

Financial burden of psychiatric disorders of Telangana state, India

Gopala Sarma Poduri*

501, Highlight Haveli, Street No. 6, Habsiguda, Hyderabad 500 007, India

Psychiatric disorders can be devastating, causing damage to the patient, his/her family and society. Financial aspect is the main criterion in a disease or group of diseases for decision-making, planning and prioritizing issues. The aim of the present study was to estimate the tangible cost of psychiatric disorders per annum in Telangana, India, from societal perspective. Cost estimation of various components was done under direct and indirect heads. The direct costs included were consultation, drugs, inpatients, investigations, procedures, psychologist consultation, rehabilitation and travel for treatment. The indirect costs included attendant, disability benefits, faith healing, loss of taxes on earnings, patients in conflict with the law, student training, statutory bodies, substance abuse, suicide and attempted suicide, work absence/loss of wages and productivity. Costs were also estimated based on other published works and local conditions. Of the Rs 140,963.0 crore cost, direct costs were only a small fraction (2%) while fraction indirect costs were high (98%). Cost due to wages and productivity loss accounted for 55% of the total cost. The estimated arrived at was several times more than the total health budget of the state. Thus, there is an urgent need to improve and expand mental health services to reduce the financial burden.

Keywords: Case study, cost estimation, financial burden, health budget, psychiatric disorders.

WITH the objective of raising awareness regarding mental health issues around the world and to mobilize efforts in support of mental health, World Mental Health Day is observed every year on 10 October. The year 2021 campaign slogan was ‘Mental health care for all: let us make it a reality’¹.

Mental illness affects everyone directly or indirectly. In India, it has been estimated that 15 crore people have mental health problems². A study conducted by Assocham in 2017 showed that 42.5% of employees in the Indian private sector are afflicted with a general anxiety disorder or depression, compared to government employees³. There is a separate law governing psychiatric patients. In India, to protect, promote and fulfil the rights of persons with mental illness (PMI), the Mental Healthcare Act, 2017 (MHCA) was enacted. Implementation of the Act requires conservatively Rs 94,073 crores⁴. Mental health problems often exacerbate physical health problems and vice versa, adding to the cost of healthcare. Cost of illness (COI) is a summary of disease costs to the patient, family, society and the government. COI study is an essential evaluation technique in healthcare and its fun-

damental goal is to evaluate the economic burden that illness imposes on society. So, in conducting COI studies, researchers are required to recognize, identify, list, measure and value the costs that a disease and its comorbidities can generate⁵. COI studies are used to provide a measure of the impact of medical conditions, and can overcome the natural tendency of policymakers to focus attention on those conditions with high mortality rates to the exclusion of those with a high impact on the quality of life. Studies of the economic burden of diseases are especially helpful in allocating healthcare resources for conditions in which mortality rates are less prominent. The economic burden is enumerated by summing up the expenditure for medical care, termed ‘direct costs’, and earning losses and value of productivity losses in other activities, termed ‘indirect costs’⁶. Every year, it is customary for all to take stock of their financial situation by preparing a budget for the following year by income–expenditure, profit–loss for the purpose of financial planning and prioritizing expenditure. This is done by individuals, business people, institutions, government, etc. It is also done for individual diseases or a group of diseases. However, its usefulness as a decision-making tool has been questioned since its inception. The main criticism came from welfare economists, who rejected COI because it was not grounded in welfare economics theory⁷. Morbidity (unhealthy state) and mortality (death) of diseases are parameters used to compare the impact of various disorders on the health system. These include disability adjusted life years (DALY), years of life lost (YLL), standardized death rates, cost of health maintenance, quality of life (QoL), DALY and Burden of Disease (BOD), and others. Health economics deals with these and more. Every disease has an economic aspect to it. These are sometimes referred to as indirect costs that include social care, education, housing, criminal justice and social security systems⁸.

There are no studies about the total cost of psychiatric disorders in India. So, to estimate the annual cost of psychiatric disorders, a case study of Telangana – a relatively prosperous state of India, with a high crude DALY due to mental illness was selected². So, a computation of cost of psychiatric illnesses in Telangana state by taking at all possible, annual finances involved, with a societal perspective was undertaken.

The cost estimation depends on purpose and perspective. The purpose of the present study was to determine the cost of psychiatric disorders in Telangana taking at all possible annual finances involved, with a societal perspective.

