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Prevalence and Predictors of Mental Health Disorders among Indian Population: Evidence from the SAGE Wave-1

Balhasan Ali[*1] and Gyan Chandra Kashyap[2]

Abstract: The aim of this study is to examine the prevalence of mental disorders in the Indian population, and its socio-economic determinants that affect the mental health of the population. Data for this study was obtained from the cross-sectional survey conducted by Global Ageing and Adult Health (SAGE), WAVE-1, in India in 2007. The target population in the SAGE survey was aged 18+ years with emphasis on those aged 50+ years with 11230 sample. Mental disorder was the outcome measure of the study. Bivariate and Multivariate techniques, along with the correlation matrix, were used to achieve the objectives of this study. Cronbach's alpha test was used to test the reliability of mental health symptoms. More than half (55%) of the respondents of age '60 years and above' were found to have severe mental disorders. Forty-two percent of the respondents living in rural area were found to have severe mental disorders as compared to those living in urban places (32%). The findings reveal useful insights regarding the predictors associated with mental health disorder, such as the age of the respondent, sex, place of residence, educational attainment, and wealth quintile.

Keywords: Mental Health, Disorder, Indian, SAGE.

Introduction

Mental Health disorder has become a significant risk factor for overall wellbeing. The World Health Organization reported that the prevalence of mental disorder is the highest among older people (15%) and around 6.6 percent of all disability endorsed to mental disorders (WHO, 2017). Various social, mental and physical factors determine the level of psychological health of a person at any point of time. Persistent socioeconomic pressures are recognized as risks to the mental health of individuals and communities. There is compelling evidence that associates some indicators like poverty and low educational levels with Mental Health Disorders. Poor mental health is also associated with rapid social change, stressful work conditions, gender discrimination, social exclusion, unhealthy lifestyle, risks of violence, and physical morbidity (WHO, 2018). There are also some biological causes of mental illness, including genetic factors, which contribute to imbalances in the brain. A study conducted in China and India found that around one-third of global disability adjusted life years (DALYs) are attributable to mental health, neurological problems, and substance use disorders, which is greater than that of all developed countries combined (Charlson et al., 2016). Evidence from the Chinese population shows that higher workplace social capital is associated with the lower odds of mental health

[*] Corresponding Author
[1]PhD. Student, Department of Mathematical Demography & Statistics, International Institute for Population Studies, Mumbai, 400088, India, Email: alihasancs92@gmail.com
[2]Assistant Professor, Institute of Health Management Research, Bangalore, 560105, India, Email: gyan@iihmr.org

disorder (Gao et al., 2014). A higher social cohesion leads lower mental disorders in people (Erdem et al., 2016).

Mental disorders are among the most burdensome of all classes of disease because of their high prevalence and chronicity, early age of onset, and resulting serious destruction (Andrade et al., 2013). The World Health Organization estimated that globally, the contribution of mental and substance use disorders to disability-adjusted life years is 6%. At the regional level, the contribution of mental disorder and substance use disorders to the total causes of death is 3% in the African region, 10% in the American region, 6% in the Southeast Asian region, 9% in the European region, 6% in the Eastern Mediterranean, and 8% in the Western Pacific (Wang et al., 2016). Globally, the contribution of mental and substance use disorders in years lived with disability is 22%. It is 20% in the African region, 26% in the American region, 19% in Southeast Asia, 22% in the European region, 21% in the eastern Mediterranean and 23% in the western pacific region (Wang et al., 2016).

The world health organization also reported that the mental and substance use disorders significantly contribute to the years of life lost due to disability. It is 1% globally, 2% in the American region, 2% in the European region and 1% in the western (Wang et al., 2016). Globally, 1.08 billion people have mental and substances use disorders, which increased 14.3% between 2005 and 2015 (Whiteford et al., 2015). Result from the national mental health survey of India show that prevalence of lifetime mental morbidity, current mental morbidity, and risk of suicides were 13.9%, 10.5%, and 6.4%, respectively. The prevalence of mental disorders among adolescents was 7.3% and it is higher in urban areas. This study also showed that the treatment gap for mental disorders varies from 70% to 90% for different mental disorders (Gururaj et al., 2016).

