

1 Article

## 2 Mental Health Issues in Madhya Pradesh: Insights 3 from National Mental Health Survey of India 2016

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17 **Abstract:** Background: India has one-fifth of the world's population with contribution of mental  
18 disorders to the overall burden of the disease being 13.9 %. Objectives of Study: To estimate  
19 prevalence and patterns of mental illnesses in Madhya Pradesh. Material and Methods: Multi-stage,  
20 cluster random sampling technique, with selection probability proportionate to size at each stage.  
21 A total of 3240 individuals 18 years or older were interviewed. The methodology employed had  
22 both quantitative and qualitative components. Mini International Neuro-psychiatric Interview  
23 along with 10 other instruments were used. Results: The overall weighted prevalence for any mental  
24 illness was 13.9% with 16.7% over the lifetime. The treatment-gap for all mental health problems is  
25 very high (91%) along with huge impact on the socioeconomic condition in Madhya Pradesh.  
26 Conclusions: This study provides an evidence of huge burden of mental, behavioral and substance  
27 use disorders as well as treatment gap in Madhya Pradesh. There is an immediate need for the  
28 attention of all stakeholders including policy makers, political leaders, health care professionals and  
29 the society at large. These findings also highlight need for multi-pronged interventions rooted in  
30 health policy directed at reducing treatment gap in the short term and disease burden in the long  
31 run.

32 **Keywords:** Mental disorder; treatment gap; health system; Madhya Pradesh

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### 34 1. Introduction

35 Mental illness is an emerging public health problem of global concern. In India, mental disorders  
36 with 22 million years lived with disability (YLD) ranks number one cause for YLD as per latest Global  
37 Burden of Disease study 2017 estimates. <sup>[1]</sup> Adults between 15-49 years have more burden of YLD due  
38 to mental disorders. In terms of Disability Adjusted Life Years (DALY) which measures both potential  
39 Years of Life Lost (YLL) and YLD, in the same age-group mental disorders (8.76% of all DALY) rank  
40 as number 2 cause after cardiovascular diseases (10% of all DALY) in terms of disability adjusted life  
41 years (DALYs). This is approximately 30% increase in percent of total DALY from 6% in 1990. <sup>[1]</sup>  
42 Although, developed countries have higher prevalence of mental disorders, developing countries  
43 have large global burden of untreated mental disease. <sup>[2,3,4]</sup> Almost four in five persons with mental  
44 disorder are from low-and-middle-income (LAMI) countries. <sup>[2]</sup>

45 Mental as well as neurological and substance use disorders (MNSUDs) categorized under the  
46 non-communicable (NCD) are recognized as important public health problems in India. <sup>[5,7]</sup> The  
47 presence of mental illness is considered as stigma and impacts familial, social as well as occupational  
48 life of person. This has considerable negative influence on the family and society at large. Also, mental  
49 healthcare access is limited in most parts of India including Madhya Pradesh.

50 Madhya Pradesh is the second largest state in India having 7.2 million population and 51  
51 districts. <sup>[8]</sup> It is a high priority state for Reproductive Maternal New-Born Child and Adolescent  
52 Health (RMNCH+A) interventions for reducing maternal and child mortality. Consequently,  
53 MNSUDs have not received the needed attention from various concerned stakeholders. Insufficiency  
54 of the data from previous studies often precludes its use for development of mental health programs  
55 in Madhya Pradesh <sup>[5,6]</sup> Thus, in order to strengthen mental health policies and programmes at the  
56 state levels, the present study was conducted as a part of National Mental Health Survey 2015-16  
57 with the objective of estimating prevalence and patterns of mental illnesses, identification of the  
58 treatment gap, health care utilisation and self-reported disability among respondents with current  
59 mental illness.

## 60 2. Material and Methods

61 National Mental Health Survey of India (include reference of all 3 NMHS reports *i.e.* prevalence,  
62 mental health system and summary report) was undertaken in 12 states of India including Madhya  
63 Pradesh during 2015-16. <sup>[7]</sup>

### 64 2.1. Study design

65 Community based cross-sectional study was undertaken to assess the prevalence, pattern,  
66 treatment gap and disability associated with mental disorders in the state. Focus group discussions  
67 were conducted to understand the perception of the community regarding. Mental health systems in  
68 the state were assessed through Key informant interview and also by collecting secondary data.

