

## REVIEW ARTICLE

### Economics of mental health: Part I - Economic consequences of neglecting mental health - an Indian perspective

Srinivasa SRR Yerramilli\*, Rajshekhar Bipeta\*

\*Assistant Professor of Psychiatry, Institute of Mental Health, Osmania Medical College, Hyderabad. Andhra Pradesh. India

## ABSTRACT

**Background:** Mental health is not a priority area for policy makers even today.

**Objective:** The objective of the present review is to sensitize policy makers regarding the importance of investing in mental health. Appraising the policy makers about the costs of mental illness and the negative economic consequences of poor investment in mental health on the society are the aims.

**Methodology:** A review of various studies on the above subject was done using Google Scholar and PubMed.

**Results:** Most of the studies are from World Health Organization (WHO). There is paucity of studies from the developing world. The costs of mental illnesses are high. The indirect costs are much higher than direct costs. Mental illnesses impact not only the individuals but also the family and society at large.

**Conclusions:** The indirect costs of mental illnesses are much higher than the direct costs i.e. the negative economic consequences of not treating the mental illness is much higher than the costs of treatment as concluded by the World Economic Forum. Mental health and socio-economic development appear to go hand in hand. Investing in mental health is therefore investing for development.

**Key words:** costs of mental illness, consequences of mental illness on society, mental illness and its impact, burden of mental illness

## INTRODUCTION

### No progress without health:

The World Health Organisation (WHO) definition of Health has been amplified to include the ability to lead a "socially and economically productive life".<sup>[1]</sup> The 1978 declaration and subsequent global conferences of WHO,<sup>[2]</sup> have made very clear the following facts: Health and development mutually impact each other. Health contributes to and results from social and economic development. All sectors of the society affect and get affected by health. Investing in health is thus investing for development. Also, health cannot be narrowed to just a medical subject, but, should be viewed on a broader perspective. The role of many other mutually connected and interdependent sectors in the maintenance and development of Health needs to be understood.

It is 34 years since the Alma-Ata declaration, and the state of affairs has not changed in any significant manner. The investment in Health is still low, and the statement

**Address for correspondence** Dr Srinivasa SRR Yerramilli. Assistant Professor of Psychiatry, Institute of Mental Health, Osmania Medical College, S.R. Nagar, Hyderabad-500038. Andhra Pradesh. India.

Email: dryssr@yahoo.com

**How to cite this article :** Yerramilli SRR S, Bipeta R. Economics of mental health: Part I - Economic consequences of neglecting mental health - an Indian perspective. AP J Psychol Med 2012; 13(2): 80-6.

that the majority of the resources go for armaments and military conflicts (Alma Ata declaration)<sup>[1]</sup> holds true even today. Health and social markets are different from business markets. Effective and equitable care and principles of social justice should take priority over supply and demand principles.<sup>[2]</sup>

### Mental health is a neglected subject even today

Mental health is an integral part of health. Mental health is defined as "a state of wellbeing in which individuals realize their abilities, cope with the normal stresses of life, work productively and fruitfully and make a contribution to their communities."<sup>[3]</sup> WHO emphasizes that 'mental health is crucial to the overall wellbeing of individuals, societies and countries. Mental, Emotional and Behavioural disorders (MEBs) are a serious threat to national security and economy. Healthy working environments, safe living conditions, are seriously compromised by MEBs.'<sup>[4]</sup> Thus the impact of mental illnesses on the nation's/world economy is huge. Some of the losses can be measured while others cannot be quantified.

Despite it being a proven point that, there are definite gains by investing in mental health and we can make a measurable difference (WHO), unfortunately the investment on mental health continues to be substantially low. Hence, it becomes the responsibility of every mental health professional to advocate for investing in mental health.

### Constitutional obligation:

Health is a fundamental human right and a State responsibility (Alma Ata Declaration, 1978).<sup>111</sup> Constitution of India promises all its citizens a better quality of life, a life that is lived with dignity and respect, a life that is healthier and richer, free from suffering, chronic disability and premature death.<sup>15,61</sup> Hence, investing in mental health is also a constitutional obligation.

Proper planned investment is needed to do away with unnecessary costs while at the same time enhancing productivity. Unfortunately policy makers in India have not given importance to mental health in parity with physical health. While cost effective interventions are available for most mental illnesses,<sup>141</sup> however the fruits of recent scientific advances are still out of reach of the common man. There is a need to bridge this gap between science and society.<sup>171</sup>

### OBJECTIVE OF THE REVIEW

The purpose of this review is to highlight the economic aspects of mental health, thus sensitizing the policy makers about the need for increasing investment in this area. In this paper, we reviewed the literature for studies on burden due to mental illness, costs of mental illness, and consequences of mental illness on the labour market, with emphasis on current scenario in India. Most of these studies are from WHO. A summary of findings and our views are presented.

