

Healthcare utilization and financial protection among those with mental disorders in India: Insights from the 75th round of the National Sample Survey

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Abstract

Background: Mental disorders pose a significant public health issue in India, with a prevalence rate of one in seven individuals diagnosed with varying severities of mental disorders in 2017. This study examined the patterns of socio-demographic factors associated with disease burden, healthcare utilization, and financial protection among individuals reported to have a mental disorder across India.

Methods: Data from the recently released (November 2019) 75th Round National Sample Survey (NSS), which was conducted from July 2017 to June 2018, across 8077 rural villages and 6181 urban wards was used. Data collected from 555,115 individuals (rural: 325,232; urban: 229,232) included 283 outpatient and 374 hospitalization cases due to mental disorders in India. Logistic regression models were used for analyses.

Results: Self-reporting of mental health disorders was significantly higher in the general category compared to scheduled tribe, and among the richest income quintile compared to the poorest income quintile in India. The private sector was a major service provider for mental health services with a larger share for outpatient (66.1%) than inpatient care (59.2%). Over 63.5% of individuals with a mental disorder and who went to the private sector for hospitalization reported unavailability or poor service quality at public facilities. Out of total hospitalization cases, 23.5% had insurance coverage. Average out-of-pocket expenditure during hospitalization [public: Rs.7947 (107 USD); private: Rs. 37152 (502 USD)] and outpatient care [public: Rs.544 (7 USD); private: Rs. 2358 (32 USD)] was higher under the private sector than the public sector. This led to high catastrophic health expenditure (CHE-10: public- 30.8%; private- 82.5%).

Conclusions: Stigma associated with mental disorders may have decreased the self-reporting of mental disorders in this survey. India urgently needs greater investment in mental health resources to improve access and financial protection. To achieve universal health coverage under sustainable development goals, the country needs to strengthen its healthcare system, providing comprehensive primary care, along with robust tertiary and rehabilitative care referral linkages.

Trial Registration: Not applicable

Background

Mental disorders pose a significant public health issue in India, with a prevalence rate of one in seven individuals diagnosed with varying severities of mental disorders in 2017 [1]. In 2016, India accounted for over 26% of the worldwide suicide-related deaths [2]. Around 5% of India's adult population reported some suicidality, and about 1% reported having high suicidality that requires urgent attention [3]. These pre-COVID-19 statistics reveal that morbidity and mortality associated with mental disorders in India were already high. Recent research has shown that the current COVID-19 pandemic has resulted in a sharp rise in mental health concerns, including stress, depression, and insomnia [4]. However, while mental health concerns have increased, there is decreased utilization of mental health services such as hospital visits during the COVID-19 pandemic due to factors such as imposed lockdowns and social distancing measures [5]. There is an urgent need to raise awareness regarding healthcare utilization factors among individuals with mental disorders to reduce the rising disease burden.

Although mental disorders are among the leading causes of non-fatal disease burden in India, there is a paucity of research examining patterns of healthcare access for individuals with mental disorders. The recent China-India Lancet series of studies based on the National Mental Health Survey revealed that in 2017, around 197.3 million individuals had a mental disorder in India [1]. The authors noted that the prevalence of mental disorders of predominantly childhood and adolescent-onset were significantly higher in the less developed northern states than in the more developed southern states, and the prevalence of mental disorders manifesting predominantly during adulthood was higher in the more developed southern states than in the less developed northern states [1]. This study also found that older age was associated with a higher prevalence of depression, an alarming finding since the population of India is rapidly aging. A study investigating the social correlates of mental, neurological, and substance use disorders in India and China found that social factors differentially impacted prevalence in India compared to higher-income countries [6]. Specifically, there was a positive association between being married and depression among women in India, and low education and poverty were associated with a higher occurrence of dementia [6]. These findings emphasize the importance of understanding the local socio-demographic context while designing strategies to reduce the disease burden of mental disorders. While these studies provide crucial information regarding factors impacting the prevalence and disease burden, there is limited research examining current healthcare utilization patterns at the national level. Given the socio-cultural and demographic diversity across regions in India, a systematic investigation into these factors is required to understand better the distribution and trends of mental health service utilization.

A systematic review and meta-analysis found that one-third of young people in India displayed some form of mental-health-related stigma, including negative attitudes towards people with mental health problems [7]. The public stigma associated with mental disorders limits those with mental health concerns from seeking counseling and treatment [8]. The National Mental Health Survey of India (2015-16) revealed that the treatment gap is around 83% for mental disorders [9]. Social determinants of healthcare utilization among individuals with mental disorders include age, sex, race, socioeconomic status, education level, marital status, and rural and urban settings [10-12]. There is a higher prevalence (17.1/1000) of mental disorders in rural compared to urban areas (12.7/1000) of India [12]. Disparities in economic profiles across rural and urban regions, further contribute to inequities in healthcare access. In India, expenditure incurred to access mental health services is alarmingly high, often leading families to an economic crisis [13]. An estimated 85% of individuals with mental disorders seek treatment from the private sector [9], and private-sector Out-of-pocket expenditure (OOPE) is nearly five times higher than that in the public sector [15]. OOPE incurred by individuals with mental disorders include medicines, psychiatrist fees, travel, as well as losing wages on the day of visiting the doctor [13]. Catastrophic health expenditure, defined as expenditure exceeding 10% of household expenses, was incurred by around 63% of individuals with psychiatric or neurological disorders and was significantly higher among the poorest quintile [14]. The direct and indirect costs of mental disorders can worsen the economic condition, creating a vicious cycle of poverty and mental disorder [11].

