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Responding to the Burden of Mental
Illness

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Responding to the Burden of Mental Illness

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1. INTRODUCTION

Mental Disorders are found in all cultures, are prevalent, cause considerable disability and rank high on the league table of world disease burden. By extension, they constitute a significant economic burden in all countries. Better understanding the extent of this economic burden and the development of frameworks to deliver cost effective interventions will provide a basis for programs which not only reduce the disability associated with these disorders but also promote human development and economic productivity. International agencies such as the World Health Organisation are intensifying their focus on mental illness with the World Health Report 2001 dedicated to mental health. The World Bank has identified neuropsychiatric disorders as an important emerging public health problem for developing market economies.

This report addresses three main questions:

- 1) What is the burden of mental disorders?
- 2) What are the economic consequences of mental disorders?
- 3) What cost effective interventions are available?

2. BURDEN OF MENTAL DISORDERS

A number of key issues set mental disorders apart from other health problems and impact on our ability to respond to the burden of disease. One issue is the boundary surrounding *definition*. While most mental disorders have biological and psychosocial factors contributing to aetiology, it has not been possible to create a classificatory system based on aetiology. The classificatory systems which have been developed are based on clinical signs and symptoms, supplemented infrequently by laboratory or other investigations. The reliability of these classificatory systems have been improved greatly in recent years within internationally accepted systems such as the International Classification of Disease (WHO, 1990) and Diagnostic and Statistical Manual for Mental Disorders (American Psychiatric Association, 1994). While the self reported prevalence rates of mental disorder vary from country to country, there is now good data from developed countries (eg USA, UK, The Netherlands and Australia) and developing countries (Rumble et al, 1996; Almeida-Filho et al, 1997; Araya et al, 2001) that the 12 month prevalence rates, using these classificatory systems, is in the order of 20-25%.

In both developed and developing countries, prevalence rates are influenced by many factors. Prevalence of mental health problems can rise significantly after natural disasters and conflict. Sharan et al (1996) assessed survivors in 23 households in three villages in India affected by an earthquake, and found 59% to have a psychiatric diagnosis. In a study of Bosnian refugees, 45% reported psychiatric symptoms and 25% disability associated with these symptoms (Mollica et al, 1999). A study of 854 Rwandans and Burundese in 23 refugee camps found a 50% prevalence for serious

mental health problems (de Jong et al, 2000). The amount of violence to which refugees are exposed tends to predict the level of functioning associated with mental disorder (Berthold, 1999). Other factors can also affect prevalence. For example, rates of service utilization for substance abuse in the USA increased following the aggressive introduction of cocaine and the associated increase in the prevalence of disorders resulting from its use (Rupp, 1998).

Differences in self-reported prevalence rates may, in part, be explained by the *stigma* associated with mental disorders and punitive state responses to mental illness including eugenics in some countries. This stigma can result in under-reporting and under-treatment. People in developing countries may also hold fatalistic beliefs about mental illness (for example, mental illness as punishment for past bad deeds), which mitigate against individuals seeking professional help (Yousaf, 1997; Laungani, 1997; Desjarlais et al, 1995). Even in developed countries where community education campaigns have tried to de-stigmatize mental illness and services are more accessible, there is evidence that stigma still mitigates against people seeking treatment (Jorm, 2000). Once help seeking behavior has occurred, Wang and colleagues (2000) in their survey of respondents in eleven countries (including 3 developing countries), found successful initiation and adherence to treatment depends critically on patient's knowledge about their illness. The issues of stigma and poor mental health literacy make market failure in mental health more likely than in other areas of health.

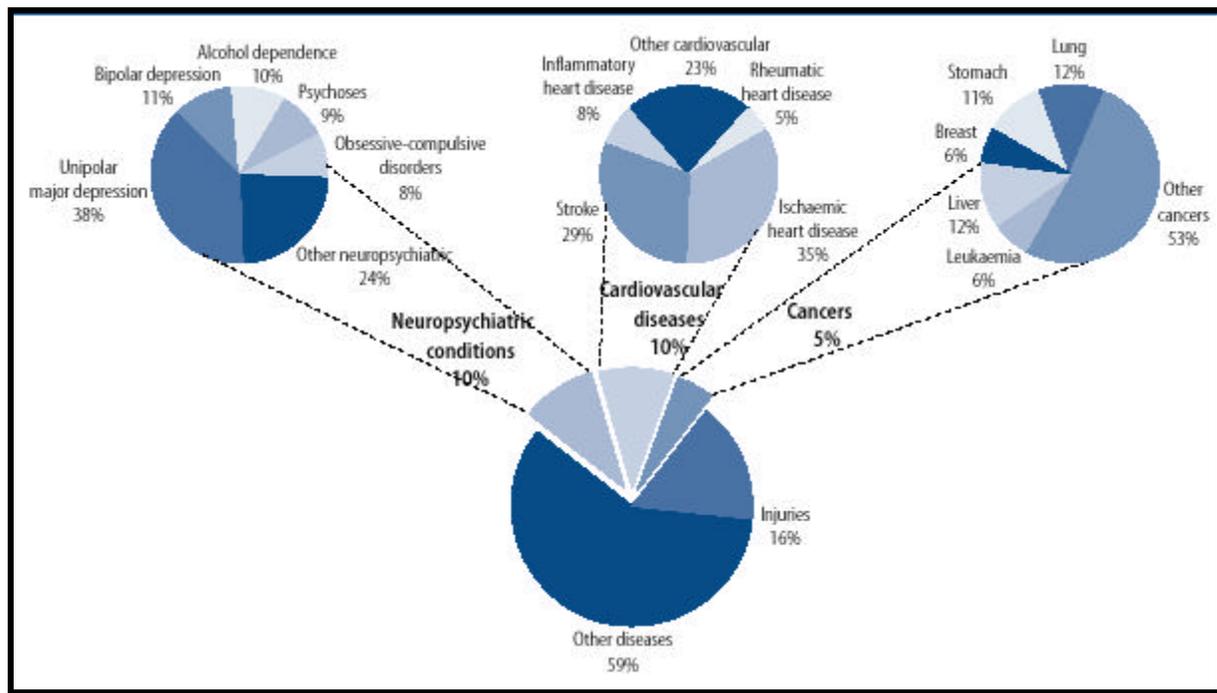
Traditional healers are a major source of care for people with mental health problems in many developing countries, especially for women and those with little education. This may be another explanation for low treatment rates in some medical settings. Saeed et al (2000) found 61% of attenders at faith healers in Pakistan suffered mental disorder. They also found there was little agreement between the faith healers' classification and medical diagnosis.

Mental disorders are disabling. Many studies have confirmed this, including the WHO Collaborative Study on Psychological Problems in General Health Care (Ormel et al, 1994), which surveyed 26,000 patients in 14 countries. The Global Burden of Disease Project has calculated the burden of disease in each country by combining the mortality (years of life lost through premature mortality, YLL) and morbidity (years lived with disability, YLD) associated with each disease (Murray and Lopez, 1996). Thus global disease burden (Disability Adjusted Life Years, DALYs) was able to be quantified, not only in terms of number of deaths, but also in terms of the impact of premature death and disability. With this shift in method, many of the major causes of mortality (eg communicable diseases) remained prominent, however the burden of disabling but non-fatal disorders was recognised (Figure 1).