### METHODOLOGY

A review of various studies on the above subject was done using Google Scholar and PubMed. The key words used were 'costs of mental illness', 'consequences of mental illness on society', 'mental illness and its impact', 'burden of mental illness'.

### DISCUSSION

#### Whom does the mental illness affect?

Socio-economic risk factors for psychiatric morbidity: WHO report on mental health puts that "No group is immune to mental disorders. Factors like poverty, unemployment, low education, violence, neglect, abuse, isolation increase the risk for mental illness. The vulnerable sections also include migrants and refugees, children, abused women and the neglected elderly".<sup>141</sup> These socio-economic factors are more evident in developing (low and middle income countries) nations.<sup>181</sup> Also, mental illnesses themselves contribute to these socio-economic factors.<sup>191</sup> Thus, poverty and mental illnesses form a vicious circle. "Talking about mental illnesses is talking about poverty".<sup>141</sup> Hence, investing in mental health becomes a public health priority.

**Early onset - poses a big challenge:** Most mental disorders have their onsets during childhood or adolescence. 75% of all adult mental disorders begin before 24 years, and 50% of these by the age of 14 years. Early symptoms of a mental disorder emerge a few years before the full diagnostic criteria are met.<sup>1101</sup> Early onset, chronic progressively deteriorating course, frequent relapses, disability pose a big challenge.

**The risk factors are everywhere:** Easy availability and accessibility to substances / situations that cause/ contribute to MEBs is another factor.

**The burden of the mental illness:** The burden of mental illness is enormous.

### The global scenario

According to WHO, 'World-wide nearly 450 million people suffer from MEBs. Every year, 1 million people commit suicide. Four of the six leading causes of years lived with disability (YLD) are due to neuro-psychiatric disorders (depression, alcohol use, schizophrenia and bipolar disorders).'<sup>141</sup>

According to WHO's global burden of disease (GBD) (Table 1),<sup>1111</sup> 33% of the years lived with disability is due to neuropsychiatric disorders. Unipolar depressive disorders alone lead to 12.5% of the YLD and rank as the third leading contributor to GBDs. By 2020, depression will be the 2nd leading cause of world disability (WHO, 2001), and by 2030, it is expected to be the largest contributor to the disease burden (WHO, 2008). Neuropsychiatric diseases also form the leading causes of years lived with disability between 10-24 years age group.<sup>1121</sup>

### Table1: Estimate of DALYs for major mental illnesses given by the global burden of diseases study by WHO. The global burden of disease: 2004 update (WHO, 2008)

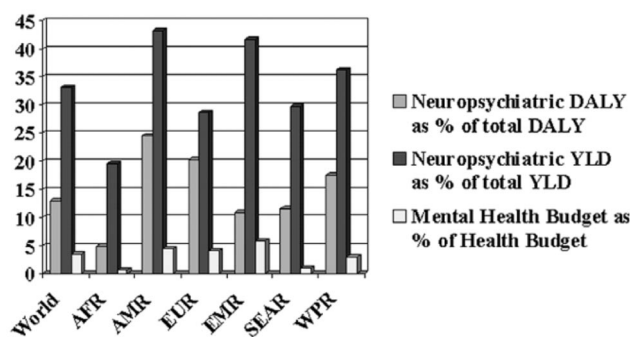
(Reproduced with permission: Collins PY, Patel V, Joestl SS, March D, Insel TR, et al. Grand challenges in global mental health. Nature 2011; 475 (7354):2730)<sup>1111</sup>

Rank	World-wide		High-income countries		Low- and middle-income countries	
	Cause	DALYs (millions)	Cause	DALYs (millions)	Cause	DALYs (millions)
1	Unipolar Depressive Disorder	65.5	Unipolar Depressive Disorder	10.0	Unipolar Depressive Disorder	55.5
2	Alcohol Use Disorders	237	Dementias	44	AUD	19.5
3	Schizophrenia	16.8	AUD	4.2	Schizophrenia	15.2
4	BPAD	144	Drug use disorder	1.9	BPAD	12.9
5	Dementias	11.2	Schizophrenia	1.6	Epilepsy	7.3
6	Drug-use disorder	84	BPAD	1.5	Dementias	6.8
7	Epilepsy	7.9	Migraine	14	Drug-use disorder	6.5
8	Migraine	7.8	Panic disorder	0.8	Migraine	6.3
9	Panic disorder	7.0	Insomnia (primary)	0.8	Panic disorder	6.2
10	OCD	5.1	Parkinson's Disease	0.7	OCD	4.5
11	Insomnia (Primary)	3.6	OCD	0.6	PTSD	3.0
12	PTSD	3.5	Epilepsy	0.5	Insomnia (Primary)	2.9
13	Parkinson's Disease	1.7	PTSD	0.5	Multiple sclerosis	1.2
14	Multiple sclerosis	1.5	Multiple sclerosis	0.3	Parkinson	1.0