To address the rising mental health concerns amid COVID-19, the Ministry of Health and Family Welfare developed the National Taskforce to finalize, implement, and monitor the psychosocial action plan for the COVID-19 response. The Ministry of Social Justice and Empowerment also launched a 24x7 toll-free mental health rehabilitation helpline, 'KIRAN,' to seek mental health counseling [15]. To effectively design and sustain similar mental health programs in India, there is a need to understand healthcare equity patterns among those with mental disorders.

The current study evaluated data from individuals with mental disorders from the most recently released (November 2019) 75th Round National Sample Survey (75th NSS). In the 75th NSS, mental disorders include psychiatric disorders, operationally defined as *diseases of longer duration of irregular nature affecting behavior/ abnormal behavior including excessive fears, anger, and violence; depression; detached from reality*" and drug-abuse or alcoholism, defined as "drug abuse or alcoholism interfering with the performance of major life activities such as learning, thinking, communicating, sleeping, etc. The primary objective of this study is to describe the patterns of socio-demographic factors associated with healthcare utilization and financial protection among individuals reported to have a mental disorder across India. Additionally, we examined factors predicting self-reporting of mental disorders in India, since mental disorders are associated with a stigma and unmet healthcare needs in society. We also examined variation in socio-demographic indicators predicting healthcare utilization and financial protection for individuals with mental disorders with data from the 71st Round (2014) as compared to the current 75th Round of the NSS.

Methods

The present study uses an anonymized secondary level unit data set of the 75th NSS, conducted from July 2017 to June 2018, made available in the public domain for research purposes by the Ministry of Statistics and Programme Implementation, Government of India. This nationwide survey was conducted by the Government of India, which followed ethical guidelines per the Declaration of Helsinki. The survey's unit-level data and report of the survey were released, in the public domain, in November 2019, making it one of the latest unit-level national data sets available in the country [16]. The 75th NSS collected data from 5,55,115 individuals (rural: 3,25,883; urban: 2,29,232; male: 2,83,200; female: 2,71,877) and 1,13,823 households from randomly selected 8,077 rural villages and 6,181 urban blocks. Data were collected through self-report from members of the household and included socio-demographic profile, nature of ailments, morbidity in the last 15 days, hospitalization and mortality in the last 365 days, elderly health, immunization coverage, maternal health and childbirth, insurance coverage, out-of-pocket expenditure (OOPE), and choice of healthcare provider. Mental disorders are one of the 63 ailment categories in the survey.

In the present study, age was categorized under the broader categories of '0-14', '15-29', '30-44', '45-59', and '60+'. Marital status data was collected as never married, currently married, widowed, divorced, or separated. In our analysis, never married, divorced, or separated were clubbed together. Social groups, also called *caste* in India, were categorized as scheduled tribe (ST), scheduled caste (SC), other backward castes (OBCs), and general. The 13 education categories were recategorized as illiterate, up to the primary, up to secondary, and above secondary. Household occupation was categorized as self-employed, regular wages, and casual laborer. Households were asked about their usual monthly per capita consumption expenditure, which was used to create income quintiles for the households and individuals.

The 75th NSS asked every household member if they had any acute or chronic ailment in the last 15 days, which was used in calculating the proportion of the ailing population (PAP) per 1,00,000 population. Similarly, the hospitalization rate was calculated based on the proportion of individuals who reported an incidence of hospitalization, due to mental disorders, in the last 365 days.

Individuals were also asked about their choice of healthcare provider for outpatient care and hospitalization, which included health sub-centre (HSC), primary health centre (PHC), community health centre (CHC), district hospital (DH), government medical colleges, charitable or trust run hospital, private hospital, private doctor or clinic, and informal healthcare provider. In this analysis HSC, PHC, CHC, DH, and government medical colleges were categorized as public providers. In contrast, private hospitals, private clinics, charitable or trust-run hospitals, and informal providers were categorized as private providers.

Health insurance coverage categories included: 1) Government-sponsored (example –RSBY, PMJAY, Arogyasri, etc.), 2) Government /PSU as an employer (example-CGHS, reimbursement from government, etc.), 3) Employer supported (example: ESIS), 4) Private insurance and 5) Not covered at all. For individuals who reported an outpatient visit in the last 15 days or hospitalization in the last 365 days, their medical and non-medical expenditure was asked in detail. Medical expenditure included doctor's fees, medicine, diagnostic test, and other medical expenses, whereas non-medical expenditure included transportation and other non-medical expense. OOPE was calculated by adding total medical expenditure and transportation, followed by subtracting reimbursement by insurance companies or employers. If OOPE expenditure was higher than 10% of the usual annual per capita consumption expenditure, it was categorized as catastrophic health expenditure at 10% (CHE-10) threshold [17, 18]. Individuals were also asked regarding the source of financing for total medical expenditure, which was categorized as household income or savings, borrowing, sale of the physical asset, a contribution from friends and relatives, and other sources.

To understand the barriers in availing public healthcare facilities, the 75th NSS collected individual responses from those who did not utilize public healthcare facilities, as follows: services not available, available but poor quality or doctor not available, quality satisfactory but health facility being too far, quality satisfactory but long waiting time, financial constraints, and preference for trusted doctor or hospital. Utilization rate was calculated as a major indicator for access to healthcare during hospitalization and outpatient care.