### 69 2.2. Study duration

70 April 2015 to May 2016.

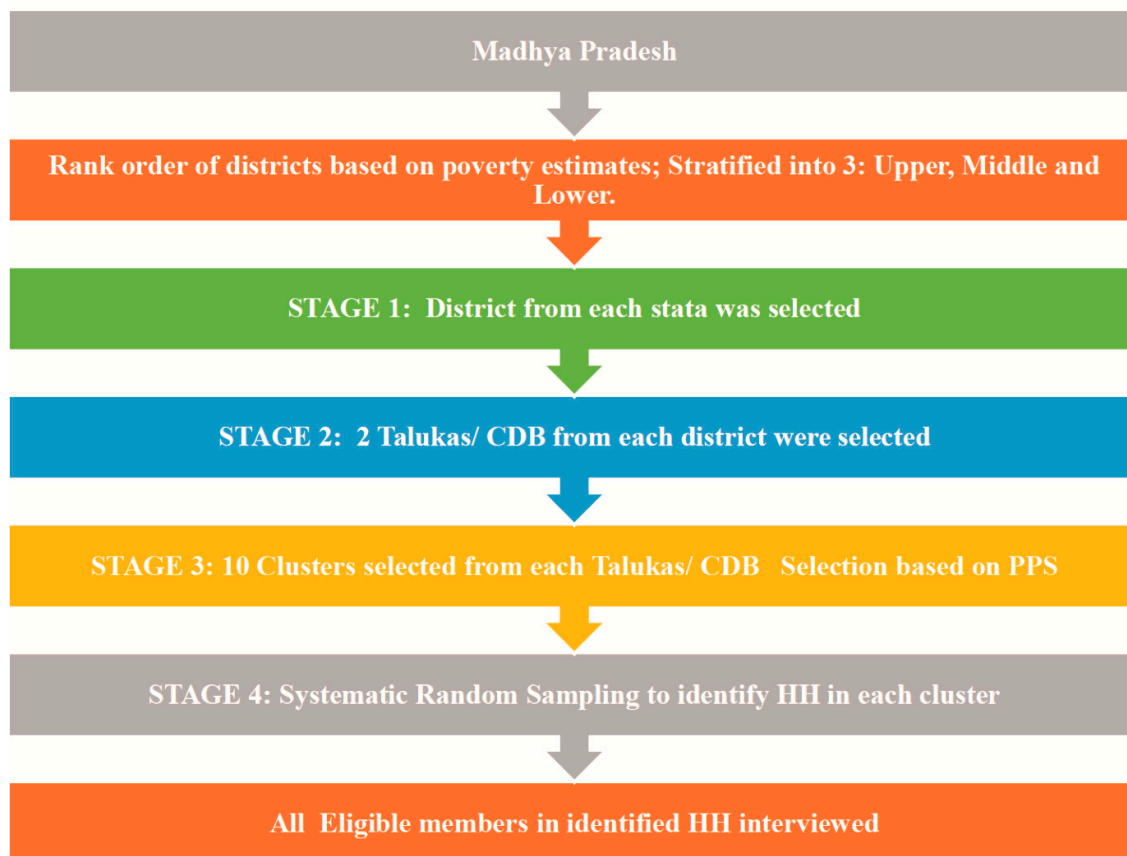
### 71 2.3. Sample size

72 Since, National Institute of Mental health and Neurosciences, Bangalore was assigned the overall  
73 responsibility of coordinating NMHS at the national level, a pilot study for NMHS was undertaken  
74 in Kolar district of Karnataka. <sup>[9]</sup> In the pilot study, the prevalence of any mental health morbidity  
75 among adults was found to be 7.5%. Therefore, the final sample size was calculated to be 3000;  
76 derived at with a design effect of 3, an absolute error of 2% at the confidence level of 95%. The non-  
77 response rate was estimated to be 30%. Accounting for the work to be done and team size, 60 clusters  
78 of 50 adults were taken for the study.