The cost was computed under direct and indirect costs. The direct costs include psychiatrists’ earnings (fees, salaries, etc.), drugs, inpatients (IP), investigations, procedures, psychologist fees, rehabilitation and travel. The indirect costs include attendant, disability benefits, faith healing, loss of taxes on legal, training, administrative expenditure, substance abuse, suicide and attempted suicide, lost income/wages and lost productivity.

The annual prevalence (total cases–new and old in a year) of cases was obtained from Sagar *et al.*². With the population,

*e-mail: gopalasarmapoduri@yahoo.com

the total number of cases was estimated. The total psychotropic drug sales in the state was obtained from pharmaceutical sources. The professional earnings of psychiatrists were estimated from earnings, salaries and pensions for the psychiatric services rendered^{9,10}. For IP costs, the average of the procedure adopted by another study⁴ and an occupancy rate of 70% obtained from local nursing-home sources were used. The same study was used to estimate charges for rehabilitation⁴, and the recurrent administrative expenditure for maintaining SMHA (State Mental Health Authority) and minimum 11 MHRBs (Mental Health Review Boards) along with other administrative machinery was taken as Rs 15 crores per annum⁴. For patients in rehab and deaddiction homes, estimation was done at the average local rate of Rs 15,000 per month at 80% occupancy rate. The average basic and routine investigations done, apart from EEG, CT and MRI brain, were based on the market value. These were assumed to have been done for all patients to compensate for higher rates at many places and some patients getting them done repeatedly. The procedures – ECT, repetitive transcranial magnetic stimulation (rTMS) and magnetic seizure therapy (MST) were assumed to have been performed in 10% of cases at the average market rate and discussions with concerned owners. About a tenth of patients consulted a clinical psychologist on their own or were referred for diagnostic psychometry and counselling. Travel expenses and follow-up were estimated based on two studies^{11,12}. About 10% of patients were arbitrarily taken as in need of an attendant all through their illness. Thus, the cost of attendant was taken as a travel expense and loss of earnings. Travel expenses and loss of income as estimated for the patients were also used for the attendant. The number of patients indulging in alcohol, tobacco and other types of chemical substances was estimated based on another study at 4.72% (ref. 13). The average money spent by a patient, as obtained from informants, instead of given by patient and family, was used to estimate the amount spent on such addiction. Ten per cent of suicides and 60% of attempted suicides (attempted suicides were estimated as 25 times the number of completed suicides) were regarded as having received therapy following the attempt¹⁴. Also 24% of suicides and 11.6% of attempted suicides were taken as mental health cases¹⁵. For calculation purposes, the per individual short-term (one year) cost of suicide from another study was used¹⁶. The same study was used to estimate lost income/wages. Average of per capita income and minimum wages were considered to estimate lost wages¹⁷. Telangana statistics for per capita state gross domestic product (SGDP) were taken to estimate the lost production; only the unemployed were taken for final loss of production. As no information was available, the lost taxes of national suicide were taken as in the above-mentioned study¹⁶ and the expenses of patients in conflict with the law—cases, courts, investigation, post-mortem, prison stay, transport, escort, consumer cases, medical council complaints, etc. were estimated based on local inquiries and the above-mentioned

study¹⁶. The expenditure for PG training, was done based on the duration of the study in comparison with the MBBS course cost estimated by another study¹⁸ and updating with the cost inflation index was done for the training cost of 52 PGs¹⁹. Disability pension and other benefits were estimated by data from SADAREM (Software for Assessment of Disabled for Access Rehabilitation and Empowerment) with an added provision for the establishment of other benefits like travel benefits, education, employment reservation, etc.²⁰. The amount spent on faith healing and alternative medicine was assessed from the patients and their family members.