This work demonstrated the previously under-recognized contribution of high prevalence, disabling conditions such as mental disorders. In 1998 23.5% of all DALYs lost in high income countries, and 10.5% of DALYs lost in low/medium income countries, were estimated to be due to neuropsychiatric conditions (World Health Organization, 1999). These disorders accounted for 28.5% of all disability worldwide, ranging from 47% in established market economies, such as the United States, to 16% in Africa. Five of the ten leading causes of disability worldwide are mental disorders - major depression, alcohol use, bipolar disorder, schizophrenia and obsessive compulsive disorder. Depression is estimated to be the leading cause of

DALYs lost in the world in the 15-44 age group and the leading cause of disability (YLD) in the entire world (Murray and Lopez, 1996; Ustun (1999)).

Figure 1. The emerging challenges: DALYs attributable to non-communicable diseases in low and middle-income countries, estimates for 1998. (World Health Report, 1999)



The neuropsychiatric group of disorders used in the Global Burden of Disease work comprise mental disorders, neurological disorders and substance abuse (Table 1).

Table 1 Percentage of total burden of disease in DALYs due to neuropsychiatric disorders, by WHO Regions. Estimates for 1999.

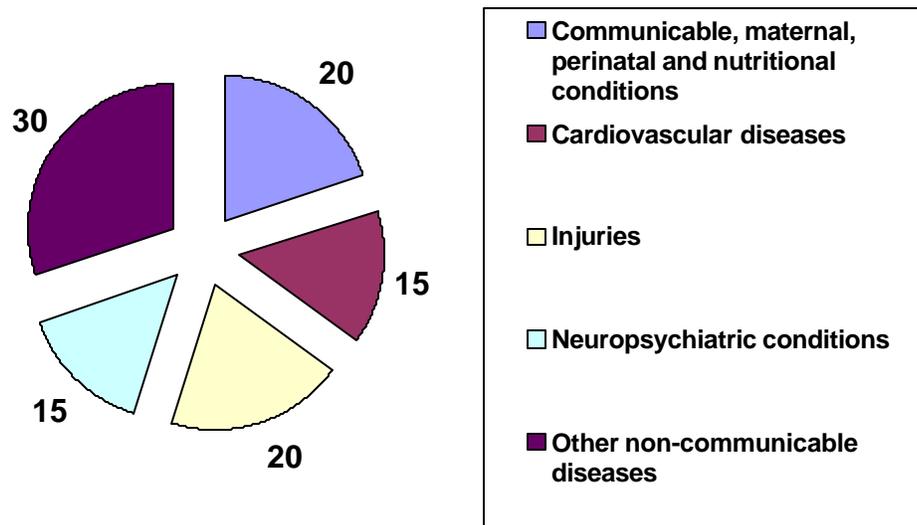
	Total	Africa	The Americas	Eastern Med	Europe	South-East Asia	Western Pacific
Unipolar major depression	4.1	1.5	6.0	3.6	6.1	3.7	6.9
Bipolar affective disorder	1.1	0.4	1.6	1.1	1.4	1.1	1.9
Psychoses	0.8	0.2	1.6	1.1	1.6	0.9	0.8
Alcohol dependence	1.3	0.6	5.0	0.2	3.6	0.6	1.1

Alzheimer and other dementias	0.7	0.1	1.4	0.2	2.1	0.5	1.0
Parkinson disease	0.1	0.0	0.2	0.1	0.3	0.1	0.2
Multiple sclerosis	0.1	0.0	0.2	0.1	0.3	0.1	0.1
Drug dependence	0.4	0.1	1.4	0.7	1.1	0.1	0.2
Post-traumatic stress disorder	0.2	0.1	0.2	0.2	0.2	0.1	0.2
Obsessive-compulsive disorder	0.8	0.3	1.2	0.8	1.2	0.7	1.3
Panic disorder	0.4	0.2	0.6	0.3	0.6	0.3	0.6
All neuropsychiatric disorders	11.0	4.3	21.0	9.5	19.4	9.1	15.2

Source: World Health Report 2000

With the epidemiological and associated health transition, the burden of mental disorders is rising. The Global Burden of Disease report estimated that mental disorders would account for 15% of the total burden of disease in the year 2020 (Figure 2). In established market economies, mental disorders, including dementia, are estimated to account for 22% of the total burden of disease in 2020. Further, depression was estimated as likely to be the second most important determinant of the global burden of disease by the year 2020. The report showed that mental disorders will be the principal cause of Years Lived with Disability (YLD) and that, because of this, mental disorders will continue to rank high in any table of the global burden of disease.

Figure 2. Global Burden of Disease 2020
Percent of all disability-adjusted life years (DALYs) World



In addition to the psychiatric burden, persons with mental disorders have a high prevalence of concurrent physical disease. Abiodun (2000) found the rate of physical morbidity amongst psychiatric in-patients in a Nigerian general hospital to be 27%. Older psychiatric patients were observed to be significantly more likely to suffer from physical morbidity. Over 70% of physical disorders were undiagnosed by the referring sources. Nhiwatiwa and colleagues (1998) found prevalence of psychiatric morbidity amongst post partum women in Zimbabwe to be 16% while Abou-Saleh and Ghubash (1997) found the prevalence in Dubai was between 18% and 24%. The latter concluded that the prevalence of postpartum psychiatric morbidity and its risk factors in this Arab culture are similar to the results obtained in studies conducted in industrialized countries.

3. ECONOMIC CONSEQUENCES OF MENTAL ILLNESS

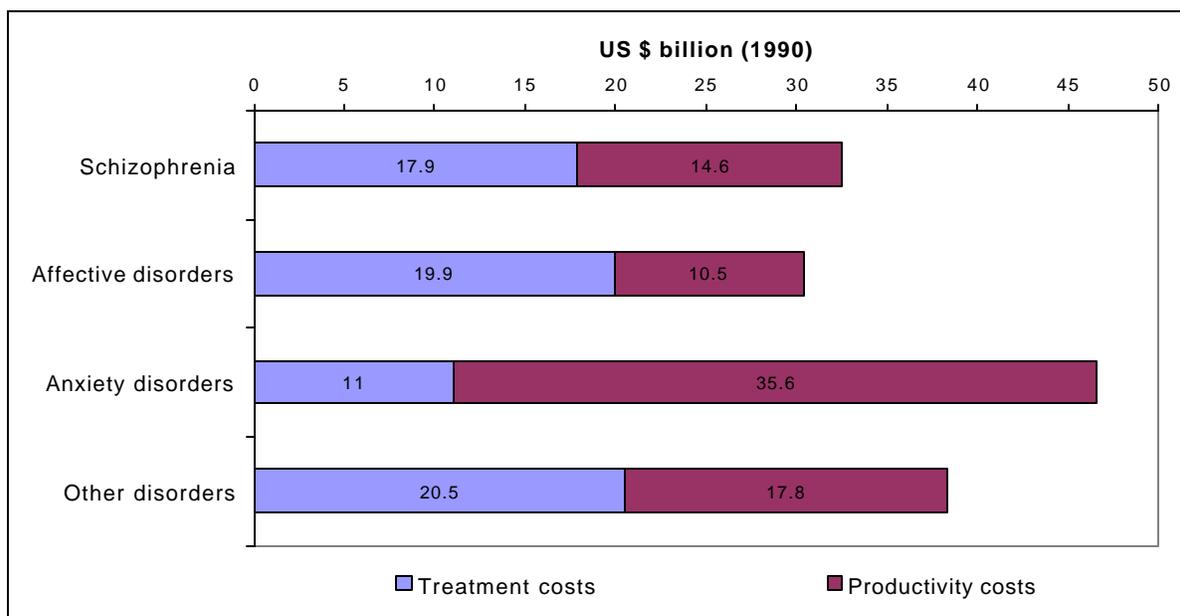
Mental disorders have wide ranging impacts on the individual and society with resultant costs that can be identified. These include cost of treatment and social welfare, transfer payments, lost productivity in remunerated or non-remunerated roles, costs to the family or caregivers, mortality and externalities.