Statistical analyses. Logistic regression models were built to understand factors determining access to care and financial protection. In model-1, the dependent variable was the incidence of hospitalization due to mental disorders in the last 365 days. The explanatory variables included age category, residence, gender, social group, household occupation, income quintile, insurance coverage, and type of provider. In model-2, the dependent variable was the incidence of reporting of acute or chronic ailment in the last 15 days due to mental disorders and the explanatory variables were the same as model-1 but age category and insurance coverage were excluded. In model-3, the dependent variable was the incidence of CHE-10 during hospitalization related to mental disorders, and the explanatory variables were the same as Model-1 in addition to marital status. Variation inflation factor for multicollinearity, LR-Chi2 and its *p*-value for the goodness of fit, mean pregibon dbeta values for influential observation, and predicted value (*_hat*) $[p>|z|]$ and predicted value squared (*_hatsq*) $[p>|z|]$ for specification error were calculated for these models. Literature review and test for specification error helped in identifying the relevant explanatory variable for the models.

Findings of the 75th NSS, 2017-18, were also compared with the 71st NSS, 2014. Weights (multipliers) were provided by NSS in the unit-level data. All analyses were done after applying analytical weight and cross-checked with the 75th NSS report [16]. Similar methods were also used in previous studies [18, 19]. We used STATA version 14.1 for the analyses.

Results

Background characteristics

Out of a total of 93,925 hospitalization in the last 365 days in India, 2017-18, 374 were due to mental disorders (Table 1). The average age of the individuals with a mental disorder and who had a hospitalization in the last 365 days was 38.4 years. Out of a total of 43,240 outpatient visits in the last 15 days, 283 were due to mental disorders in outpatient care. The survey collected gender data as male, female, and transgender. However, in this survey, no transgender individuals reported having a mental disorder.

Table 1: Demographic and Socioeconomic characteristics of sample population having mental disorders in India, 2017-18.

Mental Disorder				
	Outpatient (283)		Inpatient (374)	
	Sample size (N)	Percentage	Sample size (N)	Percentage
Total	283 out of total 43,240 outpatient episodes in India	0.49%	374 out of total 93,925 hospitalization episodes in India	0.40%
Mean age (years)	41.9		38.4	
Rate of hospitalization and PAP	40 PAP per 1,00,000 population		20 hospitalization per 1,00,000 population	
Rural	30 PAP per 1,00,000 population		20 hospitalization per 1,00,000 population	
Urban	20 PAP per 1,00,000 population		20 hospitalization per 1,00,000 population	
Age group (years)				
0-14	22	11.5	37	21.6
15-29	56	14.1	91	21.7
30-44	80	36.3	99	24.1
45-59	63	17.4	89	23.0
60+	62	20.6	58	9.7
Place of Residence				
Rural	161	60.2	221	73.4
Urban	122	39.8	153	26.6
Gender				
Male	157	59.7	234	57.3
Female	126	40.3	140	42.7
Marital Status				
Never Married/divorced/ separated	100	42.6	133	44.9
Currently married	154	48.4	203	49.6
Widowed	29	9.0	24	5.5
Social Groups				
ST	11	4.2	24	3.3
SC	39	17.2	63	14.2
OBC	123	40.3	158	55.3
General	110	38.4	129	27.2
Education				
Illiterate	101	33.5	121	33.9
Up to primary	59	28.4	56	23.6
Up to secondary	83	16.5	119	27.9
Above Secondary	40	21.7	64	14.6
Household occupation				
Self employed	143	40.0	177	49.2

Regular Wages	66	18.3	91	25.3
Casual Labourer	44	21.7	62	17.2
Others	30	19.9	30	8.3
Economic quintile				
Poorest	53	17.7	78	24.7
Poor	44	18.0	74	13.5
Middle	61	22.2	67	18.8
Rich	53	17.9	74	23.7
Richest	72	24.2	81	19.3

Source: Authors' computation from unit records of NSSO 75th Round 2017-18

Disease Burden

The hospitalization rate due to mental disorders was 20 per 1,00,000 individuals in India (Table 1). The chance of hospitalization increased with the increasing age group. For instance, the chance of hospitalization in the age group 60 years and above was 4.19 times higher [(95% CI: 2.71-6.48); $p<0.001$] compared to the 0-14 years age group. The chance of hospitalization was also higher in the rural areas, male, and general category population compared to their counterparts and this was statistically significant. Insurance coverage did not affect the chance of hospitalization (Table 2).

The proportion of the ailing population due to mental disorders in the last 15 days was 40 per 1,00,000. Self-reporting of ailment was higher in general category [OR: 3.73; 95% CI: 2.01-6.93; $p<0.001$] compared to ST category, and richest income quintile [OR: 1.73; 95% CI: 1.18-2.52; $p<0.0$] compared to poorest income quintile (Table 2).

Table 2: Factors leading to self-reporting of hospitalization, PAP, and CHE-10 due to mental disorders in India, 2017-18.