AUD = Alcohol Use Disorders; BPAD = bipolar affective disorder; OCD=obsessive-compulsive disorder; PTSD=post-traumatic stress disorder

**DALYs (Disability adjusted life years) as a measure of burden:** Neuropsychiatric disorders account for 13% of DALYs. DALYs give a measure of years lost to suffering. DALYs are calculated by adding the Years of Life Lost (YLL), i.e. mortality to Years Lived with Disability (YLD) i.e. morbidity.  $DALYs = YLL + YLD$ .

Figure 1 shows the burden in terms of DALYs and YLD due to mental illness in the different regions of the world and the budget allotted. [13] While the burden due to MEBs is high in all the regions shown, the proportion of health budget allotted for mental illness, in developing countries, is lower.



**Figure 1 Burden of neuropsychiatric disorders and federal mental health budget by WHO regions** (Reproduced with permission: Saxena S, Sharan P, Saraceno B. Budget and financing of mental health services: baseline information on 89 countries from WHO's project atlas. *J Ment Health Policy Econ* 2003; 6: 135-43)<sup>[13]</sup>

*Legend: DALY: Disability Adjusted Life Years, YLD: Years Lived with Disability, AFR: African Region, AMR: Region of the Americas, EMR: Eastern Mediterranean Region, EUR: European Region, SEAR: South-East Asia Region, WPR: Western Pacific Region*

**Limitations:** DALYs methodology does not account for the full spectrum of burden. The burden on the family members (time, effort and resources spent in the care of the sick), lost productivity at the level of the individual, family or society, the consequences of illness like harm to others, the impact of co-morbidity, the emotional burden are not accounted for.<sup>[15]</sup>

#### Costs due to MEBs:

Health care costs alone do not account for the full economic costs of mental illnesses. Indirect costs are more than direct costs with regards to mental illness. The costs of care (like medication, clinic visits (fees), hospitalization, diagnostic services, residential care, community services, rehabilitation and non-medical costs like transportation for treatment and care) are direct costs. These are the value of resources used in the treatment of disease.<sup>[16]</sup>

Indirect costs are value of resources lost as a result of illness. Indirect costs include costs due to reduced supply of labour (unemployment), reduced educational attainment, expenses for social supports, costs associated with consequences like chronic disability, homelessness, crime, suicide, homicide, caregiver burden, value of family caregiver's time, medical complications of mental illnesses, early mortality, substance use and other unquantifiable costs like emotional burden on family etc. Other costs include those for health awareness campaigning, etc.<sup>[16]</sup>

#### Resources lost (indirect/invisible costs)

##### Loss of productivity due to morbidity and mortality:

Illness would mean decreased activity and performance or being absent from work. In many developed countries 35-45% of absenteeism is due to mental health problems.<sup>[4]</sup> There are very few studies from the developing world in this area. MEBs affect both access to employment and job retention.<sup>[17]</sup> Also poor mental health is negatively associated with wages. Men who have mental illness and also smoke had greater reduction (16.3%) in wage rates.<sup>[18]</sup> Severe mental illness (SMI) in US was estimated to be associated with a \$193.2 billion reduction in personal earnings in the total US in 2002.<sup>[19]</sup>

In addition to loss of productivity due to absenteeism (100% loss), there are additional losses at work place. For example, employees come to work but still there is loss of productivity due to low performance (described as "presenteeism"). This is a more "hidden" cost.<sup>[20]</sup> Low stress and frustration tolerance, sleeplessness, poor concentration, poor communication skills at work make them dangerous to themselves and others.<sup>[21]</sup>

Not only the person with illness but also the care-givers lose their time (are off work). For individuals this would mean loss of wages and for the society at large loss of productivity. Patients and family members may resort to substance use compounding the malaise. Unemployment/loss of job by itself is a risk factor for mental illness.<sup>[22]</sup> Hence, the success of the labour market appears to be related to the mental health of its work force.

#### Costs that cannot be measured in terms of dollars and DALYs

**Violence and crime-related costs:** Severe mental illnesses are known to be associated with violence and crime in the form of homicide, suicide (self-inflicted violence),<sup>[23]</sup> sexual offences, violence against family members, at work place, elderly and child abuse. The risk is much higher with personality disorders and substance abuse as opposed to patients with other mental illness.<sup>[24]</sup> In one study, it was found that patients with severe mental illness commit one in 20 violent crimes (5% attributable risk).<sup>[25]</sup> Violence poses huge costs to criminal justice system and is a major public health problem.