### 79 2.4. Sampling technique

80 Multistage, Stratified, Random Cluster sampling technique, with random selection based on  
81 Probability Proportional to Size at each stage (MSRS-PPS) was used. The cluster was either a named  
82 inhabited village or wards in an urban area as per Census 2011. Selection of cluster was done as per  
83 PPS method. In each cluster, first house listing and mapping were done and then 15 households were  
84 selected by systematic random sampling. The primary and secondary sampling units were derived  
85 from the state's districts and talukas. The districts were selected using district level poverty estimates  
86 based on stratified random sampling technique. Only non-institutionalised individuals were  
87 considered as a respondent. All resident members of the household (HH) were enlisted and eligible  
88 members (aged >18 years) were interviewed. In the event of non-availability of a member of the  
89 household, two additional visits were planned. If the individual was not available even after three

90 visits, the individual was declared as a non-responder. An informed consent was obtained from each  
91 respondent of HH before initiation of the interview (Figure 1).



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**Figure 1.** Sampling methodology adopted during NMHS, 2015–2016.

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In order to explore the extent, pattern, geographic distribution, along with the community attributes such as stigma, health seeking patterns, barriers and challenges associated with substance/drug use and mental health problems; qualitative methodology was adopted. Two focus group discussions (one each with patients and health care providers) and four key informant interviews (one each with Health Care Provider, social worker, health care provider from NGO and Pharmacist) were conducted in each of the three selected districts.

#### 100 2.5. Data collection tools and procedures

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A set of ten study instruments were used in the study which comprises of:

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1. *Socio-demographic form*: This form had information on age, gender, place of residence, income, education, occupation and marital status.
2. *Mini International Neuro-psychiatric Inventory (MINI) 6.0* [10]: M.I.N.I. was chosen for its multiple inherent advantages. It is an instrument which requires limited training to collect validated data, has validated translations in Indian language and could be administered to a large population. In epidemiological studies requiring psychiatric evaluation and outcome tracking M.I.N.I. is usually the interview of choice. With an administration time of fewer than 30 minutes, it is a short but accurate structured diagnostic psychiatric interview. M.I.N.I.
3. *Intellectual Disability*: Intellectual Disability, referred to as mental retardation in earlier times, has been included under the mental health programme for programmatic purposes. Being a developmental disorder, it is not a mental health problem; however, because of co-morbidities, overlaps still exist. The ID screener consisted of two questions, the response for which was

- 114 recorded as either Yes or No, and probably yes was also recorded as Yes. A yes to any one of the  
115 two questions was considered to be screener positive ID. 1) Did the person appear backward,  
116 slow, dull, or markedly less intelligent in everything since childhood? Did the person always  
117 have a difficulty in learning to do things that other individuals of his age did easily (for e.g.,  
118 eating by oneself, dressing, bathing, toilet management).
- 119 4. *Fagerström Nicotine Dependence Scale* for tobacco assessment (smoking and non-smoking  
120 variants).<sup>[11]</sup>
  - 121 5. *Pathways Interview Schedule* (Encounter Form) by WHO was adopted and used to gather  
122 systematic information about the sources of care used by patients before approaching a mental  
123 health professional for assessing their health care seeking behaviour.<sup>[12]</sup>
  - 124 6. *Sheehan Disability Scale*. It was used to assess Disability status and derive socio-economic costs  
125 involved in it.<sup>[10]</sup>
  - 126 7. *Assessment of Epilepsy*. It includes questions related to epilepsy in order to provisionally diagnose  
127 Generalised Tonic-Clonic Seizures.<sup>[13]</sup>
  - 128 8. Socio-economic impact on illness (Modified as per WHO-DAS-2.0): A 7 question set looking at  
129 subjective reporting of overall difficulties, duration of these difficulties in the past 30 days, its  
130 impact on routine activities, expenditure due to illness, respondent missing on family, social or  
131 leisure activities due to illness was used.

