outcome cases, whereas the sampling method used for this study (community survey) produces more chronic, worse outcome cases.

These data from Laos do not permit a direct comparison with major psychiatric disorder in a developed society, but they do indicate that notable economic loss from such major disorders occurs even in developing societies.

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