**Emotional burden :** In addition to the suffering due to symptoms of the illness and side-effects of prolonged treatment, the patients and their relatives undergo enormous emotional strain due to social isolation, stigma, disability, residual symptoms, broken families, poverty, poor quality of life, failures in many aspects of life and sometimes even resort to suicide.<sup>[26, 27]</sup> The emotional burden in these patients and their relatives cannot be measured in monetary terms.

**MEBs increase morbidity and mortality:** Physical and mental health is interdependent. Depression per se is a risk factor for cardiovascular disorders, diabetes and cancer.<sup>[41]</sup> MEBs such as depression, anxiety and substance use disorders in patients with physical disorders adversely influence drug compliance, course and outcome.<sup>[28,29]</sup> Behaviours such as smoking and sexual activities are linked to cardiovascular disorders, carcinomas and HIV/AIDS.

Among the 10 leading risk factors for the global burden of disease measured in DALYs as identified in the World Health Report 2002, 'three were mental/behavioural factors (unsafe sex, tobacco use, alcohol use) and three others (overweight, blood pressure and cholesterol) were significantly affected by mental/behavioural factors.'<sup>[41]</sup>

**Mental disorders and medical illnesses-the link is bidirectional:** Mental illnesses (like depression, anxiety and substance abuse) occur more commonly in people with physical illnesses and vice-versa. Suicide rates are higher in people with physical disorders. Co-morbidity results in lower treatment adherence, an increase in disability and mortality and higher health care costs.<sup>[30]</sup>

Almost all major and chronic medical illnesses like hypertension, myocardial infarction, epilepsy, stroke, diabetes, cancer, HIV/AIDS, tuberculosis, are associated with higher prevalence (3to4times) of comorbid major depression relative to general population.<sup>[4, 31, 32]</sup>

**Mental illness itself may present as physical complaints:** This is more so in the Indian context where culture permits more for the expression of physical symptoms. Symptoms like tiredness, sleep problems, fatigue, vaginal discharge, chronic low-back ache, sexual complaints (dhat syndrome), are more commonly seen in patients with common mental disorders (e.g. anxiety and depression).<sup>[33]</sup>

**The burden of substance abuse:** Financial, social, family, and health related problems, accident proneness, high risk behaviour, intimate partner violence, homicidal, suicidal risk and problems to criminal justice system are all well known. The burden of alcohol use disorders AUDs is higher among the low income countries.<sup>[34]</sup> Also, there is an increase in alcoholism in India and other South-east Asian countries.<sup>[35]</sup> Hazardous and harmful drinking patterns like binge drinking, drinking to intoxication are

on the rise in India/world especially among young men and in the lower socio-economic strata.<sup>[36- 39]</sup> Tobacco and alcohol use are independent risk factors for hypertension, diabetes, cancer, heart disease, obesity, stroke etc. The social costs to the entire country (India), in 2003-04 due to alcohol use was Rupees 244 billion; while the revenue generated in the form of taxation was Rs. 216 billion. The costs of tobacco due to three diseases - cancer, heart disease and lung disease -were estimated at Rs.308.33 billion in 2002-03.<sup>[40, 41]</sup> AUDs account for 19.5% of the DALYs in the developing world. [11] Hence, alcohol and tobacco should not be viewed as revenue generating substances.

**Childhood mental health problems:** Good mental health is essential for all children to thrive and grow to their full potential. Poor social and academic success due to childhood illness has far reaching economic consequences. Children's mental health is one of the most important investments any society can make.<sup>[42-44]</sup> The burden of MEBs among children and adolescents is 10-20% of the population in developing countries.<sup>[45]</sup> Women and children are known to bear a greater burden and cost due to mental illnesses, especially in developing countries.<sup>[46]</sup>

**Costs in monetary terms:** An estimate of direct and indirect costs due to mental illness is given by the world economic forum in its latest report on economics of NCDs (Table 2).<sup>[47]</sup> This report estimates that 'the global cost of mental illness at nearly US\$2.5Trillion (two thirds in indirect costs) in 2010, with a projected increase to over US\$6T by 2030.' The world economic forum report also provides comparison across NCDs (non-communicable diseases). Mental health costs stand the highest in terms of burden. Mental illnesses account for more than half of the projected total economic burden from NCDs and 35% of the global lost output. Mental illness costs are expected to more than double by 2030.