## 132 2.6. Training and Quality control

133 The AIIMS Bhopal team in collaboration with NIMHANS team conducted a detailed training  
134 for the field survey staff (using a structured training protocol) for a period of 6 weeks and included  
135 theoretical orientation about the mental illnesses and survey methods, demonstration of asking  
136 questions to elicit mental illness symptoms, supervised interview in the hospital, and later in the  
137 community. Data was collected by these trained Field Data Collectors (FDC) who were postgraduates  
138 in psychology using Hand Held Devices which were configured for the purpose of the survey.  
139 Standard translation and back-translation protocols were used to translate all the study instruments  
140 into different local languages of the individual states. Daily and weekly monitoring and surprise on-  
141 field supervisory visits, along with systematic training of the field data collectors was done to ensure  
142 quality in data collection (including missing data). Quality control was performed by independent  
143 scrutiny of five percent of the total interviews by the state team.

## 144 2.7. Statistical analysis

145 Descriptive analysis provided estimates of the prevalence of mental illnesses coded by using  
146 International Classification of Disease, 10<sup>th</sup> revision, Diagnostic Criteria for Research (ICD 10 DCR).  
147 The probability of selection and non-response was used to weigh the results. Analysis was done using  
148 SPSS 18.0<sup>[14]</sup> and STATA 11.0<sup>[15]</sup>.

## 149 3. Results

150 A total of 3,240 individuals were contacted and 2,621 were interviewed during NMHS-MP 2015-  
151 16. An 80.9% response rate was achieved at the individual level and 87.3% at the household level.

### 152 3.1. Mental morbidity in Madhya Pradesh

153 The current prevalence of any mental illnesses amongst individuals aged >18 years was 13.9%  
154 (95% CI 13.7% -14.1%) and the lifetime prevalence was 16.7% (95% CI 16.5% -16.9%). Among current  
155 mental illnesses common mental disorders (CMDs) including depression, anxiety and substance  
156 abuse were reported in 13.55% of the individuals, whereas the weighted prevalence of Severe Mental  
157 Disorders (SMDs) was 0.38%.

### 158 3.2. Treatment patterns and care characteristics among respondents with current mental morbidity

159 There was a huge treatment gap of 90.7% among those identified with mental morbidity (n =  
 160 333) and those currently on treatment (n = 31). The median duration of illness was found to be 11  
 161 years and the median duration of the treatment was 5 years. The median interval between onset of  
 162 illness and consultation was found to be one year. A median of 2 health care providers was consulted  
 163 by the patient and 2/3rds of the time the most recent consulted doctor was from the public sector  
 164 (Table 1). Before accessing mental health care professionals, majority of the patients admitted to seek  
 165 mental health care from temples, dargah, local priest or traditional healer and the main reasons cited  
 166 for not seeking advice from the professionals were costly treatment, distant hospitals, lack of  
 167 professionals and unawareness of availability of treatment. [KII]

168 **Table 1.** Treatment patterns and care characteristics among respondents with current mental  
 169 morbidity.

Treatment Related Characteristics (N = 333)	Frequency
Currently on treatment (n)	31
Treatment gap (%)	90.69
Median duration of illness (in months)	132 (1-480)
Median interval between onset of illness and consultation (months)	12 (1-352)
Median number of treatment providers consulted	2 (1-10)
Most recent provider being a government doctor- n (%)	23 (74.19%)
Median duration of being on treatment (months)	60 (1-480)