	Reporting of hospitalization OR (95% CI)	Reporting of PAP OR (95% CI)	CHE-10 OR (95% CI)
Total			
Age group (years, ref:0-14)			
15-29	2.48 (1.69-3.64)*	NA	1.22 (0.34-4.34)
30-44	3.44 (2.35-5.03)*	NA	0.49 (0.10-2.34)
45-59	4.13 (2.81-6.08)*	NA	0.24 (0.05-1.24)
60+	4.19 (2.71-6.48)*	NA	0.15 (0.03-0.87)**
Place of Residence (ref: rural)			
Urban	0.77 (0.61-0.98)**	0.96 (0.74-1.24)	0.38 (0.18-0.80)**
Gender (ref: male)			
Female	0.62 (0.50-0.77)*	0.82 (0.65-1.04)	0.56 (0.28-1.11)
Marital status (ref: never married)			
Currently married	NA	NA	3.73 (1.15-12.04)**
Widowed	NA	NA	1.10 (0.19-6.14)
Social Groups (ref: ST)			
SC	2.13 (1.32-3.43)**		2.41 (0.63-9.11)
OBC	2.17 (1.41-3.36)*	2.95 (1.51-5.79)**	1.78 (0.53-5.98)
General	2.16 (1.38-3.38)**	3.73 (2.01-6.93)*	2.48 (0.71-8.67)
Education (ref: illiterate)			
Up to primary	NA	NA	0.42 (0.15-1.23)
Up to secondary	NA	NA	0.52 (0.21-1.26)
Above Secondary	NA	NA	1.18 (0.42-3.32)
Household occupation (ref: self-employed)			
Regular Wages	1.24 (0.73-1.42)	1.03(0.76-1.40)	0.54 (0.23-1.30)
Casual Labourer	0.88 (0.65-1.19)	0.84 (0.59-1.19)	1.29 (0.54-3.10)
Economic quintile (ref: poorest)			
Poor	1.02 (0.73-1.42)	1.00 (0.67-1.50)	0.99 (0.33-3.02)
Middle	0.89 (0.64-1.25)	1.33 (0.91-1.93)	0.33 (0.11-0.98)
Rich	1.05 (0.75-1.46)	1.25 (0.84-1.84)	0.24 (0.09-0.66)**
Richest	1.13 (0.80-1.58)	1.73 (1.18-2.52)**	0.29 (0.10-0.82)**
Insurance coverage (ref: No)			
Yes	1.11 (0.85-1.44)	NA	0.43 (0.18-1.03)
Provider (ref: public)			
Private	NA	NA	23.33(10.85-50.17)*
Constant	0.00 (0.00-0.00)*	0.00 (0.00-	0.75 (0.14-3.96)

			0.00)**
Model Details			
Log likelihood	-2932.89	-2392.59	-129.00
Number of observations	555351	555351	292
LR Chi2	139.70	71.99	143.71
Prob>Chi2	0.000	0.000	0.000
Pseudo R2	0.023	0.014	0.357
Mean Variance inflation factor	1.44	1.49	2.38
Mean Pregibon dbeta	0.001	0.001	0.55
Specification error (linktest): predicted value (_hat)[p> z]	0.01	0.04	0.000
Specification error (linktest): predicted value squared (_hatsq)[p> z]	0.07	0.19	0.990

Note: (*) p-value <0.001; (**) p-value<0.05; 'NA' indicates particular variable was not included in the respective model.

All estimates, except model details, are odds ratio (OR) and values in the parentheses are confidence intervals of the estimates

Source: Authors' computation from unit records of NSSO 75th Round 2017-18

Access to healthcare

Hospitalization: Out of the total hospitalizations due to mental disorders, 40.8% were under public providers and 59.2% were under private providers (Table 3). Share of public facilities utilization was lowest (21.0%) in the 0-14 years age group and highest (59.6%) in the 15-29 years age group. Public facilities utilization was also high among the ST category (75.5%), illiterate (52.0%), self-employed (41.8%), and rich income quintile (49.3%). On the other hand, private facility utilization was high among 0-14 years, rural areas, females, OBC category, primary school educated, casual laborer, and poor income quintile.

Table 3: Healthcare utilization among individuals having mental disorders during hospitalization and outpatient care in India.

	Hospitalization (n=374)		Out-patient care (n=283)	
	Pub.	Pvt.	Pub.	Pvt.
Total	40.8	59.2	33.9	66.1
Age group (years)				
0-14	21.0	79.0	53.1	46.9
15-29	59.6	40.4	28.2	71.8
30-44	28.4	71.6	34.3	65.7
45-59	51.4	48.6	35.1	64.9
60+	48.6	51.4	31.1	68.9
Place of Residence				
Rural	37.4	62.6	40.5	59.6
Urban	50.1	49.9	26.6	73.4
Gender				
Male	44.0	56.0	34.4	65.6
Female	36.4	63.6	32.8	67.2
Marital Status				
Never Married/ divorced/	40.2	59.8	37.9	62.1
Currently married	40.1	59.9	29.0	71.0
Widowed	55.4	44.6	40.4	59.6
Social Groups				
ST	75.5	24.5	48.1	51.9
SC	53.4	46.6	22.5	77.5
OBC	34.4	65.6	47.9	52.1
General	42.8	57.1	20.4	79.6
Education				
Illiterate	52.0	48.0	44.8	55.2
Up to primary	14.2	85.8	39.1	60.9
Up to secondary	43.5	56.5	28.5	71.5
Above Secondary	53.7	46.3	21.5	78.5
Household occupation				
Self employed	41.8	58.2	30.3	69.7
Regular Wages	41.1	58.9	24.6	75.5
Casual Labourer	37.6	62.4	59.6	40.4
Economic quintile-Rural				
Poorest	34.4	65.6	48.6	51.4
Poor	33.1	66.9	23.0	77.0
Middle	44.1	55.9	33.6	66.4
Rich	49.3	50.7	22.2	77.8

Richest	40.5	59.5	39.4	60.7
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Source: Authors' computation from unit records of NSSO 75th Round 2017-18

Major reasons for non-utilization of public healthcare facilities during hospitalization were poor quality of available care or non-availability of doctors at public healthcare facilities (46.2%), preferences for the trusted provider (19.5%), non-availability of services (17.3%), and long waiting line (9.7% - Table 4)

Table 4: Reasons for not availing government healthcare facilities during hospitalization and outpatient care among individuals with mental disorders in India, 2017-18.