Cost-of-illness studies have usually been focussed on individual disorders, and have mostly been carried out in developed countries. The US studies based on the Epidemiological Catchment Area (ECA) Study (Rice et al, 1990) included a wide service range, training costs, program administration, the net cost for private health insurance, the value of reduced or lost productivity due to morbidity, the costs of premature mortality, victim costs of crime and criminal justice system expenditures, and the value of time spent by family caregivers supporting their relatives. Direct

costs were built up from service utilisation rates found in the ECA surveys and national expenditure data. Indirect costs were based on the human capital approach: the value of labour at market prices forgone as a direct result of mental health problems, weighted by average incomes. Multivariate statistical methods were used to adjust income effects by taking into consideration other socio-economic variables. In this way, Rice and colleagues calculated an aggregate cost of \$148 billion (at 1990 prices) for all psychiatric disorders together. One of the most important findings is that the indirect costs either match or outweigh the direct costs for all mental disorders. A considerable proportion of these total costs to society are attributable to work related disability and associated productivity losses (Rice et al 1995; Figure 3). Mental health problems accounted for about 2.5% of GNP in the US.

Taking schizophrenia as an example, cost-of-illness studies have now been conducted in at least a dozen countries (Knapp and Mangalore, in preparation). The cost of schizophrenia is high, long lasting and usually underestimated. The impact of schizophrenia on health care budgets is substantial, typically between 1.5% and 3% of total national health care expenditures in developed countries (de Hert et al., 1998; Knapp, 1997). Sizeable proportions of total in-patient budgets are accounted for by people with schizophrenia. Generally between one- and two-thirds of the total health care cost of schizophrenia is for hospitalisation, even in countries which have already substantially reduced their in-patient provision (e.g. Amaddeo et al., 1997; Salize and Röler, 1996). Indirect costs of schizophrenia are estimated to be up to seven times higher than direct costs (Andrews et al., 1985; Knapp, 1997; Kissling et al, 1999). Less readily observed, but often no less important, are costs to other care organisations and public sector bodies, particularly social service (welfare) agencies, housing departments and the criminal justice system. Even for less severe mental disorders the socioeconomic impact can be substantial, as Judd and colleagues (1996) have shown with subsyndromal depression.

Figure 3. The economic burden of mental disorders in the USA, 1990 (Rice et al 1995)



There is some evidence (Gwatkin et al, 1999) that the greatest burden of disease amongst the poor comes from communicable disease. Non-communicable diseases are considered to, predominantly, be diseases of the richer people. For mental disorders there is a well-established relationship between poverty and mental illness (Saraceno and Barbui, 1997; Patel et al 1997, 1998, 1999) which requires services to be provided for mental disorders when prioritising programs for those in poverty.

HEALTH SERVICE UTILISATION

In both developed and developing countries the majority of persons with mental disorders are untreated (eg Andrews et al, 2001; Algeria et al, 1991). While methodological issues create problems for estimation, the economic costs of not treating mental disorders can be significant (Rupp, 1995). Mental health care, when it is provided, can be in primary or secondary (specialist) sectors. However in virtually all countries the majority of utilization is in primary care. This is especially the case in developing countries (Murthy, 1998). Comprehensive public mental health services, which appear sustainable, have been described in developing countries (de Jong, 1996). Nevertheless, the need to train primary health care workers in detecting and managing mental disorders is constantly emphasised (Abiodun, 1998).

The work of Harding et al (1980) confirmed that mental disorders comprise a significant proportion of primary care work in developing countries. A WHO collaborative study on psychiatric disorders in general health care (Ustun and Sartorius, 1995) identified that about 25% of all primary care attendees were suffering from a mental disorder. This work reported substantial disability (Ormel et al, 1994) and has been replicated in other studies from developed countries (Wells et al, 1989; Broadhead et al 1990; Olfson et al, 1997 and von Korff et al 1992) and developing countries (Chisholm et al 2000; Patel et al 1998; Alegria et al, 1991 and Patel et al 1997).

Clearly, service utilisation drives the direct health costs for all disorders. Berto et al (2000) reviewing cost of illness estimates for depression, concentrating on the USA, UK and Italy, found the most important contributor to the direct costs of depression is hospitalisation accounting for around half the total in the UK and three-quarters in the US. Further the discrepancy between epidemiological studies and treated prevalence studies creates a dilemma. Direct cost estimates are based on the treated prevalence, whereas indirect costs are often based on population prevalence (Rupp 1998). An increase in the rate of utilization of health services may lead to a higher treatment costs but this can be justified by delivering cost effective treatments. The return on the investment is less disability and a return of those treated to their social roles.

In developing countries the cost of treatment of mental illness appears comparable to other common health problems. For example, Suleiman and colleagues (1997) in Nigeria found that more working days were lost by patients with schizophrenia and their relatives compared to a cohort with diabetes, and that the overall treatment costs were lower for the schizophrenia.

While recognising the market failure in health care, much of what passes for mental health services in developing countries is unregulated. Where governments are reforming their health systems the balance of private versus public provision is ad hoc. For example the evidence from Tanzania and Zimbabwe suggests there is a focus on inputs rather than system organisation; attempts to control access and quality but not quantity, price or distribution; and a failure to deal with anti-competitive practices and patient rights (Kumaranayake et al, 2000).

NON HEALTH SOCIAL SERVICES

Many people with mental disorder use social services (social welfare) agencies, housing services and education services. Access to these services, which are often provided outside the formal health system, is critical to the success of primary and community mental health care (Whiteford, 1994). Even in many developing countries, multi-agency support arrangements are now the norm, not the exception.

DAYS OUT OF ROLE

A substantial proportion of the global economic impact of mental health problems stems from difficulties in finding and keeping paid employment, achieving career progression, and contributing productively when at work (Harnois and Gabriel, 2000). Although more difficult to calculate, there are also substantial costs associated with lost productivity in 'non-remunerated' roles.

As would be expected, the burden of mental disorders shown in the Global Burden of Disease Study has been complemented by impressive data, primarily from established market economies, of their contribution to 'days out of role'. Data from the US National Comorbidity Survey has shown that work impairment is one of the major adverse consequences of psychiatric disorder with approximately one billion lost days of productivity per year in the civilian workforce (Kessler and Frank, 1997). Kessler and colleagues (1999) analysed data from two US national surveys and found that depressed workers had between 1.5 and 3.2 more short term work disability days over a thirty day period than other workers with a salary-equivalent productivity loss averaging between US\$182 and US\$395. These workplace costs were nearly as large as the direct costs of successful depression treatment which suggests that encouraging depressed workers to obtain treatment might be cost-effective for employers. Depression has also been shown to have both a greater length of disability and disability relapse than comparison medical conditions (Conti and Burton, 1994). This study showed that depression was the most common diagnosis encountered in the employee assistance program studied.

Rice et al. (1990) reported that lost work days due to mood disorders cost the US economy \$2.2 billion in 1990, whilst mortality (also reckoned in terms of lost productivity) cost another \$7.7 billion. In total, these were equivalent to just over half the total health care costs of treating people with these disorders (\$19.8 billion). Greenberg et al. (1993) reported lower health care costs for the same year (\$12.4 billion). However, their estimated costs for work days lost (\$11.7 billion), reduced productivity while at work (\$12.1 billion) and mortality (\$7.5 billion) were much

larger. Greenberg's work suggested the employment-related impacts were 2.5 times larger than the health care costs. Unfortunately no cost of illness studies have yet adequately included the costs of reduced productivity in the workplace (work "cut back" days), an impact which potentially could be substantial (Rosenbaum and Hylan, 1999).