**Table 2 Global cost of mental health conditions in 2010 and 2030 (Costs shown in billions US\$<sup>[47]</sup>**

Year	LMICs			HICs			World		
	Direct costs	Indirect costs	Total cost	Direct costs	Indirect costs	Total cost	Direct costs	Indirect costs	Total cost
2010	287	583	870	536	1,088	1,624	823	1,671	2,493
2030	697	1,416	2,113	1,298	2,635	3,933	1,995	4,051	6,046

LMICs= low and middle income countries; HICs: High income countries

About 2/3rds of the costs come from indirect costs. In terms of value of lost output, mental health (35%) and cardiovascular disorders (33%) are the top drivers. The value of a statistical life model also found that the economic burden of life lost to NCDs is high and is going to double by 2030. The findings are alarming. Mental

illnesses thus pose a definite threat to development, economic growth and poverty alleviation (World Economic Forum).

#### International review of cost of illness studies:

WHO (2004) reviewed 38 cost studies conducted worldwide since 1990.<sup>[151]</sup> A summary of the review is presented here. Most of the studies were conducted in US, UK and Australia. Majority used prevalence-based approach. The studies reviewed showed wide variation in cost estimates even for the same mental disorder, during the same time period and within the same country. Affective disorders (n=11) and schizophrenia (n=12) were the most studied illnesses.

Only three studies one each from US, China and Australia provided an estimate of overall costs of mental illness. These studies found that 7 % ( US), 3.2 % ( China) and 1.8 % ( Australia) respectively of total health care expenditures are spent on mental illness. The total cost of mental disorders is about 2% of US GDP. The US study used a top-down method (national aggregate statistics) and is the most comprehensive while the other two studies used a bottom top method (individual sample statistics). The bottom-top methods use smaller samples that may not be representative of the entire population.

The direct treatment costs per most mental illness categories (schizophrenia, affective disorder or depression each) are found to be nearly 1-2% of national health care expenditure. The direct costs of mental illnesses are found to be much less than the indirect costs for affective/anxiety/depression, schizophrenia, overall mental illnesses and epilepsy. In other words, 'the negative economic consequences of mental illness greatly exceed the costs of treatment. Thus it is important to treat mental illness.'<sup>[151]</sup>

The large majority of cost studies are from high-income nations. Researchers in low and middle income nations should be encouraged to do cost analysis studies.<sup>[148]</sup>

#### Indian studies:

Studies from India are very few, mostly cross sectional, involving small samples.

**Prevalence of mental illnesses in India:** Epidemiological studies report prevalence rates of psychiatric disorders varying from 9.5 to 370/1000 population in India.<sup>[149]</sup> The burden of mental illness in India may not be much different from the global picture. The low prevalence estimates from some Indian epidemiological studies compared to international studies is possibly due to underreporting and other methodological flaws.<sup>[150]</sup>

The burden of NCDs including mental illness is on rise in India.<sup>[151]</sup> In a cost outcome study conducted in India and Pakistan, where both direct and indirect costs due

to mental illness were assessed, it was found that the overall costs at baseline for treating common mental disorders was Rupees 700 per month in India while the same was Rupees 3000 in Pakistan. The indirect costs were significantly higher than the direct costs and the costs decreased with intervention.<sup>[152]</sup> In another study, the burden of schizophrenia in Indian out-patients is compared with that of diabetes patients. The total annual costs of care of schizophrenia were 274 US\$; indirect costs were higher. The cost of care of schizophrenia was higher even in developing countries and they did not differ much from other chronic medical illnesses like diabetes.<sup>[153]</sup> Muthy et al studied the costs and effects of community based treatment among schizophrenia patients of Indian rural population (Karnataka). This follow up study conducted for one and half years found significant benefits on all fronts with treatment (disability, patient and family burden in addition to symptomatic improvement).<sup>[154]</sup> The disability and costs of care were higher for patients who were staying for longer period in the mental hospitals.<sup>[155]</sup>

Math et al, made an attempt to estimate the treatment costs due to mental illnesses in India. First, they arrived at a prevalence rate of 20% for psychiatric illnesses by adding the prevalence rates for individual psychiatric illnesses (only core psychiatric illnesses were studied). The medication cost (Rupees 300/month) + travel expenses (Rs.100/month) + consultation (Rupees 100/month) were added, and Rupees 500/- per month was arrived as average cost/month/patient. Assuming 20% prevalence, i.e. 20 lakh patients, 10,000 crores would be the cost of OP treatment for one month. Such an estimate only gives the direct costs not accounting for the indirect costs which are known to be much higher.<sup>[150]</sup> Studies on care giver's burden in OCD patients,<sup>[156]</sup> bipolar,<sup>[157]</sup> and schizophrenia patients reveal significant burden on the family members. The burden was higher with psychotic illnesses.<sup>[158]</sup>

There is paucity of public mental health research in developing countries.<sup>[159]</sup> There is a need for studies on burden and costs of mental illnesses from developing countries.