	Service not available	Available but poor quality/doctor not available	Quality satisfactory but too far	Quality satisfactory but long waiting time	Financial constraints	Preference for trusted doctor/hospital	Others
Hospitalization (n=203)							
Total	17.3	46.2	2.8	9.7	0.3	19.5	3.3
Place of Residence							
Rural	14.9	50.1	3.9	7.1	0.4	20.3	3.3
Urban	25.6	32.6	3.4	18.6	0.0	16.8	3.0
Sex							
Male	23.2	30.6	6.2	11.8	0.0	23.5	4.7
Female	10.4	64.6	0.9	7.1	0.6	14.7	1.6
Economic class							
Poorest	16.0	76.1	0.8	2.7	0.0	2.9	1.4
Richest	19.0	31.4	8.1	14.2	1.5	16.1	9.9
Outpatient visit (n=147)							
Total	12.7	20.6	6.2	11.1		49.0	0.4
Place of Residence							
Rural	24.4	28.3	13.0	7.3		26.2	0.8
Urban	2.3	13.8	0.1	14.4		69.4	0.1
Sex							
Male	16.6	13.0	2.5	11.0		56.2	0.6
Female	5.7	34.4	12.8	11.1		36.0	0.0
Economic class							
Poorest	6.6	53.3	0.0	1.1		35.9	3.1
Richest	21.4	9.6	4.0	23.5		41.3	0.1

Source: Authors' computation from unit records of NSSO 75th Round 2017-18

Outpatient care: In outpatient care, the share of private facility utilization (66.1%) was considerably higher than the public facilities (33.9%). Public facility utilization was higher among 0-14 years (53.1%), rural areas (40.5%), widowed (40.4%), ST category (48.1%),

illiterate (44.8%), casual laborer (59.6%), and poorest income quintile (48.6%) compared to the respective counterparts. Private sector utilization was high among 60 and above age group, urban areas, currently married, general category, above secondary educated, regular wage household, and rich income quintile (Table 3).

Major reasons for not-availing services as public healthcare facilities in outpatient care were preference for the trusted doctor (49.0%), poor quality of available services (20.6%), non-availability of services at public healthcare facilities (20.6%), and long waiting time (11.1% - Table 4).

Financial Protection

Insurance coverage. Out of the total hospitalizations in the last 365 days, 23.5% had some kind of insurance coverage (Table 5). A larger share of this was publically funded health insurance coverage. Insurance coverage was high among 60 years or above age group (35.0%), urban areas (29.1%), females (29.1%), SC category (27.4%), and rich income quintiles (41.5%; Table 5).

Hospitalization: Average OOPE was Rs. 7,947 (107 USD; 74 is taken as the conversion rate from USD to Rs) under public facilities and Rs. 37,152 (500 USD) under private facilities in India (Table 5). OOPE under private facilities was substantially higher compared to public facilities. For instance, OOPE for hospitalization in the age group 60 years and above was Rs. 6,027 (81 USD) in public facilities and Rs. 50,323 (678 USD) under private facilities. Similarly, OOPE in urban areas was Rs. 7,631 (103 USD) under public facilities and Rs. 46,839 (631 USD) under private facilities (Table 5).

A major source of financing hospitalization expenses was household income or savings (75.5%). However, one in four individuals had to borrow money to meet the hospitalization expenses (Table-6).

Table 5: Health insurance coverage, out-of-pocket expenditure (OOPE), and catastrophic health expenditure (CHE-10) among individuals having a mental disorder in India.

	Insurance coverage (n=374)	OOPE during Hospitalization (n=374)		OOPE during Out-patient care (n=283)		CHE-10 during hospitalization (n=304)	
		Pub.	Pvt.	Pub.	Pvt.	Pub.	Pvt.
		Total	7947	37152	544	2358	30.8
Age group (years)							
0-14	12.8	6975	29035	544	2463	30.8	82.4
15-29	27.8	8603	32550	306	1051	41.0	71.1
30-44	23.9	10712	35166	378	1244	48.3	76.1
45-59	24.3	4881	37330	650	1220	20.9	77.7
60+	35.0	6027	50323	844	854	1.1	78.9
Place of Residence							
Rural	21.5	8162	30314	420	3903	39.2	86.8
Urban	29.1	7631	46839	752	980	10.7	67.0
Gender							
Male	21.5	8964	34298	636	3047	33.5	82.4
Female	29.1	6067	41539	366	1111	27.1	82.3
Marital Status							
Never Married/divorced/	21.0	7673	27403	387	4190	29.5	91.9
Currently married	22.7	8867	43152	754	1189	32.6	74.8
Widowed	27.2	4017	21968	438	890	27.0	52.5
Social Groups							
ST	18.5	5039	33854	201	399	28.6	80.8
SC	27.4	6901	32825	1094	930	28.2	63.1
OBC	23.6	6616	40345	343	4437	32.9	85.3
General	21.9	11293	35433	970	1350	30.1	83.7
Education							
Illiterate	27.4	6551	24497	427	1302	30.4	91.1
Up to primary	4.8	6742	57849	372	5526	30.3	90.5
Up to secondary	21.6	9557	30249	586	1088	16.8	64.9
Above Secondary	39.2	9910	45533	1082	1347	55.9	81.1
Household occupation							
Self-employed	15.4	10273	45791	456	3956	34.8	84.6
Regular Wages	29.3	4777	25744	642	560	19.6	70.6
Casual Labourer	25.1	5981	26760	430	1603	39.9	85.5
Economic quintile							
Poorest	3.4	12798	59502	609	1094	40.7	95.7
Poor	14.6	5837	38767	709	815	55.7	94.9