Simon et al (2001) reviewed the literature on the impact of depression on work productivity and the potential for improved work performance associated with effective treatment. They concluded that productivity gains following effective depression treatment could far exceed direct treatment costs. Compared with other conditions, workers with mental disorder are more likely to go to work but perform suboptimally (Dewa and Lin, 2000). The magnitude of "work cutback" has highlighted the previously "hidden" disability of mental disorders. Berndt and colleagues (1998) have shown that for chronically depressed individuals, the level of perceived at-work performance is negatively related to the severity of the depressive illness and that a reduction in the severity of depression rapidly improves the patient's work performance. US data suggests that, for mental disorders, the number of work cutback days is five times the number of days lost through absenteeism (Kessler and Frank, 1997). With treatment there is a substantial improvement in productivity (Finkelstein et al, 1996) and US data on over 1500 consecutive insurance claims showed that treatment for migraine, anxiety and depression resulted in the greatest long-term percentage improvement in productivity following treatment (Berndt et al, 1997). In the McDonnell-Douglas program (1990) adequate treatment for mental illness reduced work loss days by 25% and produced an 8% reduction in turnover for people with psychiatric illnesses.

Even mild levels of depression can result in social and occupational problems (Magruder and Calderone, 2000). Judd and colleagues studied the socioeconomic burden of subsyndromal (mild) depressive symptoms in the general population and found high levels of household strain, social irritability, and financial strain as well as limitations in physical or job functioning, restricted activity days, bed days, and poor health status in this group.

Studies are limited in developing countries however it has been shown that lost productivity is associated with mental disorders in these countries also (Westermeyer, (1984). Some early results from the World Bank Living Standards Studies (Frank personal communication) suggest that mental illness results in lower incomes. For example in Bulgaria, households with persons with a mental illness were earning 63% of the average household income. These are provocative results which require further study. It may be that poor people report themselves as being disabled. The challenge is to tease out the relationship.

Chisholm et al. (2000) identified evidence on service use and costs in two districts of India and Pakistan. Combining health care and patient/family costs, the economic impact of depression and anxiety in the Bangalore (India) site was Indian Rupees 700 per month, and in the Rawalpindi (Pakistan) site was more than Pakistani Rupees 3000 per month. This was equivalent to between 7 and 14 days of an agricultural workers' wages in India, and approximately 20 days work in Pakistan. Suleiman (1997) found more working days were lost by patients with schizophrenia and their relatives compared to a cohort with diabetes.

However, in order to understand causal relationships between mental health and economic loss, longitudinal studies in developing and developed countries are required. The currently available studies highlight the need for improved measurement of both mental illness and economic consequences especially in developing countries. Further, most economic indicators have been constructed in developed countries and their relevance to low and middle income countries may be questionable. Some common forms of care are unique to developing countries. Traditional healers are rarely considered in calculating direct care costs in developed countries because the magnitude of their contribution is so much smaller. Further, costs do not stay constant even within countries (eg medication costs may fluctuate greatly in developing countries).

FAMILY AND CAREGIVER IMPACTS

Illness and disability can reduce productivity where a family member takes days out of their role to care for or support a family member who is unwell. This cause of lost productivity is particularly common in developing countries where health and support services can be seriously deficient. The magnitude of unpaid caring is enormous. The United Nations Development Programme estimated that US\$ 16 trillion of unpaid caring work was missing from the 1995 global GDP of US\$ 24 trillion (United Nations Development Programme, 1995). This emphasises the broader social costs of illness and disability.

With mental disorder, the burden of lost employment and days out of role for family members caring for a relative with mental health problems is well documented (Sallah, 1994. Lindström, 1996; Kissling et al., 1999; Ip and McKenzie 1998; Magliano et al., 1998; Goeree et al., 1999).

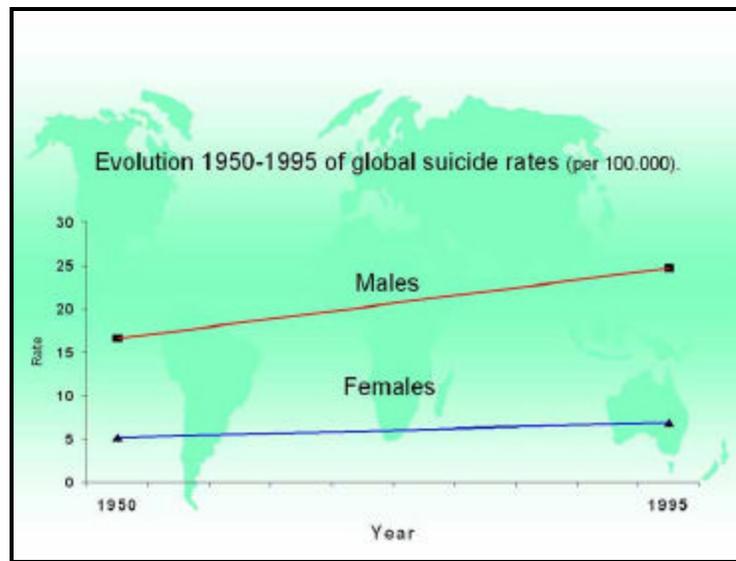
MORTALITY

Persons with mental disorders have an increased risk of premature death. Some mental health problems have quite high mortality rates through suicide (Harris and

Barracough, 1998). WHO estimated that in the year 2000 approximately one million people died from suicide, representing a global mortality rate of 16 per 100,000. WHO reports that, in the last 45 years, suicide rates have increased by 60% worldwide (Figure 4). Suicide is now one of the three leading causes of death among those aged 15-44 (both sexes). Suicide attempts are up to 20 times more frequent than completed suicides.