### 170 3.3. Substance abuse disorder in Madhya Pradesh

171 In this study the prevalence of alcohol use disorder was found about 10.33% (CI: 10.19-10.46)  
 172 and was much higher among male residents (20.23% CI: 19.98-20.49), those residing in urban non-  
 173 metro areas (11.6% CI: 11.29-11.91)) and those in age group 40-49 years (16.07% CI:15.69-16.45).  
 174 Alcohol use disorder was found surprisingly to be the lowest among people living in urban metro  
 175 city (6.42% CI:5.93-6.91). The prevalence of tobacco use disorder was found to be the highest *i.e.*  
 176 34.89% (CI: 34.68-35.1) and was highest among male, those aged more than 40 years and among rural  
 177 residents. Khaini, Gutka, Nus, Bidi, Madhu, Munnaka (Sasan) were the most commonly consumed  
 178 tobacco forms prevalent in local areas. Few health care workers also reported some unusual form of  
 179 substance abuse like cough syrups, drugs like diclofenac, cetirizine, derivatives of barbiturates,  
 180 whitener and thinners, for which prevalence was found to be 0.6%. Stress relief, curiosity, recreation,  
 181 lack of family support/ emotional support, family conflicts for youths and depression are some of the  
 182 reasons for consumption of these substances brought out by the participants.

### 183 3.4. Suicides and Risk of suicides

184 Suicidal risk was estimated to be present among 0.8% of the study participants. Males, residents  
 185 of urban metros and individuals aged between 30- 49 years were found to be at the highest risk of  
 186 suicides (Table 2).

187 **Table 2.** Prevalence of Suicidal risk by age, gender and residence.

Classification	Biosocial Characteristic	Prevalence in % (CI)
Gender	Male	0.93 (0.87-0.99)
	Female	0.67 (0.62-0.72)
Residence	Rural	0.68 (0.64-0.72)
	Urban non- metro	0.83 (0.74-0.91)
	Urban metro	2.67 (2.35-3)

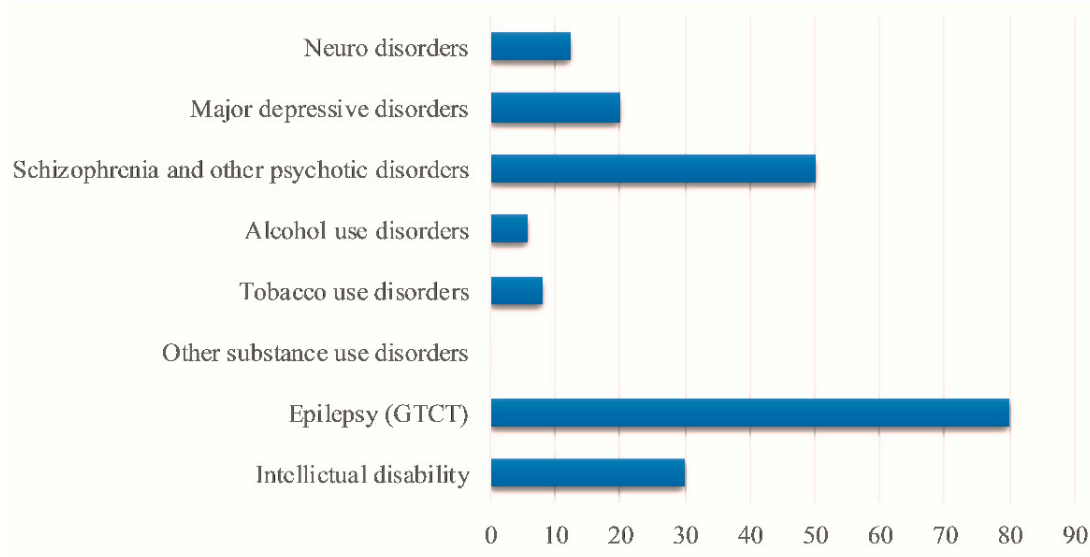
### 188 3.5. Mental Health Services in Madhya Pradesh

189 Currently, the District Mental Health Program (DMHP) covers 14% of the total population of  
 190 the state with a meager allocation of 0.2% of the total budget for mental health by the state health  
 191 department. The state of Madhya Pradesh has two mental hospitals and 14 medical colleges with

192 Department of Psychiatry; which are engaged in mental health care delivery services. About 12% of  
 193 the District/General hospitals of the state are providing mental health services. However, only 3%  
 194 and 0.1% of CHCs and PHCs respectively are providing mental health care services. Also, the number  
 195 of core hospital-based mental health facilities in the state per lakh population was found to be near  
 196 0.03, whereas the numbers of beds available for mental health patient services are only 1.18 per one  
 197 lakh population. It was found that only 124 health care professionals are available to deliver mental  
 198 health services; with only two specialists and three trained MBBS doctors for one lakh population.  
 199 There are 0.2 mental health professionals and 0.05 psychiatrists in the state per one lakh population.  
 200 There was also a shortage of rehabilitation workers and special education teachers in the state. Health  
 201 care professionals who had undergone training in mental health in the previous three years were 99  
 202 *i.e.* 0.1 per lakh population.