Middle	21.1	3785	28316	757	6405	3.6	81.6
Rich	41.5	6280	26633	234	1098	23.0	74.3
Richest	35.7	9591	35036	445	1483	37.5	58.1

Source: Authors' computation from unit records of NSSO 75th Round 2017-18

Table 6: Source of financing during access to care among individuals living with a mental disorder.

	Household income/saving	Borrowing	Sale of physical asset	Contribution from friends and relatives	Other sources
Hospitalization (n=374)					
Total	75.5	12.0	0.6	9.4	2.5
Place of Residence					
Rural	75.1	12.1	0.8	9.9	2.1
Urban	76.4	12.0	0.0	7.9	3.7
Sex					
Male	72.2	13.7	0.4	11.7	2.0
Female	79.9	9.8	0.8	6.3	3.1
Outpatient visit (n=283)					
Total	95.9	0.4		1.1	2.7
Place of Residence					
Rural	93.6	0.3		2.1	4.1
Urban	98.4	0.4		0.0	1.1
Sex					
Male	97.5	0.0		0.7	1.8
Female	92.4	1.2		2.0	4.5

Source: Authors' computation from unit records of NSSO 75th Round 2017-18

CHE-10 due to hospitalization was 30.8% under public facilities and 82.5% under private facilities (Table 5). CHE-10 was considerably high in the lower socioeconomic population group. For example, 95.7% of the poorest income quintile households, which had hospitalization under the private sector, faced CHE-10 in the last 365 days (Table 4). The chance of facing CHE-10 was 62% lower [95% CI: 82-20; $p<0.05$] in the urban areas compared to rural areas. The chance of facing CHE-10 was 23.33 times higher [95% CI: (10.85-50.17); $p<0.001$] under the private sector compared to the public sector (Table 2).

Total expenditure during a hospitalization was Rs. 8,794 (medical expenditure: Rs. 5,932 [80 USD], non-medical expenditure: Rs. 2,862 [39 USD]) under public facilities and Rs. 30,331 (medical expenditure: Rs. 27,294 [368 USD], non-medical expenditure: Rs. 3,035 [41 USD]) under private facilities. The share of average medical expenditure of the total expenditure was 67.5% under public facilities, and 90.0% under private facilities. The average expenditure on medicines was Rs. 3,958 (53 USD) under public facilities and Rs. 11,987 (162 USD) under private facilities, which were 45.0% and 39.5% of total expenditure, respectively. Bed charges had a share of 16.2% of total expenditure under private facilities and 1.9% under public facilities (Table 7).

Table 7: Cost of medical and non-medical expenditure during inpatient and outpatient care for mental disorders in India.

Source: Authors' computation from unit records of NSSO 71st, 2014, and 75th Round 2017-18

Strata	Average Medical expenditure in Rs, %						Average Non-medical expenditure in Rs, %			Total expenditure
	Doctor's Surgeon's Fee	Medicine	Diagnostic Test	Bed Charge	Other medical expense	Total	Transport for patient	Other non-medical expense	Total	
Inpatient care (n=374)										
Public	54 (0.6 %)	3958 (45.0 %)	1199 (13.6%)	164 (1.9%)	557 (6.3%)	5932 (67.5%)	1200 (13.6%)	1662 (18.9%)	2862 (32.5%)	8794 (100 %)
Private	4423 (14.6%)	11987 (39.5%)	3687 (12.2%)	4923 (16.2%)	2273 (7.5%)	27294 (90.0%)	1100 (3.6%)	1935 (6.4%)	3035 (10.0%)	30331 (100 %)
Outpatient care (n=283)										
Public	2 (0.3%)	438 (74.1%)	19 (3.2%)	-	22 (3.7%)	482 (81.6%)	62 (10.5%)	47 (8.0%)	109 (18.4%)	591 (100 %)
Private	169 (6.1%)	1091 (39.7%)	380 (13.8%)	-	790 (28.7%)	2430 (88.3%)	183 (6.7%)	138 (5.0%)	321 (11.7%)	2751 (100 %)

Out-patient care: Average OOPE for an out-patient visit was Rs. 544 (7 USD) under public facilities and Rs. 2,358 (32 USD) under private facilities. Under public facilities, OOPE was high in urban areas [Rs. 752 (10 USD)], males [Rs. 636 (9 USD)], currently married [Rs. 754 (10 USD)], above secondary educated [Rs. 1,082 (15 USD)], and regular wage households [Rs. 642 (9 USD)]. OOPE under the private sector was many times higher than the public sector and more so in 0-14 years age group [Rs. 2,463 (33 USD)], rural areas [Rs. 3,903 (53 USD)], males [Rs. 3,047 (41 USD)], and self-employed [Rs. 3,956 (53 USD)] households.