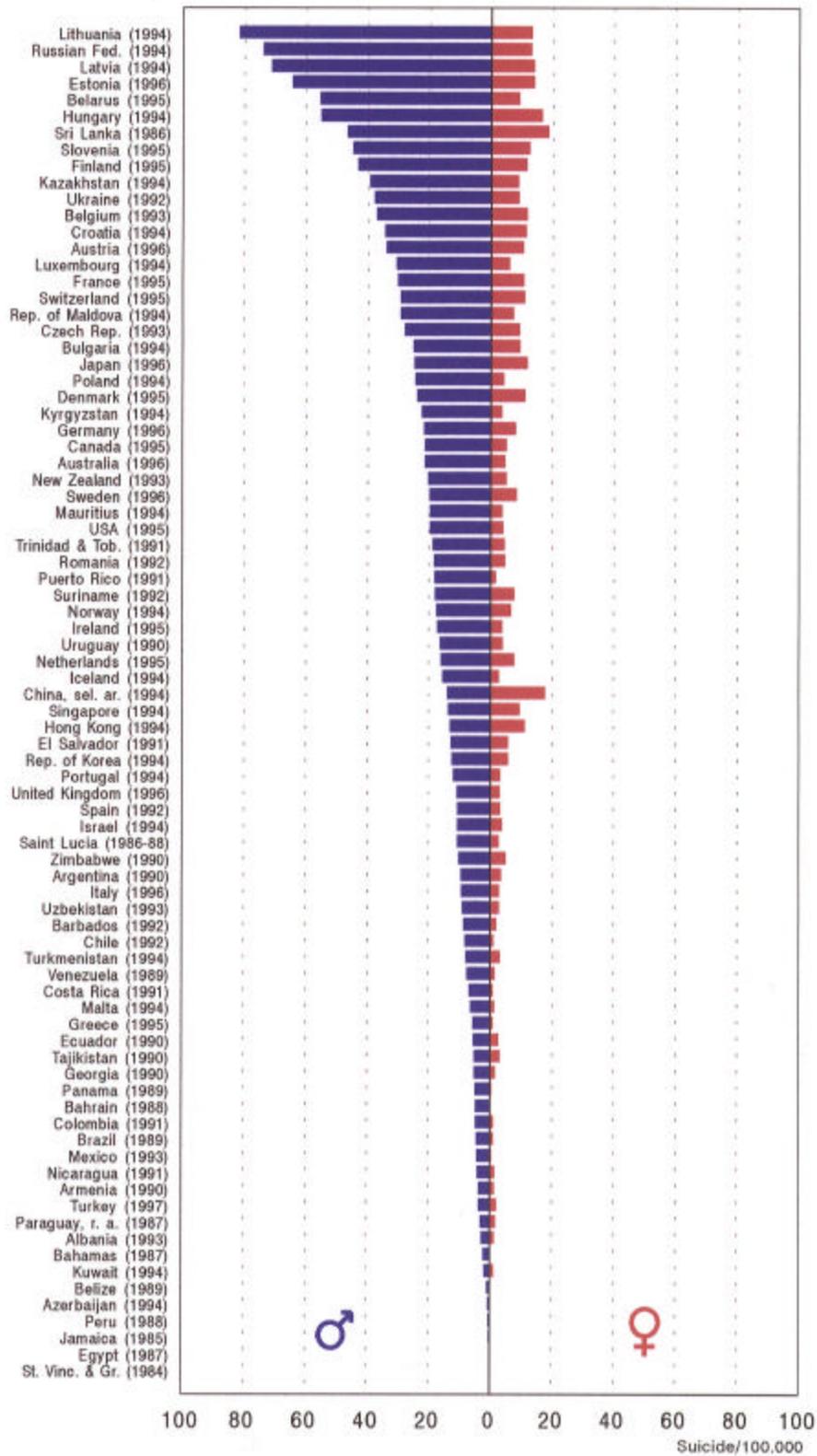
Further, suicide rates affecting young people have increased to such an extent that they are now the group at highest risk in a third of all countries. Mental disorders (particularly depression and substance abuse) are associated with more than 90% of all cases of suicide. However, suicide results from many complex sociocultural factors and is more likely to occur during periods of socioeconomic, family and individual crisis. Suicide rates are highest in the countries of Eastern Europe and Central Asia (Figure 5).

Figure 4. Global Suicide Rates 1950-1995



Source: http://www.who.int/mental_health/Topic_Suicide/Graph2.htm

Figure 5. Male and Female Suicide Rates by Country



WHO (1996). World Health Statistics Annual 1995. Geneva. World Health Organisation.

TRANSFER PAYMENTS

Social security, welfare or income support payments are transfers from one part of society (taxpayers or social insurance contributors) to another (benefit recipients), but not in exchange for goods or services. Such payments can represent a major component of the costs to the community for mental disorders. In Australia, the decision to launch a National Mental Health Reform program in 1992 was strongly influenced by the finding that Federal social welfare expenditure on people with mental illness was almost A\$2 billion in 1991, compared to the combined state expenditure on mental health services of less than A\$1 billion (Whiteford et al, 1993).

This type of information often highlights policy inconsistencies. In the Australian example, the Federal government spent A\$1.45 billion in 1991/92 on income security for people with mental illness and psychiatric disability, but at the same time excluded them from the programs designed to decrease dependence on welfare payments and help disabled people back into the workforce (Whiteford, in press).

EXTERNALITIES

Providing treatment for individuals with mental disorder creates benefits for many parties, other than the person. Positive externalities accrue to employers through reduced absenteeism and higher productivity, family members and friends through lower burden of care and governments and other agencies through fewer transfer payments (Wells and Sturm, 1995).

However for individuals with mental disorders such as schizophrenia there are externalities arising from untreated illness which are not found for other health conditions. For example there are costs to the police and judicial system associated with crime and public safety, even though on aggregate, 'most people with a mental disorder offer no risk to others' (Taylor and Gunn, 1999).

4. COST EFFECTIVE MENTAL HEALTH INTERVENTIONS

There is good evidence for the effectiveness of mental health interventions. Nathan and Gorman (1998) provide a summary of efficacious interventions based on the results of randomized controlled trials (Table 2). Since Weisbrod (1983) conducted one of the first cost-benefit evaluations in mental health, comparing assertive case management to traditional hospital-based care, there has been an exponential rise in research in this area.

Examples of recent summaries and reviews include depression (Rosenbaum and Hylan, 1999), schizophrenia (Knapp et al, 1999), alcoholism (WHO Brief Intervention Study Group, 1996), dementia (Jonsson et al, 2000) and opiate dependence (Ward et al 1998). Rupp (1995) demonstrated that cost-benefit analysis provides some evidence that appropriately treating people with untreated depression is cost-beneficial. Simon and colleagues (2001) have undertaken a review of the

literature which suggests that productivity gains exceeds the cost of treating depression.

Table 2: Efficacious Treatment (Nathan and Gorman 1998).

DISORDER	TREATMENT
Alcohol dependence	Cognitive Behaviour Therapy, naltrexone
Acute Mania	Lithium, valproate, carbemazine
Borderline Personality Disorder	Antidepressants, Cognitive Behaviour Therapy
ADHD	Stimulants
Conduct Disorder	Structured therapies
Dementia	Acetylcholinesterase inhibitors
Generalised Anxiety Disorder	Pharmacological Interventions(TCAs SSRIs MAOIs), Cognitive Behaviour Therapy
Obsessive Compulsive Disorder	Cognitive Behaviour Therapy, benzodiazepines, buspirone, TCAs
Panic	Behaviour Therapy, Cognitive Behaviour Therapy, TCAs MAOIs benzodiazepines, SRIs, SSRI
Post traumatic stress disorder	TCAs SSRIs MAOIs, Behaviour Therapy
Schizophrenia	Antipsychotics, Behaviour Therapy, Social Skills Training, Family Therapy
Social phobia	Cognitive Behaviour Therapy, SSRIs MAOIs, benzodiazepines
Opiate Use	Methadone, naltrexone

The widening recognition of mental health as a significant international public health issue has led to an increasing need to demonstrate that investment of resources into service development is not only required but also worthwhile in countries with varying socioeconomic circumstances. Specifically, there is a need to generate evidence on affordable, cost-effective, generalisable and sustainable mental health care strategies, which can support mental health policy initiatives by governments and donor agencies alike.

PHARMACOTHERAPY

Most economic studies have focused not on the cost-effectiveness of active pharmacotherapy over placebo or no care *per se*, but on the relative cost-effectiveness of newer classes of anti-depressant and anti-psychotic medications over their older counterparts (tri-cyclic anti-depressants and conventional neuroleptics, respectively). Synthesis of the available evidence indicates that these newer psychotropic drugs have less adverse side-effects on users but are not significantly more efficacious, and that the considerably higher acquisition costs of the newer drugs are offset by a reduced need for other care and treatment (Knapp et al, 1999; Rosenbaum and Hylan, 1999). The ultimately inconclusive evidence arising out of the experimental and simulated studies carried out to date therefore suggests that the first-line choice of drug, particularly in localities where evidence has not been accrued, remains to a large

extent a question of preference and affordability. For example, fluoxetine, one of the newer class of anti-depressants, may represent a more attractive and affordable prescribing option in lower-income countries as its patent expires (or where it is already available at a similar cost to older drugs, such as in India). What is less in question is the superior efficacy of these psychotropic agents over no treatment or placebo in reducing psychotic or depressive symptoms, associated disabilities and service costs in the acute phase of illness, and if appropriately managed, over the longer-term as well.