The estimated per annum prevalence of psychiatry patients was 6,463,830. There were 220 qualified psychiatrists either in service or full-time private practice or both, with average professional earnings of Rs one lakh per month. In addition, the employed get salaries. Pensioners get pension for their past service in psychiatry. The PG seats in psychiatry, including DNB was 69. There was one Government Mental Hospital with a bed strength of 600. All the medical colleges combined, psychiatry bed strength of 580. There were 24 private nursing homes with a bed strength of 480, an average occupancy rate of 70%, and about 300 beds for long-term deaddiction and rehabilitation. The maintenance charge per bed per month was Rs 15,000. The daily bed charges of nursing homes averaged Rs 1500. The state-wide psychotropic drug sales was Rs 16 crores. The average travel cost for an individual was Rs 480. There were 9596 average suicides per annum between 2014 and 2016 (ref. 21). The cost for investigations was Rs 1500 per patient per annum. Procedures in treatment amounted to Rs 5000 per patient, in a fifth of all patients. Total disability benefits, including pension and other benefits for the eligible amounted to Rs 2000. An average amount of Rs 6000 per month was spent by 60% of patients on faith healing, while Rs 3000 per month was spent on substance abuse by 4.72% of patients. The cost of training of one PG student was estimated as Rs 210.4 lakhs. Rehabilitation for needy patients was computed at Rs 15,000 per month per patient. Table 1 provides details of cost estimation arrived for distinct items.

The basic handicap of this type of estimation is that assumptions must be necessarily made, which may or may not be in tune with reality. Further, the number of patients requiring treatment, admission, etc. is from older estimates of other studies. Therefore, as some of the estimations were guess-timates, the results are general and should be considered as such when evaluating them. Based on the perspective of this study, there are different cost estimation methods which can give drastically different results²². The present exercise was with a societal perspective and a mixed type of accounting, where both actuals and dues were used. Conventionally, the cost is estimated under two heads, viz. tangible direct and indirect, and intangible. In the present study, only tangible costs were estimated. The average of the available options was taken as no single option was perfect. Any method of cost estimation of disease needs to follow the circular type of evaluation – starting from the patient from the start of

the disease to the end either cure, or demise, back to the patient and the period in between and all and consequent expenses – by whomsoever borne. This was done in the present study. One should remember that there is no standardization method for COI estimation and there is substantial heterogeneity in method, perspective, cost categorizing and healthcare systems²³.

Gross State Domestic Product of Telangana for 2022–23 (at current prices) was estimated to be close to Rs 13.04 lakh crores. The total expenditure for 2022–23 was estimated to be Rs 256,959 crores, with an expected income of Rs 2.53 lakh crores. Health and family welfare expenditure was estimated to be Rs 10,954 crores²⁴. With a health budget of Rs 10,954 crores, the present estimated cost of Rs 140,963.0 crores shows the gravity of the situation. The accuracy of many presumptions may be suspect, but the overall overestimation in one item cancels underestimations in another item, thus making the estimate closer to reality.

Not all patients take treatment; in some items, all of them were included to compensate the low amount assumed for that item. For example, in the case of investigations, with labs aplenty, patients get tests done frequently – sometimes even before consultation or advice. People have graduated from simple blood tests to CT/MRI and get them done independently or demand that such tests be done frequently. So, the amount computed will be less than in reality. The treatment of co-morbidities and its impact on physical illnesses will increase the cost further. Any suicide attempt is taken as MLC and all cases get admitted to the intensive care facility, even if only a couple of paracetamol tablets

are taken. If the patient is admitted for more than two or three days, the bill will be more. The state is mandated to provide free treatment and implement MHCA-established statutory bodies. With increasing public awareness, increasing legal professionals, etc. the Government may fall foul of the law leading to litigation, which will cost more money. The loss of taxes due to decreased productivity, presenteeism and absenteeism was assessed extremely low despite many of those employed in the software, and private and public-sector white-collared jobs drawing good salaries. This is to compensate for others who are unemployed, non-compliant taxpayers, etc. Clinical psychologists give session wise treatment spread over many expensive sessions. The state must constitute SMHA, and MHRB at the district level (three districts can be combined) to implement the MHCA 2017. Thus, Telangana with 33 districts requires one SMHA and at least 11 MHRBs. The establishment incurs capital expenditure and recurrent expenditure in their functioning – salaries, transport, office accommodation, electricity, staff-welfare benefits, etc., apart from their existence purpose duties like documentation, inspection, etc., and all of this requires money. In addition, the state must maintain big controlling offices for medical education, health services, etc. with staff and their expenditure. The recurrent expenditure can be expected to be Rs 15 crores per annum, which will be ever increasing. In this study, capital expenditure interest was not considered.

The National Mental Health Survey, 2016, revealed a huge treatment gap of 95% (patients remained untreated despite the availability of effective treatment), with only 5 out of 100 individuals with common mental disorders receiving any treatment over the past year²⁵. This aspect was not given emphasis in the present study.