Total expenditure per outpatient visit under public facilities was Rs 591 (medical expenditure: Rs. 482 [7 USD], non-medical expenditure: Rs. 109 [1.5 USD]) and Rs. 2,751 under private healthcare facilities (medical expenditure: Rs. 2,430 [3 USD], non-medical expenditure: Rs. 321 [4 USD]). Expenditure on medicines was Rs. 438 (5.9 USD) under public facilities and Rs. 1,091 (15 USD) under private facilities, which constituted 74.1% and 39.7% of total expenditure, respectively.

Comparison between 71st Round, 2014, and 75th Round, 2017-18, National Sample Survey

During hospitalization, public facilities utilization had reduced from 45.7%, in 2014, to 40.8% in 2017-18. On the other hand, in outpatient visits, public facilities utilization had increased from 27.9%, in 2014, to 33.9%, in 2017-18. Insurance coverage during hospitalization had increased from 15.8% to 23.5% during the same period. OOPE under public facilities had reduced from Rs. 16,771 (226 USD) to Rs. 7,947 (107 USD) during hospitalization and from Rs. 869 (12 USD) to Rs. 544 (7 USD) in outpatient visits. However, OOPE under private healthcare facilities had increased from Rs. 30,568 (412 USD) to Rs. 37,152 (500 USD) during hospitalization and from Rs. 1,201 (16 USD) to Rs. 2,358 (32 USD) per outpatient visit. CHE-10 under public facilities had decreased from 47.9 % to 30.8% and increased from 52.1% to 82.5% under private healthcare facilities.

Table 8: Variation in various indicators for individuals with mental disorder from 71st Round NSS, 2014, to 75th Round NSS, 2017-18

		Mental disorder	
		71 st NSS, 2014	75 th NSS, 2017-18
Access			
Inpatient care	Hospitalization rate	30 per 100000 population	20 per 100000 population
	Share of public sector during hospitalization (in %)	45.7	40.8
	Share of private sector during hospitalization (in %)	54.3	59.2
Outpatient care	PAP	70 per 100000 population	40 per 100000 population
	Share of the public sector in outpatient care (in %)	27.9	33.9
	Share of the private sector in outpatient care (in %)	72.1	66.1
Financial Protection			
Inpatient care	Any insurance coverage (in %) among individuals having a mental disorder and were hospitalized in the last 365 days	15.8	23.5
	OOPEx during hospitalization in the public sector (in Rs.)	16771	7947
	OOPEx during hospitalization in the private sector (in Rs.)	30568	37152
	CHE-10 in public sector during hospitalization (in %)	47.9	30.8
	CHE-10 in private sector during hospitalization (in %)	52.1	82.5
Outpatient care	OOPEx in outpatient care under public sector (in Rs.)	869	544
	OOPEx in outpatient care under private sector (in Rs.)	1201	2358

Source: Authors' computation from unit records of NSSO 71st, 2014, and 75th Round 2017-18

Discussion

The current study aims to understand healthcare utilization and associated financial expenses in individuals with a mental disorder in India. The study uses the 75th NSS, which is nationally representative and one of the most robust datasets present in the country [16]. Overall, self-reporting of mental disorders in India was low. This could be due to two reasons. First, individuals may conceal their diagnosis due to the stigma associated with mental disorders [20, 21], and second, India's health system is highly underfunded and

fragmented at the system level, which hampers access to mental health services [22–24]. However, self-reporting of mental disorders was higher in the upper socioeconomic population compared to the lower socioeconomic population. This could be attributed to better awareness of mental disorders and access to services in higher socioeconomic populations, which Amartya Sen has called 'positional objectivity' [27].

In the present study, 63.5% of the individuals with a mental disorder and who went to the private sector for hospitalization reported unavailability or poor service quality at public facilities. While tax-funded government health facilities provide selective care related to immunization, maternal and child health, leprosy, etc., there are limited resources for mental health disorders [26, 27]. For India's population of 1.39 billion, there are 9,000 psychiatrists, 2,000 psychiatric nurses, 1,000 psychiatric social workers, 1,000 clinical psychologists, and 60,000 psychiatric beds [22, 28]. In other words, India has 0.3 psychiatrists per 100,000 population compared to the global median of 3 per 100,000 population. Developed nations such as Canada, and New Zealand recommend a range of one psychiatrist for 7,500 to 10,000 population [29, 30]. This gap between the demand for mental health services and their supply has created significant unmet healthcare needs.

The current study showed that the private sector was a major service provider for mental health services with a larger share for outpatient than inpatient care. Since inpatient care requires greater investment in infrastructure, human resources, and clinical management than outpatient care, the private sector may shy away from this expense [31]. Interestingly, in individuals from higher socioeconomic groups, there was lower utilization of private healthcare facilities during inpatient care compared to poorer socioeconomic groups. A potential explanation could be that individuals from lower socioeconomic groups may not have access to government mental health hospitals, typically situated in few metropolitan cities in India, for inpatient care whereas those from higher socioeconomic groups may have greater access to government facilities since they can afford transportation costs [26, 35]. This pattern of utilization could also be due to regional and state variations. In recent years, given the rise in mental health awareness, the private sector has also started investing in mental health in urban localities [32]. However, further research is required to understand the differences in patterns of health care utilization among different socioeconomic groups.

In outpatient care, preference for a trusted doctor was the major reason for choosing a private provider over a public provider. This was mainly due to greater autonomy to visit the same doctor for continuity of care under the private sector than the public sector. Patients often find it difficult to consult the same doctor under public facilities during their follow-up visits. Similar findings have also been reported by various national and international studies [33, 34].