PSYCHOLOGICAL INTERVENTIONS

Encouraging evidence is emerging in relation to the cost-effectiveness of psychotherapeutic approaches to the management of psychosis and a range of mood and stress-related disorders, in combination with or as an alternative to pharmacotherapy (Miller and Magruder, 1999). A consistent research finding is that psychological interventions lead to improved satisfaction and treatment concordance, which can contribute significantly to reduced rates of relapse, hospitalisation and unemployment. For example, controlled cost-outcome trials of family therapy for schizophrenia carried out in the UK, USA and China each identified appreciably greater reductions in relapse rates, hospital re-admission and family burden for study subjects in receipt of the family intervention (Knapp et al, 1999). In a similar vein to newer psychotropic medications, there is a prevailing (if not fully substantiated) view that the additional costs of psychological treatments are countered by decreased levels of other health service support or contact (Miller and Magruder, 1999; Rosenbaum and Hylan, 1999). A controlled trial of brief physician advice to problem drinkers in primary care, for example, produced a cost-benefit ratio of 1:5.6, with savings made up of reduced use of hospital services and avoided crime and motor accidents in broadly equal measure (Fleming et al, 2000).

CARE MANAGEMENT APPROACHES

Key challenges in the effective management of common mental disorders include the recurrent nature of many conditions and the high rate of treatment discontinuation, which suggest the need for a proactive, chronic disease management model. A series of studies undertaken in Seattle and elsewhere in the US, for example, have shown that important gains in clinical outcomes and functioning can be achieved for a modest investment via the pursuit of disease management and quality improvement programs for depression in primary care settings (Rosenbaum and Hylan, 1999; Simon et al, 2001). For more persistent and severe disorders including schizophrenia, various permutations of an assertive or intensive community treatment model have been tested as an alternative to hospital-based care; on balance, research studies have shown a positive if slowly declining impact on the clinical outcomes and satisfaction of patients, as well as on the costs and processes of care (Knapp et al, 1999). A similar finding emerged from the evaluation of an educational programme to prevent depression and suicide in Sweden: the programme resulted in considerable economic savings to society (a cost-benefit ratio of 1:30 in direct costs of care, and 1:350 in terms of productivity gains and mortality reductions), but initial improvements gradually faded over the follow-up study period (Rutz et al, 1992).

In developing countries there are few studies (Shah & Jenkins, 1999). However, cost effective interventions can often be developed at a local level in developing countries. For example, Salleh (1994) reported on an intervention for families of schizophrenic patients appropriate for China's complex family relationships and unique social environment. With this intervention, the proportion of subjects re-hospitalised was lower, the duration of re-hospitalisation was shorter, family burden less and the duration of employment was longer in the group receiving the intervention, than in the control group. The intervention was less costly than standard treatment.

A report commissioned by the Global Forum for Health Research and the US National Institutes of Health, and carried out by the US Institute of Medicine, was released in May 2001 (Institute of Medicine, 2001). This report identifies, in more detail, cost effective interventions for selected mental and neurological conditions, with specific attention paid to developing countries.

Economic burden and the prospect for returns by investing in the eroded human capital resulting from mental disorders is an important but not sufficient reason for a country to provide resources to the address the mental health of its population. The provision of resources and the development of systems to deliver cost effective interventions provides a basis for programs which not only reduce the disability associated with these disorders but to also promote human development and social justice.

REFERENCES

- Abiodun, O. A. (2000). Physical morbidity in a psychiatric population in Nigeria. General Hospital Psychiatry 22(3): 195-9.
- Abiodun, O.A. (1998). Psychotropic drug use in primary health care units in Nigeria. East African Medical Journal, 75 (6): 339-341.
- Abou-Saleh, M. T. and Ghubash, R. (1997). The prevalence of early postpartum psychiatric morbidity in Dubai: A transcultural perspective. Acta Psychiatrica Scandinavica, 95(5): 428-32.
- Alegria, M., Robles, R. et al. (1991). Patterns of mental health utilization among island Puerto Rican poor. American Journal of Public Health 81(7): 875-9.
- Alexander, A.C.G. (1990). McDonnell Douglas Corporation employee assistance program financial offset study, 1985-1989. Westport CT, Alexander Consulting Group: 20.
- Almeida-Filho, N., Mari, J. J. & Coutinho, E.A., S.; Fernandes, J.; França, J. (1997). Brazilian multicentric study of psychiatric morbidity. Methodological features and prevalence estimates. British Journal of Psychiatry, 171 (December): 524-529.
- Amaddeo, F., Beecham, J., Bonizzato, P., et al (1997). The use of a case register to evaluate the costs of psychiatric care. Acta Psychiatrica Scandinavica, 95 (3), 189-98.
- American Psychiatric Association (1994). Diagnostic and statistical manual of mental disorders. 4th ed. APA.
- Andrews, G., Hall, W., Goldstein, G., et al (1985). The economic costs of schizophrenia. Implications for public policy. Archives of General Psychiatry, 42 (6), 537-43.
- Andrews, G, Henderson S, and Hall W, (2001) Prevalence, comorbidity, disability and service utilisation: Overview of the Australian National Mental Health Survey. British Journal of Psychiatry, 178: 145-153.
- Araya, R., Rojas, G., Fritsch, R., Acuña, J. and Lewis, G. (2001). Common mental disorders in Santiago, Chile: Prevalence and socio-demographic correlates British Journal of Psychiatry, 178: 228-233.
- Berndt, E., Finkelstein, S., Greenberg, P., Keith, A., Bailit, H. Illness and Productivity: Objective Workplace Evidence. May 1997. WP #42-97. Sloan School of Management, Massachusetts Institute of Technology, Cambridge, Massachusetts.
- Berndt, E.R., Finkelstein, S.N. et al. (1998). Workplace performance effects from chronic depression and its treatment. Journal of Health Economics 17(5): 511-35.

Berto, P., D'Ilario, D., Ruffo, P., Di Virgilio, R., Rizzo, F. (2000a). Depression: cost-of-illness studies in the international literature, a review, Journal of Mental Health Policy and Economics, 3: 3-10.

Berthold, M. The Effects of Exposure to Community Violence on Khmer Refugee Adolescents. (1999). Journal of Traumatic Stress, 12 (3): 455-471.

Broadhead, W.E., Blazer, D.G., George, L.K., et al (1990). Depression, disability days, and days lost from work in a prospective epidemiologic survey. JAMA, 264 (19): 2524-8.

Chisholm, D., Sekar, K., Kishore, Kumar K., Saeed, S., James, S., Mubbashar, M., Srinivasa Murthy, R. (2000). Integration of mental health care into primary care: demonstration cost-outcome study in India and Pakistan, British Journal of Psychiatry, 176: 581-588.

Conti, D.J. and Burton, W.N. (1994). The economic impact of depression in a workplace. Journal of Occupational Medicine, 36 (9): 983-8.

de Hert, M., Thys, E., Boydens, J., et al (1998). Health care expenditure on schizophrenia patients in Belgium. Schizophrenia Bulletin, 24 (4): 519-27.

de Jong , J. T. (1996). A comprehensive public mental health programme in Guinea-Bissau: a useful model for African, Asian and Latin-American countries. Psychological Medicine, 26 (1): 97-108.

de Jong, J. P., Scholte, W. F., Koeter, M. W., et al (2000). The prevalence of mental health problems in Rwandan and Burundese refugee camps. Acta Psychiatrica Scandinavica, 102 (3): 171-7.