### 203 3.6. Treatment gap

204 Treatment-gap for all mental health problems is as high as 91% in the state. Only 30% of patients  
 205 with intellectual disability, 8% with tobacco use disorder, 5.8% with alcohol use disorder, 20% with  
 206 the major depressive disorder and 12.5% with neuro disorder received treatment. However, 80% of  
 207 the patients with epilepsy received treatment (Figure 2).



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**Figure 2.** Treatment gap for mental morbidity in Madhya Pradesh.

### 210 3.7. Socioeconomic Impact of Mental Illnesses

211 The median number of days in which difficulty was shown by people with mental morbidity in  
 212 carrying out daily activities in the past 30 days was 25. While median number of days for which the  
 213 family members were not able to go for work due to the care of the patient in the past three months  
 214 were 5, whereas median number of days where family could not attend family, social or leisure  
 215 activities due to the care of patient care were 6 and median monthly expense on the care of the patient  
 216 was 1450 Rupees INR (Figure 3).

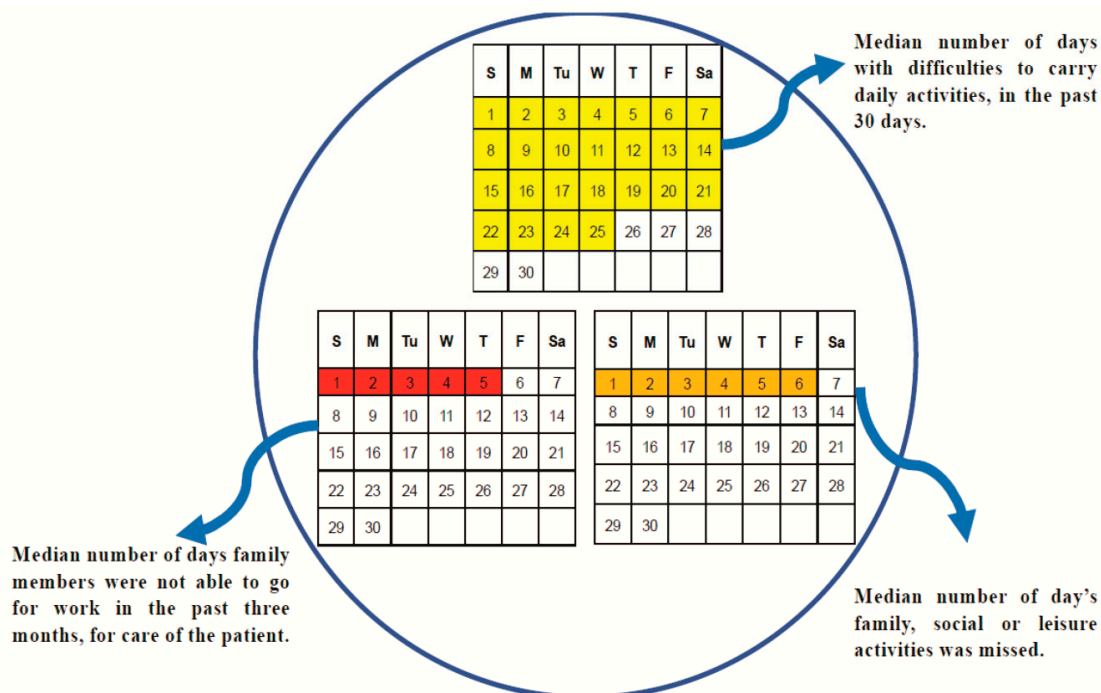


Figure 3. Socioeconomic impact of mental morbidities.