COI studies have often been criticized for overestimating disease-specific costs²⁶. This may be true of the present exercise.

By fostering a friendly, stress-free environment that is aptitude-appropriate and work-related, the main contributor, work-related can be reduced or minimized. Establishment of low-cost day-care centres by the Government will reduce substantial amounts of attendant-related costs. Early detection, and initiation and continuation of treatment will reduce chronicity and consequential financial costs. The only way to lessen this enormous amount of suffering, is by strict implementation of the MHC Act that may bring all-round relief.

The estimate arrived at in this study confirms the general belief that psychiatric disorders are costly and take a huge financial toll. The present study quantifies the same. The per capita burden of psychiatric disorders is heavy. This is to be borne by the patients, caregivers, society and the government. To suit the societal purpose, a mixed estimation method was used in the present study. The problem with this kind of analysis is that an individual is taken as a productive machine, and we do not consider other aspects and dimensions of a human being outside the workforce²³. One should

Table 1. Details of cost estimation for distinct items

Item	Cost (Rs crores)
Direct	
Consultations/psychiatrists' earnings	45.2
Drugs	16.0
Inpatients	98.3
Investigations	969.6
Procedures	81.12
Psychologist consultation	96.9
Rehabilitation + deaddiction	1163.4
Travel	601.3
Total direct cost	3071.9
Indirect	
Attendant	5522.8
Disability benefits	103.0
Faith healing	2327.0
Loss of taxes on earnings	599.7
Patients in conflict with the law	5.5
PGs training	158.4
Administrative	16.0
Substance abuse	1098.3
Suicide and attempted suicide	81.1
Lost income/wages	58,548.8
Lost productivity	77,383.3
Total indirect cost	137,891.1
Total cost	140,963.0

be conscious of the fact that the estimates vary, sometimes drastically, by the data used, method and purpose of estimation. As mentioned by Darrel and Ruth²⁷, this is a conceptual study, conducted theoretically, considering welfare (or normative) economics, and not positive or empirical economics.

With mounting inflation and, reality being different from official statistics, the implications for a patient, his/her family and society, are worse. The costs are always increasing. Unemployment and gross under-employment place the patients, their families, and caregivers at the mercy of the Government to provide free, subsidized psychiatric services. The Government most often turns a blind eye towards health, more so mental health, and promises but does not deliver. Insurance is almost non-existent, though law mandates it. Euphoria of insurance coverage for mental illnesses, the MHC Act, increased visibility of articles on mental health and other periodic public activities should facilitate the administration to increase spending on mental health. The Pelzman effect should not operate to hinder other efforts to take precautionary measures. On the flip side, the cost should be weighed against employment of mental health professionals, pharma companies and their staff and the supply chain, service providers and their supply organizations, rehab centers, etc. rentals paid by psychiatry hospitals, and commercial taxes paid by nursing homes, clinics, money changing under the table to get permits, and other routine works to succeed, staff of these establishments, etc.

There's a critical need for reducing the major contributor (work-related) by creating the unanimous and stress-free terrain, suitable and aptitude amenability work and by strict perpetration of MHC act that may bring down costs. Intellectuals of the society should ponder over the cost issue of psychiatric disorders and give suggestions to the planners to bring down the same. Improvement in service to the needy is possible with realistic and pragmatic planning of what is achievable within a given timeframe and with discussion among stakeholders and making individuals take the responsibility.

To the best of our knowledge, there are no previous prevalence-based cost estimation studies of psychiatric disorders in any state in India.

1. <https://www.who.int/campaigns/world-mental-health-day>
2. Sagar, R. *et al.*, The burden of mental disorders across the states of India: The Global Burden of Disease Study 1990–2017. India State Level Disease Burden Initiative Mental Disorders Collaborators. *Lancet Psychiatry*, 2020, **7**, 148–161.
3. World Mental Health Day: Nearly half of India Inc employees suffer from depression, 30 April 2020; https://economictimes.india-times.com/magazines/panache/world-mental-health-day-nearly-half-of-india-inc-employees-suffer-from-depression/articleshow/66119215.Cms?utm_source=contentofinterest&utm_medium=text&utm_campaign=cppst
4. Math, S. B. *et al.*, Cost estimation for the implementation of the Mental Healthcare Act 2017. *Indian J. Psychiatry*, 2019, **61**(Suppl. S4), 650–659.