Desjarlais, R., Eisenberg, L., Good, B., et al (1995) World Mental Health Problems and Priorities in Low-Income Countries: Oxford University Press.

Dewa, C., Lin, E. Chronic physical illness, psychiatric disorder and disability in the workplace. (2000). Social Science and Medicine, 51: 41-50.

Ettner, S., Frank, R. and Kessler R. (1997). The impact of psychiatric disorders on labor market outcomes. Industrial and Labor Relations Review, 51(1): 64-81.

Finkelstein, S., Berndt, E., Greenberg, P., Parsley, R., Russell, J., Keller, M., Chronic Depression Study Group (1996). Improvement in Subjective Work Performance after Treatment of Chronic Depression: Some Preliminary Results. Psychopharmacology Bulletin, 32 (1): 33-40.

Fleming, M.F., Mundt, M.P., French, M.T., Manwell, L.B., Stauffacher, E.A., Barry, K.L. (2000). Benefit-cost analysis of brief physician advise with problem drinkers in primary care settings. Medical Care, 38:7-18.

Goeree, R., O'Brien, B. J., Goering, P., et al (1999). The economic burden of schizophrenia in Canada. Pharmacoeconomics, 15 (6): 597-610.

- Greenberg, P.E., Stiglin, L.E., Finkelstein, S.N. et al. (1993). The economic burden of depression in 1990, Journal of Clinical Psychiatry, 54: 405 - 418.
- Griffiths, R., Schrammel, P. et al. (1999). Payer costs of patients diagnosed with epilepsy, Epilepsia, 40 (3): 351-8.
- Gwatkin, D.R., Guillot, M. & Heuveline, P. (1999). The burden of disease among the global poor [see comments]. Lancet, 354 (9178): 586-9.
- Harding, T.W., de Arango, M.V., Baltazar, J., et al (1980). Mental disorders in primary health care: a study of their frequency and diagnosis in four developing countries. Psychological Medicine, 10 (2): 231-41.
- Harnois, G., and Gabriel, P. (2000). Mental Health and Work: Impact, Issues and Good Practices, WHO, Geneva.
- Harris, E.C. and Barraclough, B. (1998). Excess mortality of mental disorder. British Journal of Psychiatry, 173: 11-53.
- Institute of Medicine (2001). Neurological, Psychiatric, and Developmental Disorders: Meeting the Challenges in the Developing World. Washington DC: Institute of Medicine, National Academy of Sciences.
- Ip, G.S. and Mackenzie, A.E. (1998). Caring for relatives with serious mental illness at home: the experiences of family carers in Hong Kong. Archives of Psychiatric Nursing, 12 (5): 288-94.
- Jamison, D. (2001). Institute of Medicine study on the cost effectiveness of interventions for neuropsychiatric disorders. In Neurological, Psychiatric, and Developmental Disorders: Meeting the challenges in the developing world: National Academy Press.
- Jonsson, L., Jonsson. B., Wimo, A., Whitehouse, P., Winblad, B. (2000). Second International Pharmacoeconomic Conference on Alzheimer's Disease. Alzheimer Disease Associated Disorder, 14 (3): 137-140.
- Jorm, A., Angermeyer, M. & Katschnig, H. (2000). Public knowledge and attitudes about mental disorders: a limiting factor in the optimal use of treatment services. In Unmet Need in Psychiatry: Problems Resources Responses (ed G. Andrews, Henderson, S editors), pp. 399-413. Cambridge: Cambridge University Press.
- Judd, L.L., M.P. Paulus, et al. (1996). Socioeconomic burden of subsyndromal depressive symptoms and major depression in a sample of the general population. American Journal of Psychiatry 153(11): 1411-7.
- Kessler, R., Barber, C., Birnbaum, H., Frank, R., Greenberg, P., Rose, R., Simon, G. and Wang, P. (1999). Depression in the workplace: effects on short-term disability. Health Affairs 18(5): 163-71.
- Kessler, R.C. and Frank, R.G. (1997). The impact of psychiatric disorders on work loss days. Psychological Medicine, 27 (4): 861-73.

- Kissling, W., Hoffler, J., Seemann, U., et al (1999). Direct and indirect costs of schizophrenia. Fortschr Neurological Psychiatry, 67 (1): 29-36.
- Knapp, M. (1997). Costs of schizophrenia. British Journal of Schizophrenia, 171: 509-518.
- Knapp, M. and Mangalore, R. (in preparation). The global costs of schizophrenia.
- Knapp, M., Almond, S., Percudani, M. (1999). Costs of schizophrenia. In M Maj, N Sartorius (eds). Evidence and Experience in Psychiatry, Volume 1, John Wiley and Sons, London.
- Kumaranayake, L., Lake, S., Mujinja, P., Hongoro, C., Mpenbeni, R. (2000). How do countries regulate the health sector? Evidence from Tanzania and Zimbabwe. Journal of Health, Policy and Planning, 15(4): 357-367.
- Laungani, P. (1997). Mental illness in India and Britain: theory and practice. Medical Law, 16 (3): 509-40.
- Lindstrom, E. (1996). The hidden burden of schizophrenia. Economic and clinical issues. Journal of Drug Development, 7 (2): 281-288.
- Magliano, L., Fadden, G., Madianos, M., et al (1998). Burden on the families of patients with schizophrenia: results of the BIOMED I study. Social Psychiatric Epidemiology, 33 (9): 405-12.
- Magruder, K.M. and Calderone, G.E. (2000). Public health consequences of different thresholds for the diagnosis of mental disorders. Compr Psychiatry, 41(2 Suppl 1): 14-8.
- Miller, N., Magruder, K (eds). (1999). Cost Effectiveness of Psychotherapy. Oxford University Press, New York.
- Miller, W. R., Brown, J. M., Simpson, T. L., Handmaker, N. S., Bien, T. H., Luckie, F., Montgomery, H. A., Hester, R. K., & Tonigan, J. S. (1995). What works? A methodological analysis of the alcohol treatment outcome literature. In R. K. Hester and W. R. Miller (Eds.), Handbook of Alcoholism Treatment Approaches: Effective Alternatives (pp. 12-44). Boston, USA: Allyn & Bacon.
- Mollica, R.F., McInnes, K., Sarajlic, N., et al (1999) Disability associated with psychiatric comorbidity and health status in Bosnian refugees living in Croatia. JAMA, 282 (5): 433-9.
- Murray, C.J.L. and Lopez, A.D., (eds). (1996). Global Burden of Disease. Cambridge MA: Harvard University Press.
- Murthy, R.S. (1998). Rural psychiatry in developing countries. Psychiatric Services, 49 (7): 967-9.
- Nathan, P.E. and Gorman, J.M. (1998). A Guide to Treatments That Work: Oxford University Press, New York.