Financial hardship was a major challenge in access to mental health services in India. Our analyses showed that more than three out of four hospitalized individuals did not have health insurance coverage, and one out of four had to borrow money for hospitalization. Access to services becomes even more challenging since outpatient care and rehabilitation services are not covered under most health insurance schemes in India [24, 35]. Individuals with mental disorders often require life-long services and expenditure on drugs and diagnostics constitutes more than half of the total expenditure. Previous studies have also shown a similarly high level of financial hardship in outpatient care compared to inpatient care over time [36]. Lack of health insurance coverage leads to higher OOPE at the point of service delivery for the household, which is one of the most regressive financing methods. OOPE was many times higher under the private sector compared to the public sector in India with more than eight out of 10 households facing CHE-10 during hospitalization. This could be attributed to the profit maximization nature of India's private sector and differential charging schemes wherein patients are charged till their maximum capacity to pay [27, 34]. In contrast to private facilities, public facilities appear to be more equitable given that their outpatient utilization among the lower socioeconomic groups was higher than upper socioeconomic groups. Our findings align with data from the last five years (2014 to 2018) that show significantly increased utilization of public health facilities for outpatient care, and drastically reduced OOPE [29, 40, 41]. However, OOPE for drugs and diagnostics under the public sector is still significant, which may reduce affordability for patients from lower socioeconomic groups.

Often, individuals with a mental health disorder from lower socioeconomic groups and rural areas may either forgo their treatment or turn to traditional healers or informal providers that are not legally approved in the country [38]. This could be due to the unavailability of mental health facilities at the primary healthcare facilities (health sub-centre, primary health centre, and community health centre), which are closest to the community [20, 22]. Moreover, the private sector does not typically invest in setting up mental health facilities in remote and rural areas of India. For individuals from lower socioeconomic groups, even non-medical expenditure (transportation, food, lodging) can hinder access to care, apart from opportunity cost [39, 40]. Taken together, a variety of factors contribute to the high unmet healthcare needs for mental disorders in India.

India's health system has been chronically underfunded since the government allocates only 1.3% of its gross domestic product (GDP), which is much less than 5% recommended by the World Health Organization [41, 42]. India's National Health Policy had proposed spending 2.5% of the GDP on health by 2025, but this commitment has not been realized so far [42]. Among the competing healthcare priorities, the country has paid very little attention to mental health. India spends less than 1% of total government health expenditure on mental health (mental health hospital: 0.23%; rehabilitative care: 0.05%; all long term care: <0.01%) [41]. According to one conservative estimate, the annual estimated cost on the government to meet the mental health needs of the country would be Rs. 94,073 crore [22].

The current COVID-19 pandemic is a wake-up call for greater investment in mental healthcare in India. Issues related to mental health have been reported across the world and in India [43]. The National Health Policy-2017 envisages providing comprehensive primary healthcare, including mental health, at the community level by upgrading the health sub-centre to a health and wellness centre. However, real-world implementation has yet to be realized [44]. As the country is going through an epidemiological and demographic transition, by 2050, 20% of India's population will be above the age of 60 years. The large elderly population may present with a higher disease burden of non-communicable diseases and mental health disorders [45]. Thus, there is an urgent need to improve the country's mental health resources.

The findings of this study need to be interpreted in light of certain limitations. This study is based on the self-reporting of mental disorders, which significantly undercounts the real disease burden and unmet healthcare needs of mental disorders. The 75th NSS combined different categories of mental disorders into one category that does not allow a deeper understanding of individual mental disorders, which must be calculated for populous countries like India. However, the study's strengths include the nationally-representative sample which allows for investigation into factors affecting healthcare utilization and financial protection in the present context.

Conclusion

Self-reporting of mental disorders in India is low. The private sector is a major service provider for individuals with a mental disorder with a greater share of outpatient care compared to inpatient care. However, financial hardship is considerably very high while seeking care from the private sector. The public sector is more affordable and equitable compared to the private sector. However, the public sector provides a limited range of services that do not meet the societal demand for mental health services. India needs greater investment in mental health resources as it goes through an epidemiological and demographic transition. To achieve universal health coverage under sustainable development goals, the country needs to strengthen its healthcare system, providing comprehensive primary care, along with robust tertiary and rehabilitative care referral linkages.

Abbreviations

CHC: Community Health Centre

CHE: Catastrophic health expenditure

CHE-10: Proportion of households in a population who face catastrophic health expenditure computed using the threshold of 10% of usual annual consumption expenditure

DH: District Hospital

NSS: National sample survey

NSSO: National sample survey office

OOPEx: Out-of-pocket expenditure

PHC: Primary Health Centre

PMJAY: Pradhan Mantri Jan Arogya Yojana

SHC: Sub Health Centre

RSBY: Rashtriya Swasthya Bima Yojana

Declarations

Ethics approval and consent to participate: The data analysed for this article are from the National Sample Survey, 75th Round, which contains anonymised data in the public domain (online available). The researchers had no access to personal identifiable data. The survey is undertaken by the National Sample Survey Office (NSSO) of the Ministry of Statistics and Programme Implementation of the Government of India. Data available in public domain are approved for use for research purpose by Ministry of Statistics and Programme Implementation, Government of India [16].

Consent for publication: Not Applicable.

Availability of data and materials: The present study is based on India's National Sample Survey, 2017-18, which is freely available in the public domain (<http://www.mospi.gov.in/unit-level-data-report-nss-75th-round-july-2017-june-2018-schedule-250social-consumption-health>) [16].

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