5. Jo, C., Cost-of-illness studies: concepts, scopes, and methods. *Clin. Mol. Hepatol.*, 2014, **20**, 327–337.
6. musculoskeletalkey.com/economic-burden-of
7. Tarricone, R., Cost-of-illness analysis. What room in health economics? *Health Policy*, 2006, **77**, 51–63; doi:10.1016/j.healthpol.2005.07.016.
8. Knapp, M., Hidden costs of mental illness. *Br. J. Psychiatry*, 2003, **183**, 477–478; doi:<https://doi.org/10.1192/03-29>.
9. <https://www.salaryhood.com/in/psychiatrist-salary-in-hyderabad-telangana-pay-scale-income-report/>
10. <https://telangana.20govt.com/esic-hospital-hyderabad-recruitment-jobs/>
11. Sarkar, S., Mathan, K., Sakey, S., Shaik, S., Subramanian, K. and Kattimani, S., Cost-of-treatment of clinically stable severe mental illnesses in India. *Indian J. Soc. Psychiatry*, 2017, **33**, 262–268.
12. Singla, M., Goyal, S. K., Sood, A., Philips, A. and Philips, S., Profile, and pattern of follow-ups of psychiatry outpatients at Christian Medical College, Ludhiana. *J. Mental Health Hum. Behav.*, 2015, **20**, 76–79.
13. Ambekar, A., Agrawal, A., Rao, R., Mishra, A. K., Khandelwal, S. K. and Chadda, R. K., On behalf of the group of investigators for the National Survey on Extent and Pattern of Substance Use in India. Magnitude of substance use in India. Ministry of Social Justice and Empowerment, Government of India, and NDDTC, AIIMS, New Delhi, February 2019; http://socialjustice.nic.in/writereaddata/UploadFile/Magnitude_Substance_Use_India_REPORT.pdf
14. Vadlamani, L. N. and Gowda, M., Practical implications of Mental Healthcare Act 2017: Suicide and suicide attempt. *Indian J. Psychiatry*, 2019, **61**(S4), 750–755.
15. Radhakrishnan, R. and Andrade, C., Suicide: an Indian perspective. *Indian J. Psychiatry*, 2012, **54**, 304–319.
16. Poduri, G. S., Short-term cost of suicides in India. *Indian J. Psychol. Med.*, 2016, **38**, 524–528.
17. <https://www.simpliance.in/minimum-wages/Telangana-range-from-361.14-432.56>
18. Verma, R., Gupta, S. K., Satpathy, S., Kant, S., Chumber, S. and Deka, R. C., Determination of the cost of training of undergraduate medical (MBBS) for student's at the All India Institute of Medical Sciences, New Delhi, India. *Int. J. Res. Found. Hosp. Health Adm.*, 2013, **1**, 1–7.
19. [TaxGurutaxguru.in > income-tax > cost-inflation-index-fy-2019-20-ay-2020-21](https://www.taxgurutaxguru.in/income-tax/cost-inflation-index-fy-2019-20-ay-2020-21)
20. www.sadarem.telangana.gov.in
21. Poduri, G. S., An analysis of suicides in Telangana. *Indian J. Priv. Psychiatry*, 2019, **13**, 1–3.
22. Gopala Sarma, P., Cost of schizophrenia in India. *Indian J. Psychol. Med.*, 2005, **26**, 80–82.
23. Christensen, M., Lim, C., Saha, S., Plana-Ripoll, O., Cannon, D., Presley, F. and McGrath, J., The cost of mental disorders: a systematic review. *Epidemiol. Psychiatric Sci.*, 2020, **29**, E161; doi:10.1017/S204579602000075X.
24. <https://www.prsindia.org/parliamenttrack/budgets/telangana-budget-analysis-2020-21>
25. Sagar, R. *et al.*, Twelve-month prevalence and treatment gap for common mental disorders: findings from a large-scale epidemiological survey in India. *Indian J. Psychiatry*, 2017, **59**, 46–55.
26. <https://yhec.co.uk/glossary/cost-of-illness/>
27. Darrel, P. D. and Ruth, F. G., The economic argument for a policy of suicide prevention. *Suicidol. Online*, 2010, **1**, 66–75.

Received 15 October 2021; revised accepted 16 November 2022

doi: 10.18520/cs/v124/i3/355-358