The burden due to non-communicable diseases has been increasing steadily. Rapid changes in India's social structures resulting from work stress, unemployment, unhealthy lifestyles, aging, etc. have led to increasing levels loneliness, anxiety, sleeping disorders and stress. Mental disorders cover the full spectrum of mental illnesses ranging from mild anxiety to severe forms of behavioural and thought abnormalities. Numerous studies have shown that the prevalence of mental disorders is high in the Indian population (Chatterjee, 2009; Das et al., 2016; Das-Munshi et al., 2016; Sidhaye and Patel, 2010; Pothen et al., 2003). Despite previous studies, many studies documented in different time-period in the different origin, researches indicated that prevalence of severe mental disorder at community level has been also increasing due to poverty, low education, social exclusion and gender discrimination, lack of employment (Lahariya et al., 2010; Srinath et al., 2010; Khandelwal et al., 2004). Health facilities are inadequate in India poverty is widespread. As most people cannot afford the cost of maintaining their physical health, getting treated for mental disorders is not an issue of major concern. Due to lack of awareness about mental health, poverty, low levels of education and lack of resources to detect mental health symptoms, a substantial proportion of populations continues to suffer from mental disorders.

In India, only few studies carried out to assessed the mental disorders at large scale. However, there are many studies which assessed mental disorder at community level. Most of the studies revealed about socio-economic and gender disadvantages for mental health which

mostly affect women and poor section of the society (Chatterjee, 2008; Chatterjee, 2009; Sidhaye and Patel, 2010; Pothen et al., 2003; Nayak et al., 2010; Kishore et al., 2011). In addition, life style, ageing and family structure affect mental health of people as many studies carried in India revealed that adolescents and elderly have more risk of suffer with mental disorders (Pillai et al., 2008; Lahariya et al., 2010; Srinath et al., 2010), and people from rural area and with low education have more risk of mental disorders (Ganguli, 2000; Nayak et al., 2010; Kermode et al., 2009; Kermode et al., 2009).

Mental disorders can be both cause and consequence of socio-economic inequality. The gap between the need for treatment and its provision is very large in India. There have been only few studies in India which assessed mental disorders and most of these are limited to clinical and community research. In this context, it is important to assess mental disorder at large scale. In the present study, we tried to canvass the reasons of mental health disorder and its determinants among people aged 18 years and above. The aim of this study was to examine the prevalence of mental disorders in the Indian population, and its socio-economic determinants that affect the mental health of the population.

Data and Method

Data for this study was obtained from Study on Global Ageing and Adult Health (SAGE), WAVE-1conducted in India in 2007. The SAGE survey was conducted in six countries — China, Ghana, India, Mexico, South Africa and Russia — in the period 2007−10. SAGE is a longitudinal, cross-sectional, household, face-to-face survey, which was initiated by the World Health Organization (WHO). SAGE Wave-1 in India was carried out in six states — Assam, Karnataka, Maharashtra, Rajasthan, Uttar Pradesh and West Bengal.

The sample size of the study was 11230. The SAGE survey adopted the instruments and methods used in World Health Surveys. The target population in the SAGE survey was aged 18+ years with an emphasis on population aged 50+ years. A multistage stratified clustered sample design was used uniformly in all the countries that were part of SAGE. SAGE Wave-1 (India) included a total of 11,230 completed interviews: 4670 interviews with persons aged 18−49 years (3625 women and 1045 men) and 6560 (3256 women and 3304 men) interviews with individuals aged 50 years and above (Arokiasamy et al., 2013).

For this study, we used STATA software to analyze the data. Bivariate and Multivariate techniques were used to achieve the proposed objectives of this study. Logistic regression analysis is used to estimate the odds of mental health status. This is a statistical method for analyzing a dataset in which there are one or more independent variables that determine an outcome. PCA is used to construct mental health index. The correlation matrix table shows the correlation coefficients between sets of variables. Each variable is correlated with each of the other values. The correlation matrix computes the correlation coefficients of the columns in a matrix i.e, row i and column j of the correlation matrix is the correlation between column i and column j of the original matrix.

Cronbach's alpha was used to test the reliability of mental health symptoms. It is a measure of the reliability, or internal consistency, of a set of scale or test items. Cronbach's alpha

is computed by correlating the score for each scale item with the total score for each observation (usually individual survey respondents or test takers) and then comparing that to the variance for all individual item scores. Mental health disorder is the dependent variable for this study.