- Nhiwatiwa, S., Patel, V. & Acuda, W. (1998). Predicting postnatal mental disorder with a screening questionnaire: a prospective cohort study from Zimbabwe. Journal of Epidemiology Community Health, 52 (4): 262-6.
- Olfson, M., Fireman, B. et al. (1997). Mental disorders and disability among patients in a primary care group practice. American Journal of Psychiatry 154 (12): 1734-40.
- Ormel, J., VonKorff, M., Ustun, T. B., et al (1994). Common mental disorders and disability across cultures. Results from the WHO Collaborative Study on Psychological Problems in General Health Care. JAMA, 272 (22): 1741-8.
- Patel, V., Araya, R., de Lima, M., et al (1999). Women, poverty and common mental disorders in four restructuring societies. Journal of Social Science and Medicine, 49 (11): 1461-71.
- Patel, V., Pereira, J., Coutinho, L., et al (1998). Poverty, psychological disorder and disability in primary care attenders in Goa, India. British Journal of Psychiatry, 172: 533-6.
- Patel, V., Todd, C., Winston, M., et al (1997). Common mental disorders in primary care in Harare, Zimbabwe: associations and risk factors. British Journal of Psychiatry, 171: 60-4.
- Rice, D., Kelman, S., Miller, N. et al. (1995). The Economic Costs of Alcohol and Drug Abuse and Mental Illness: 1985, Publication No. (ADM) 90-1694, Alcohol, Drug Abuse and Mental Health Administration, Rockville.
- Rice, D.P., Miller, L.S. (1996). The economic burden of schizophrenia: conceptual and methodological issues, and cost estimates, in Moscarelli M, Rupp A, Sartorius N (eds) Schizophrenia, Wiley London.
- Rosenbaum, J. and Hylan, T. (1999). Chapter 6: Costs of Depressive Disorders. In Evidence and practice in psychiatry: Depressive Disorders (ed M. S. Maj, Norman [eds.]),. John Wiley and Sons, London.
- Rumble, S., Swartz, L., Parry, C., et al (1996). Prevalence of psychiatric morbidity in the adult population of a rural South African village. Psychological Medicine, 26 (5): 997-1007.
- Rupp, A. (1995). The economic consequences of not treating depression. British Journal of Psychiatry Suppl (27): 29-33.
- Rupp, A., Gause, E. M. and Regier, D. A. (1998). Research policy implications of cost-of-illness studies for mental disorders. British Journal of Psychiatry Suppl (36): 19-25.
- Rutz, W., Carlsson, P., von Knorring, L. et al. (1992). Cost-benefit analysis of an educational program for general practitioners given by the Swedish Committee for Prevention and Treatment of Depression. Acta Psychiatrica Scandinavica, 85:457-464.
- Saeed, K., Gater, R et al. (2000). The prevalence, classification and treatment of

- mental disorders among attenders of native faith healers in rural Pakistan. Social Psychiatric Epidemiology 35(10): 480-5.
- Salize, H. J. and Rossler, W. (1996). The cost of comprehensive care of people with schizophrenia living in the community. A cost evaluation from a German catchment area. British Journal of Psychiatry, 169 (1): 42-8.
- Salleh, M. R. (1994). The burden of care of schizophrenia in Malay families. Acta Psychiatrica Scandinavica, 89 (3): 180-5.
- Saraceno, B. and Barbui, C. (1997). Poverty and mental illness. Canadian Journal of Psychiatry, 42 (3): 285-90.
- Shah, A. and Jenkins, R. (2000). Mental health economic studies from developing countries reviewed in the context of those from developed countries. Acta Psychiatrica Scandinavica, 101 (2): 87-103.
- Sharan, P., Chaudhary, G. et al. (1996). Preliminary report of psychiatric disorders in survivors of a severe earthquake. American Journal of Psychiatry 153(4): 556-8.
- Simon, G.E., Barber, C. et al. (2001). Depression and work productivity: the comparative costs of treatment versus non-treatment. Journal of Occupational Environmental Medicine, 43(1): 2-9.
- Simon, G.E., Manning, W.G., Katzelnick, D.J., Pearson, S.D., Henk, H.J., Helstad, C.P. (2001). Cost effectiveness of systematic depression treatment for high utilisers of general medical care. Archives of General Psychiatry, in press.
- Suleiman, T.G., Ohaeri, J.U., Lawal, R.A., Haruna, A.Y., Orija, O.B. (1997). Financial cost of treating out-patients with schizophrenia in Nigeria, British Journal of Psychiatry, 171: 364-368.
- Taylor, P.J., and Gunn, J. (1999). Homicides by people with mental illness: myth and reality, British Journal of Psychiatry, 174: 9-14.
- Thomas, S.V. and Bindu, V.B. (1999). Psychosocial and economic problems of parents of children with epilepsy. Seizure, 8 (1): 66-9.
- United Nations Development Programme (1995). Human Development Report. Oxford University Press. New York
- Ustun, T.B., and N., S. (Eds.). (1995). Mental Illness in General Health Care: An International Study. Chicester: John Wiley.
- Ustun, T.B. (1999). The global burden of mental disorders. American Journal of Public Health, 89 (9): 1315-8.
- Von Korff, M., Ormel, J., Katon, W., et al (1992). Disability and depression among high utilizers of health care. A longitudinal analysis. Archives of General Psychiatry, 49 (2): 91-100.
- Wang, P.S., Gilman, S.E., Guardino, M., Christiana, J.M., Morselli, P.L., Mickelson, K., Kessler, R.C. (2000). Initiation of and Adherence to Treatment for Mental Disorders. Medical Care, 38 (9): 926-936.

- Ward, J., Mattick, R.P., & Hall, W. (Eds.). (1998). *Methadone Maintenance, Treatment and Other Opioid Replacement Therapies*. Amsterdam: OPA
- Wells, K.B. and Sturm, R. (1995). Care for depression in a changing environment. Health Affairs, 14 (3): 78-89.
- Weisbrod, B.A. (1983). A guide to benefit-cost analysis, as seen through a controlled experiment in treating the mentally ill. Journal of Health Politics, Policy and Law, 7 (4): 808-45.
- Whiteford, H.A. (1994). Intersectoral Policy Reform is Critical to the National Mental Health Strategy. Australian Journal of Public Health, 18:342-344.
- Whiteford, H.A. (in press). Can Research Influence Mental Health Policy? Australian and New Zealand Journal of Psychiatry.
- Whiteford, H.A., Behan, S., Leitch, E et al. (1993). Help Where Help is Needed: Continuity of Care for People with Chronic Mental Illness. National Health Strategy Issues Paper Number 5, National Health Strategy, Melbourne.
- WHO Brief Intervention Study Group. (1996a). A cross-national trial of brief interventions with heavy drinkers. American Journal of Public Health, 86 (7): 948-955.
- World Health Organisation (1990). International classification of diseases, 10th revision. Geneva, Switzerland: WHO.
- WHO (1996). World Health Statistics Annual 1995. Geneva, Switzerland: WHO.
- WHO (1999). The World Health Report 1999 - Making A Difference. Geneva, Switzerland: WHO.
- WHO (2000). The World Health Report 2000 - Health Systems: improving performance . Geneva, Switzerland: WHO.
- Yousaf, F. Psychiatry in Pakistan. (1997). International Journal of Social Psychiatry, 43 (4): 298-302.

**BACKGROUND PAPERS FOR AND PRESENTATIONS AT THE WHO
COMMISSION ON MACROECONOMICS AND HEALTH WORLD BANK
WORKSHOP, THE UNIVERSITY OF CALIFORNIA, LOS ANGELES,
NOVEMBER 1 AND 2, 2000**

Who Commission On The Macroeconomics of Health: Dean Jamison

A Perspective From The World Bank: Florence Baingana

A Perspective From A World Health Organization Regional Office: Vijay Chandra

A Perspective From The US National Institute of Mental Health: Agnes Rupp

The Economic Burden Of Mental Illness And The Gains From Treatment: Richard Frank

Institute Of Medicine Study On The Cost Effectiveness Of Interventions For Neuropsychiatric Disorders: Dean Jamison

Cost Effectiveness Of Improving The Quality Of Care For Depression: Ken Wells

Financing Mental Health Services: Equity and Efficiency Targets: Martin Knapp

Mental Health Service Utilization: Even In The Developed World Money Is Not Enough: Gavin Andrews

Mental Health Service Delivery Within The Context Of Health Sector Reform: Harvey Whiteford

The Impact Of Psychiatric Disorders On Labor Market Outcomes: Susan Ettner

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