#### CONCLUSIONS

MEBs pose a major challenge to the community due to early onset, chronic progressively deteriorating course, frequent relapses and disability. They impact not just the individual but the family and society at large. Some of the costs due to the illnesses could be measured in monetary terms while the others cannot be quantified. Most of the studies on costs analysis are from developed countries. The direct costs of mental illnesses are found to be much less than the indirect costs for mental illnesses. In other words, 'the negative economic consequences of mental illness greatly exceed the costs

of treatment. Thus it is important to treat mental illness.'

<sup>[15]</sup> There is paucity of public mental health research in developing countries. <sup>[59]</sup> There is a need for studies on burden and costs of mental illnesses from developing countries.

**Acknowledgements:** Nil

### References:

- World Health Organization. Declaration of Alma-Ata International conference on primary health care, Alma-Ata, USSR, 6-12 September 1978. Available from: [www.searo.who.int/LinkFiles/Health\\_Systems\\_declaration\\_almaata.pdf](http://www.searo.who.int/LinkFiles/Health_Systems_declaration_almaata.pdf) (accessed 7 October 2012).
- World Health Organization. Milestones in health promotion statements from global conferences. Available from: [http://www.who.int/healthpromotion/Milestones\\_Health\\_Promotion\\_05022010.pdf](http://www.who.int/healthpromotion/Milestones_Health_Promotion_05022010.pdf) (accessed 6 August 2012).
- World Health Organization. Promoting mental health - concepts -emerging evidence and practice, a report of WHO, Department of mental health and substance abuse in collaboration with the Victorian health promotion foundation and The University of Melbourne. Available from: [http://www.who.int/mental\\_health/evidence/en/promoting\\_mnh.pdf](http://www.who.int/mental_health/evidence/en/promoting_mnh.pdf) (accessed 6 August 2012).
- World Health Organization. Investing in mental health. Available from: [http://www.who.int/mental\\_health/media/investing\\_mnh.pdf](http://www.who.int/mental_health/media/investing_mnh.pdf) (accessed 10 August 2012).
- Central Government Act. Article 21 in The Constitution Of India 1949. Available from: <http://indiankanoon.org/doc/1199182/> (accessed 1 August 2012).
- Central Government Act. Article 47 in The Constitution Of India 1949. Available from: <http://indiankanoon.org/doc/1551554/> (accessed 1 August 2012).
- Tansella M, Thorncraft G. Implementation science: understanding the translation of evidence into practice. *Br J Psychiatry* 2009; 195:283-5.
- Shidhaye R, Patel V. Association of socio-economic, gender and health factors with common mental disorders in women: a population-based study of 5703 married rural women in India. *Int J Epidemiol* 2010; 39(6):1510-21.
- Kuruville A, Jacob KS. Poverty, social stress and mental health. *Indian J Med Res* 2007; 126: 273-8.
- O'Connell ME, Boat T, Warner KE, Editors; Committee on the prevention of mental disorders and substance abuse among children, youth and young adults: research advances and promising interventions; Institute of Medicine; National Research Council. Preventing mental, emotional, and behavioural disorders among young people: progress and possibilities. 1st ed. Washington, D.C. The National Academies Press; 2009
- Collins PY, Patel V, Joestl SS, March D, Insel TR, et al. Grand challenges in global mental health. *Nature* 2011; 475 (7354):27-30
- Gore F, Bloem P, Patton G, Ferguson J, Joseph V, Coffey C, Sawyer S, Mathers C. Global burden of disease in young people aged 10-24 years: a systematic analysis. *The Lancet* 2011; 377: 2093-102.
- Saxena S, Sharan P, Saraceno B. Budget and financing of mental health services: baseline information on 89 countries from WHO's project atlas. *J Ment Health Policy Econ* 2003; 6: 135-43
- World Health Organization. Disease control priorities related to Mental Neurological, developmental and substance abuse disorders. Available from: [http://www.dcp2.org/file/64/WHO\\_DCPP%20mental%20health%20book\\_final.pdf](http://www.dcp2.org/file/64/WHO_DCPP%20mental%20health%20book_final.pdf) (accessed 1 August 2012).
- Insel TR. Assessing the economic costs of serious mental illness. *Am J Psychiatry* 2008; 165: 663-5.
- Teh-wei Hu. Disease Control Priorities Project. Working paper No. 31 October 2004 An International review of the economic costs of mental illness. Available from: <http://www.dcp2.org/file/45/wp31.pdf> (accessed 11 August 2012).
- Frank RG, Koss C. Mental health and labour markets productivity loss and restoration. Working paper No.38. Available from: <http://www.dcp2.org/file/50/wp38.pdf> (accessed 2 August 2012).
- Jofre-Bonet M, Busch SH, Falba TA, Sindelar JL. Poor mental health and smoking: interactive impact on wages. *J Ment Health Policy Econ* 2005; 8(4):193-203.
- Kessler RC, Heeringa S, Lokoma MD, Petukhova M, Rupp AE, Schoenbaum M, Wang PS, Zaslavsky AM. The individual level and societal level effects of mental disorders on earnings in the US: results from the National Comorbidity Survey Replication. *Am J Psychiatry* 2008; 165:703-11.
- Institute for Women's Policy Research. No time to be sick: why everyone suffers when workers don't have paid sick leave. Available from: <http://www.aecf.org/upload/publicationfiles/fe3655k409.pdf> (accessed 2 August 2012).
- Srivastava K. Mental health and industry: dynamics and perspectives. *Ind J Psychiatry J* 2009; 18(1): 1-2.
- Goldsmith A, Diette T. Exploring the link between unemployment and mental health outcomes. Available from: <http://www.apa.org/pi/ses/resources/indicator/2012/04/unemployment.aspx> (accessed 3 August 2012).
- Vijayakumar L. Indian research on suicide. *Indian J Psychiatry* 2010; 52 (Suppl 1): 291-6.
- Stuart H. Violence and mental illness: an overview. *World Psychiatry* 2003; 2(2): 121-4.
- Fazel S, Grann M. The population impact of severe mental illness on violent crime. *Am J Psychiatry* 2006; 163:1397-403.
- Thara R, Kamath S, Kumar S. Women with schizophrenia and broken marriages--doubly disadvantaged? Part I: patient perspective. *Int J Soc Psychiatry* 2003; 49(3):225-32.
- Thara R, Kamath S, Kumar S. Women with schizophrenia and broken marriages--doubly disadvantaged? Part II: Family perspective. *Int J Soc Psychiatry* 2003; 49(3):233-40.
- DiMatteo MR, Lepper HS and Croghan TW. Depression is a risk factor for noncompliance with medical treatment: meta-analysis of the effects of anxiety and depression on patient adherence. *Arch Intern Med* 2000; 160(14): 2101-7.
- Moussavi S, Chatterji S, Verdes E, Tandon A, Patel V, Ustun B. Depression, chronic diseases and decrements in health: results from the world Health Surveys. *Lancet* 2007; 370(9590): 851-8.
- World Federation for Mental Health (WFMH). Mental health