Dependent Variables

Mental health status is the dependent variable for objective of this study. For this, we used symptoms of mental disorder. For mental health index, eight symptoms of mental health were used in this study. The symptoms are "participation in the community," "dealing with conflicts and tensions with others," "making a new friendship," "dealing with strangers," "falling asleep," "not feeling rested," "feeling depressed," "anxiety", which were used to develop a mental health index. In the questionnaire, there were five response categories: "none," "mild," "moderate," "severe," and "extreme". Mental health is categorized as normal (no symptoms), moderate (less than four symptoms) and severe (more than four symptoms), which is based on the frequency of symptoms. Had no symptoms recoded as '0' and have symptoms as '1'. We have used mental health variable as a binary variable (0, No Symptoms) (1, Have Symptoms) as binary variable to perform a logistic regression analysis.

Independent Variables

The background variables are age, sex, place of residence, marital status, education, employment, currently working, caste, religion, wealth index, and region. The socio-economic and demographic characteristics include age groups (18-34, 35-59, 60 years and above), sex (male and female), place of residence (rural, urban), education (no formal education, less than primary, primary school completed, secondary education completed, high school completed, college and above education), marital status (never married, currently married, widowed, others (divorced/separated), employment (public sector, private sector, self-employed, informal employment), religion (Hindu, Muslim, others), caste (SC, ST, others), wealth quintile (poorest, poor, middle, rich, richest), (Assam, Karnataka, Maharashtra, Rajasthan, Uttar Pradesh, and West Bengal). Two other independent variables (currently used tobacco and currently used alcohol) were also included in the logistic Model-II to examine the adjusted effect of predictor variables on mental health status.

Results

The socio-economic and demographic characteristics of the study population are presented in **Table 1**. It is seen that nearly half of the study population (46%) belong to the age group 35−59 years and one-third were aged 60 years and above. 61 percent of the respondents were males, and the remaining females. Most respondents (75%) were living in rural areas. Of greater concern is that forty-five percent of the respondents did not have formal schooling. Only 6 percent had completed 12 and more years of schooling. Forty-six percent were self-employed and 32 percent were engaged in informal employment. Only 10 percent of the respondents reported that they work in public sector. Further, 42 percent of respondents were employed at the time of the survey. Among the study population, one-fourth of the respondent belonged to the SC/ST castes, the larger proportion (75%) belonging to other caste groups (Other backward castes, or OBCs, and the general caste category). Eighty-four percent of the respondents were Hindus, 12 percent were Muslims and the rest belonged to various other religions.

Table 1: Percentage distribution of the aged 18 and above by their socio-economic and demographic characteristics in India, 2007-10

Background Variables	Percent	Number (N)
Age in years		
18-34	21.1	2,368
35-59	46.7	5,244
60+	32.2	3,618
Sex		
Male	38.8	4,357
Female	61.2	6,873
Place of residence		
Urban	25.3	2,845
Rural	74.7	8,385
Marital status		
Never married	5.5	621
Currently married	77.6	8,709
Widowed	16.2	1,814
Others	0.8	85
Educational status		
No formal education	44.8	5,029
Less than primary	10.5	1,174
Primary school completed	15.5	1,740
Secondary school completed	12.4	1,391
High school completed	10.9	1,225
College and above	6.0	670
Employment		
Public sector	9.7	714
Private sector	12.6	931
Self-employed	45.7	3,374
Informal employment	32.1	2,372
Currently working		
Yes	42.3	4,745
No	57.8	6,485
Caste		
Schedule tribe	6.9	774
Schedule caste	17.7	1,978
Others	75.3	8,408
Religion		
Hindu	84.1	9,439
Muslim	12.3	1,384
Others	3.6	407
Wealth index		
Poorest	20.2	2,271
Poor	20.0	2,245
Middle	20.0	2,248
Richer	20.0	2,245
Richest	19.8	2,221
Region		
Assam	10.6	1,194
Karnataka	13.8	1,553
Maharashtra	17.7	1,983
Rajasthan	19.8	2,225
Uttar Pradesh	19.6	2,201
West Bengal	18.5	2,074
Total	**100.0**	**11,230**

The prevalence of self-reported symptoms of mental health disorder in the sample population is shown in Figure 1. About three-fifths (59%) of the individuals reported that they felt anxiety and tiredness, the most common symptoms of mental disorder. Fifty-one percent reported feeling depressed. Of other self-reported symptoms 47% reported falling asleep, problems in dealing with strangers (46%), dealing with tension (45%), difficulty in participation or interactions with community (41%) and making new friends (38%).