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#### 4. Discussion

220 The present study is the first large scale, comprehensive mental health problem assessment  
 221 undertaken in the state of Madhya Pradesh which has provided state-level prevalence estimates. The  
 222 hallmark of the study is the strict quality control measures undertaken at multiple levels. The lifetime  
 223 prevalence of mental morbidity in the state is 16.7% which is higher than the national average (13.7%).  
 224 [6,9] This is also higher than reported by several other studies done in India and other developing  
 225 nations. [15,16,17,18] The prevalence of psychoactive substance use disorder is also three times higher than  
 226 the national estimate. [6,9, 20,21, 22] In recent studies by Chavan *et al.*, [23] at Chandigarh and Gururaj G *et*  
 227 *al.* at Bangalore; [24] the prevalence rates were found to be lower than the present study. Among  
 228 substance use disorders, tobacco use disorders are highest in the state; [6] which is similar to the  
 229 findings reported by Ghulam R, *et al.* [24] Most affected population for tobacco use disorder is males  
 230 having age more than 40 years. Similar findings have been reported in a study by Singh A &  
 231 Ladusingh L. [26] High prevalence is attributed to social and cultural acceptance of tobacco  
 232 consumption in the rural community and adding onto it, at some places local customs and cultures  
 233 necessitates its consumption. [6,9] Thus a package of comprehensive, un-fractured and integrated  
 234 services targeting this huge burden of substance abuse in the state should be formulated.

235 Suicide rate per lakh population in Madhya Pradesh is also found to be higher than the national  
 236 suicide rate. [6,9, 27] About 11.9 people per lakh population commit suicide per year accounting for a  
 237 huge loss attributed to a high treatment gap in mental healthcare in MP. The treatment gap (not  
 238 consulting health provider despite having a mental health problem) in the state is much higher (91%)  
 239 as compared to the national level (60%). [6,9] Similar findings have been reported by other studies. [28,29]

240 This huge treatment gap can be attributed to severe shortages of skilled mental health  
 241 professionals in the public health system for delivering mental health care to the patients and very  
 242 few capacity building initiatives for general health professionals and non-specialists health workers.  
 243 Availability of psychiatrists is least in Madhya Pradesh and has fallen short of the recommended  
 244 requirement of at least 1 psychiatrist per lakh population highlighting the severe inadequacy of  
 245 mental health specialists in the state. [30] Also, the existing facilities for mental health care are  
 246 inadequate, mostly urban-centric and available in few of Medical Colleges only. Moreover, even the  
 247 rehabilitative facilities like daycare centres, halfway homes, sheltered workshops, temporary stay

248 facilities, etc are also very limited in addition to mental health care personnel like social workers,  
249 counsellors, physiotherapists. A large proportion of the individuals with mental morbidity belonging  
250 to rural and tribal areas face difficulty in accessing mental health services due to the long distance of  
251 the health care centres from their residence. Also, the majority of psychiatric patients do not seek  
252 health care due to low mental health literacy, lack of awareness about treatment services, and the  
253 stigma associated with treatment. Although mental health NGOs are working in the state, their  
254 impact at ground level is lowest. Score for intra and intersectoral collaboration among various  
255 departments for mental health is also smallest for Madhya Pradesh which is an important cog in the  
256 wheel of effective prevention, management and rehabilitative services for Mental Health. Thus, the  
257 unavailability, inaccessibility of mental health care resources amalgamated by the diverse and  
258 complex sociocultural factors appear to influence the mental health-seeking behaviour of the  
259 population in the state.

260 Despite of its high disease burden, mental morbidities and substance use disorder receive very  
261 little attention from the legislators and stakeholders of policy making in the state of Madhya Pradesh.  
262 Though mental morbidities are included in the existing routine HMIS in the state, the reality of the  
263 situation is not reflected as the data related to this is scarce. Also, there is no separate budget head  
264 for mental health in the state. The total budget available for mental health was less than 1% in the  
265 state and of the available the budgetary support, utilization could not be done due to lack of  
266 administrative and procedural clarity and skilled human resource constraints. <sup>[28]</sup>

267 Thus, the development and proper implementation of policies for building a strong health  
268 system that integrates mental health with the larger public health system based on evidence-based  
269 practices is the burning need.