- and chronic physical illness - the need for continued and integrated care. Available from: <http://www.wfmh.org/2010DOCS/WMHDAY2010.pdf> (accessed 2 August 2012).
31. Gautam S. Fourth revolution in psychiatry - addressing comorbidity with chronic physical disorders *Indian J Psychiatry* 2010; 52: 213-9.
  32. Rosenthal MH. The challenges of comorbid disorders in patients with depression. *J Am Osteopathic Assoc* 2003; 103:8.
  33. Patel V. Social origins, biological treatments: the public health implications of CMDs in India. *Indian J Psychiatry* 2005; 47:15-20.
  34. Pillai A, Nayak MB, Greenfield TK, Bond JC, Nadkarni A, Patel V. Patterns of alcohol use, their correlates, and impact in male drinkers: a population-based survey from Goa, India. *Soc Psychiatry Psychiatr Epidemiol* 2012. DOI 10.1007/s00127-012-0538-1
  35. World Health Organization. Global status report on alcohol and health. Available from: [http://www.who.int/substance\\_abuse/publications/global\\_alcohol\\_report/msbgsruprofiles.pdf](http://www.who.int/substance_abuse/publications/global_alcohol_report/msbgsruprofiles.pdf) (accessed 1 August 2012).
  36. Rehm J, Mathers C, Popova S, Thavorncharoensap M, Teerawattananon Y, Patra J. Alcohol and global health 1: global burden of disease and injury and economic cost attributable to alcohol use and alcohol-use disorders. *Lancet* 2009; 373:2223-33.
  37. The Lancet. Calling time on young people's alcohol consumption. *The Lancet* 2008; 371(9616):871.
  38. Cuellar AE, Markowitz S, Libby AM. Mental health and substance abuse treatment and juvenile crime. *Ment Health Policy Econ* 2004; 7(2):59-68.
  39. Das SK, Balakrishnan V, Vasudevan DM. Alcohol: its health and social impact in India. *Natl Med J India* 2006; 19(2):94-9.
  40. Reddy KS (2005). Success of tobacco control in India: research as a lever for public policy (presentation at the global forum for health). Available from: <http://www.globalforumhealth.org/filesupld/forum9/CD%20Forum%209/papers/Reddy%20KS.pdf> (accessed 10 August 2012).
  41. Benegal V, Bajpai A, Basu D, Bohra N, Chatterji S, Galgali RB, Goel DS, Isaac MK, Jhanwar V, Lenin R, Madhavan PM, Mittal AK, Mohandas E, Murali T, Murthy P, Nagpal R, Nambi S, Subramaniam CR, Parkar S, Rao P, Reddy MS, Sarin A, Sudhakar TP, Tripathi BM, Varghese M. Proposal to the Indian Psychiatric Society for adopting a specialty section on addiction medicine (alcohol and other substance abuse). *Indian J Psychiatry* 2007; 49(4): 277-82.
  42. Belfer ML. Child and adolescent mental disorders: the magnitude of the problem across the globe. *J Child Psychol Psychiatry* 2008; 49(3):226-36.
  43. Patel V, Flisher AJ, Nikapota A, Malhotra S. Promoting child and adolescent mental health in low and middle income countries. *J Child Psychol Psychiatry* 2008; 49(3):313-34.
  44. Hysenbegasi A, Hass SL, Rowland CR. The impact of depression on the academic productivity of university students. *J Ment Health Policy Econ* 2005; 8(3):145-51.
  45. Srinath S, Kandasamy P, Golhar TS. Epidemiology of child and adolescent mental health disorders in Asia. *Curr Opin Psychiatry* 2010; 23(4):330-6.