Fig 1: Prevalence of mental disorder symptoms included for mental health index, India, 2007-10

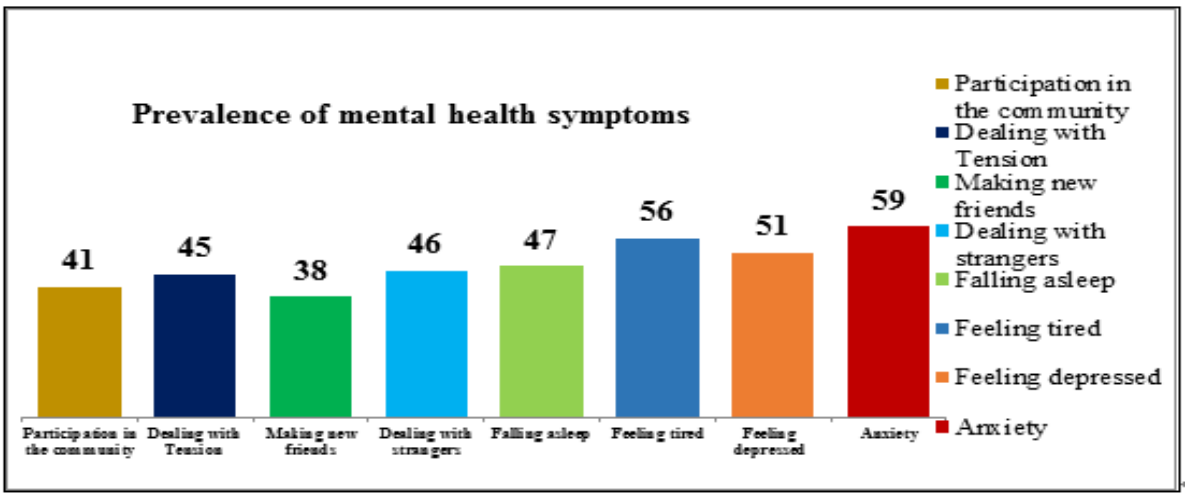

Table 2 shows the correlation matrix and Cronbach's alpha coefficients for each item. Cronbach's alpha test is one of the most commonly used tools to test reliability estimates and for checking internal consistency. We found alpha value to be α=0.83 for the entire sample. The value of alpha represents the acceptable internal consistency for all the items. Item 1 (participation in the community) shows the highest correlation with item 3 (making new friends) while it was the lowest with the item 8 (Anxiety). Further, item 2 (dealing with tension) shows highest correlation with item 3 (Making new friends) and lowest with item 6 (Feeling tired). Item 3 (making new friends) shows higher correlation with item 4 (Dealing with strangers) and less so with item 6 (feeling tired).

Table 2: Shows correlation between self-reported symptoms of mental health disorder and Cronbach's alpha test

	Item 1	Item 2	Item 3	Item 4	Item 5	Item 6	Item 7	Item 8	α-value
Item 1	1.00								0.81
Item 2	0.59	1.00							0.81
Item 3	0.60	0.62	1.00						0.81
Item 4	0.51	0.57	0.70	1.00					0.82
Item 5	0.30	0.27	0.26	0.23	1.00				0.82
Item 6	0.28	0.26	0.25	0.22	0.63	1.00			0.82
Item 7	0.32	0.32	0.28	0.23	0.42	0.42	1.00		0.82
Item 8	0.27	0.31	0.27	0.22	0.37	0.41	0.70	1.00	0.82
Overall									0.83

Note: Internal consistency, α= 0.83,

Item-1: Participation in the community; **Item-2:** Dealing with Tension; **Item-3:** Making new friends; **Item-4:** Dealing with strangers; **Item-5:** Falling asleep; **Item-6:** Feeling tired; **Item-7:** Feeling depressed; **Item-8:** Anxiety