#### 270 *Limitation of study*

271 The study does not include children and adolescent population which comprises a significant  
272 proportion of those with mental morbidities in the state.

#### 273 **5. Conclusion**

274 This study has generated evidence of high burden of mental disorders in Madhya Pradesh. It  
275 also highlights huge treatment gap which needs to be addressed on priority. Despite this, the problem  
276 of mental health is neglected and left unaddressed during the planning and delivery of health care  
277 programmes. Therefore, high priority should be ascertained for the development of inclusive and  
278 integrated mental health services, with a greater focus on substance use disorders.

#### 279 **6. Recommendations**

280 Development of stand-alone comprehensive mental health approach with specified goals and  
281 targets is the need of the hour. Being a high prevalent state in context to substance use the approach  
282 should be prioritized on the treatment of related morbidities along with a focus on rehabilitation of  
283 mentally unhealthy population and health promotional activities. Quality assured mental health  
284 services should be provided through skill development of human resources engaged in mental health  
285 services along with upgradation of the basic infrastructure and functioning of the concerned  
286 institution. Proper training of the existing manpower should be done periodically to enhance their  
287 basic expertise to deal with mental health issues both at community and facility level. Apart from  
288 that there is also a need to increase the involvement of qualified specialist *viz.* psychologists and  
289 psychiatrists along with the paramedical workforce so as to deal with the situation more effectively.  
290 Creating awareness among upcoming younger generation through school-based Information  
291 Education Communication/ Behavioral Change Communication (IEC/BCC) activities and  
292 involvement of important stakeholders like community leaders could boost the already existing  
293 preventive strategies.



294 More significantly regular evaluation of the mental health services with a rapid and periodic  
 295 appraisal of the programs should be done so as to stringently monitor the innovation, new  
 296 actions/strategies and their efficacy to deal with the mental health problems.

297 **Author Contributions:** Conceptualization: A.K., A.P., G.G., M.V., V.B., G.N.R., B.A., M.S. and A.R.; Data  
 298 curation: A.K. and G.G.; Formal analysis: A.K., A.P., G.G. and B.A.; Funding acquisition: G.G., M.V. and V.B.;  
 299 Investigation: A.K., A.P., G.G. and B.A.; Methodology: A.K., A.P., G.G., M.V., V.B., G.N.R., B.A., M.S. and A.R.;  
 300 Project administration: A.K., A.P., G.G., M.V., V.B., G.N.R., B.A., R.C., S.R.; Resources: G.G., M.V. and V.B.;  
 301 Software: A.K., A.P., G.G., G.N.R. and B.A.; Supervision: A.K., A.P., G.N.R., B.A., R.C., S.R. and A.R.; Validation:  
 302 A.K., A.P., S.R., M.S., B.A., G.G., M.V., V.B., G.N.R., A.M., K.Y. and A.R.; Visualization: A.K., A.P. and G.G.;  
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 308 Bengaluru, India in collaboration with state partners. NMHS phase 1 (2015-16) was undertaken in 12 states of  
 309 India across the 6 regions and interviewed 39,532 individuals (<http://indianmhs.nimhans.ac.in>).

310 **Conflicts of Interest:** The authors declare no conflict of interest.

311 **Consent for Publication:** The data that support the findings of this study are available from [NIMHANS, India]  
 312 but restrictions apply to the availability of these data, which were used under license for the current study, and  
 313 so are not publicly available. Data are however available from the authors upon reasonable request and with  
 314 permission of [NIMHANS, India].

315 **Ethical Approval:** The study protocol was approved by NIMHANS Institutional Ethics Committee and  
 316 Institutional Human Ethical Committee, All India Institute of Medical Sciences Bhopal prior to the start of the  
 317 study vide letter No. No. NIMHANS/DO/98th IEC/2015 dated 16th July 2015 and No. IHEC-LOP/2015/EF0021  
 318 dated 7th Aug. 2015 respectively.

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