  46. Chandra PS, Kommu JV, and Rudhran V. Schizophrenia in women and children: a selective review of literature from developing countries. *Int Rev Psychiatry* 2012; 24(5):467-82.
  47. Bloom DE, Cafiero ET, Jané-Llopis E, Abrahams-Gessel S, Bloom LR, Fathima S, Feigl AB, Gaziano T, Mowafi M, Pandya A, Prettner K, Rosenberg L, Seligman B, Stein AZ, Weinstein C (2011). *The Global Economic Burden of Non-communicable Diseases*. Geneva: World Economic Forum.
  48. Hu T. Financing global mental health services. *Journal of Mental Health Policy and Economics* 2003; 6:145-7.
  49. Math SB, Chandrasekhar CR, Bhugra D. Psychiatric epidemiology in India. *Indian J Med Res* 2007; 126: 183-92.
  50. Math SB, Srinivasaraju R. Psychiatric epidemiological studies: Learning from the past. *Indian J Psychiatry* 2010; 52: 95-103.
  51. Patel V, Chatterji S, Chisholm D, Ebrahim S, Gopalakrishna G, Mathers C, Mohan V, Prabhakaran D, Ravindran RD, Reddy KS. Chronic diseases and injuries in India. *Lancet* 2011; 377(9763):413-28.
  52. Chisholm D, Sekar K, Kishore Kumar K, Saeed K, James S, Mubbashar M, Murthy RS. Integration of mental health care into primary care. Demonstration cost-outcome study in India and Pakistan. *Br J Psychiatry* 2000; 176: 581-8.
  53. Grover S, Avasthi A, Chakrabarti S, Bhansali A, Kulhara P. Cost of care of schizophrenia: a study of Indian out-patient attenders. *Acta Psychiatr Scand* 2005; 112(1): 54-63.
  54. Srinivasa Murthy R, Kishore Kumar KV, Chisholm D, Thomas T, Sekar K, Chandrashekari CR. Community outreach for untreated schizophrenia in rural India: a follow-up study of symptoms, disability, family burden and costs. *Psychol Med* 2005; 35(3):341-51.
  55. Narayan KK, Kumar DS. Disability in a group of long-stay patients with schizophrenia: experience from a mental hospital. *Indian J Psychol Med* 2012; 34(1):70-5.
  56. Grover S, Dutta A. Perceived burden and quality of life in OCD. *Psychiatry Clin Neurosci* 2011; 65(5):416-22.
  57. Maji KR, Sood M, Sagar R and Khandelwal SK. A follow-up study of family burden in patients with bipolar affective disorder. *Int J Soc Psychiatry* 2012; 58(2):217-23.
  58. Thomas JK, Suresh Kumar PN, Verma AN, Sinha VK, Andrade C. Psychosocial dysfunction and family burden in schizophrenia and obsessive compulsive disorder. *Indian J Psychiatry* 2004; 46(3):238-43.
  59. Saxena S, Maulik PK, Sharan P, Levav I, Saraceno B. Brief report - mental health research on low- and middle-income countries in indexed journals: a preliminary assessment. *The Journal of Mental Health Policy and Economics* 2004; 7 (3): 127-31.

<b>Source of Support :</b> Nil	<b>Conflict of Interest :</b> Nil
--------------------------------	-----------------------------------

As the editor of this journal, Rajshekhar Bipeta happens to be the co-author; this manuscript was handled by the editorial board member, Farooq Ahmed Khan (handling editor). Except for authorship, Rajshekhar Bipeta was in no way involved with this publication
---