Table 3 shows the prevalence of self-reported symptoms of mental health disorder in the Indian population according to a few selected socio-economic and demographic characteristics. Mental health variables were categorized into three groups – normal, moderate, and severe. It can be seen that about 16 percent of the respondents were normal (meaning that no symptoms of mental disorder were reported), while slightly less than half (44%) were having a moderate mental health problem. A high proportion (40%) had symptoms of severe mental disorder. The prevalence of the severe mental disorder in the study population is not uniform across age groups. More than half of the respondents (55%) of age 60 years and above reported symptoms of severe mental disorder. Only 7 percent of the respondents in this age group reported that they were normal. The chi-square test shows a statistically significant association between age of the respondent and prevalence of mental disorder ($p<0.01$). About two-fifths of older (60+years) females (41%) had severe mental disorder, while the prevalence was slightly less among older men (38%). Prevalence of mental health disorder is also seen to vary with place of residence. A higher proportion (42%) of respondents living in rural areas were found to have severe mental disorder than those living in urban areas (32%). Unsurprisingly, 41 percent never married respondents were normal (not having symptoms of mental disorder). On the other hand, a high proportion of widowed respondents (58%) had symptoms of severe mental disorder. Results show that educational attainment has positive association with mental health. There was considerable difference in prevalence (51%) of the severe mental disorders among respondents who had no formal schooling and those who had a college education or higher (11%). It is also seen that a high proportion of those who were informally employed (46%) and self-employed (42%) had severe mental disorder. A higher proportion of those who were not currently working had severe mental disorder than those who were working. Minor differences were observed in the prevalence of mental disorder across caste and religion. Respondents from the poorest wealth quintile had the highest prevalence of severe mental disorder (52%). Expectedly, it was the lowest in the richest wealth quintile (27%). Most importantly, all the predictor variables show statistically significant association with the prevalence of mental health disorder.

Table 3: Prevalence of Mental Health Status by socio-economic and Demographic characteristics among age 18 and above in India, (2007-10)

Background Variables	Normal/no	Moderate	Severe	Number (N)	p-value
Age in years					
18-34	30.7	49.7	19.6	2,354	
35-59	14.9	46.4	38.7	5,208	<0.01
60+	7.9	37.6	54.5	3,607	
Sex					
Male	17.5	44.2	38.3	4,337	<0.05
Female	15.1	44.3	40.7	6,832	
Place of residence					
Urban	18.9	49.1	31.9	2,833	<0.01
Rural	15.0	42.6	42.4	8,336	
Marital status					
Never married	40.6	44.6	14.9	619	
Currently married	16.1	46.2	37.7	8,656	<0.01
Widowed	7.5	34.8	57.7	1,808	
Others	9.4	40.0	50.6	85	
Educational status					
No formal education	8.7	40.2	51.1	4,996	
Less than primary	12.4	44.7	42.9	1,168	
Primary school completed	17.9	42.7	39.4	1,729	<0.01
Secondary school completed	22.4	49.7	27.9	1,386	
High school completed	29.4	50.7	20.0	1,219	
College and above	34.2	54.5	11.3	670	
Employment					
Public sector	23.7	49.6	26.8	714	
Private sector	22.9	47.6	29.5	927	<0.01
Self-employed	15.3	42.7	42.0	3,349	
Informal employment	10.0	44.1	45.9	2,364	
Currently working					
Yes	18.2	46.9	34.9	4,721	<0.01
No	14.4	42.3	43.3	6,448	
Caste					
Schedule tribe	18.73	42.4	38.9	769	
Schedule caste	14.4	40.85	44.8	1,968	<0.01
Others	16.2	45.1	38.7	8,362	
Religion					
Hindu	16.7	44.5	38.8	9,391	
Muslim	10.3	44.0	45.7	1,372	<0.01
Others	19.5	39.4	41.1	406	
Wealth quintile					
Poorest	9.6	38.4	52.0	2,261	
Poor	12.8	41.9	45.3	2,224	
Middle	16.4	45.4	38.2	2,236	<0.01
Richer	18.5	45.9	35.6	2,233	
Richest	22.9	49.7	27.4	2,215	
Region					
Assam	23.6	40.2	36.2	1,187	
Karnataka	15.5	58.2	26.3	1,553	
Maharashtra	21.0	36.9	42.1	1,971	
Rajasthan	10.8	42.2	47.1	2,206	<0.01
Uttar Pradesh	17.7	45.2	37.1	2,188	
West Bengal	11.0	44.3	44.7	2,064	
Total	**16.0**	**44.2**	**39.8**	**11,169**	

Table 4 shows the results of logistic regression analysis to understand the factors affecting the mental health of the study population. Model-I considers socio-economic and demographic variables (age, sex, education status, marital status, religion, caste, employment, working status, wealth index and region), while Model-II includes substance use variables (currently consuming tobacco, alcohol, etc.) along with the variables in Model-I. The results show that age has a significant effect on the mental health disorder. Those in the age group 35−59 years and 60 years and above were 2.03 ($p<0.01$) and 3.43 ($p<0.01$) times respectively more likely to have mental health problems in Model-I. In Model-II the corresponding probabilities increase by 2.29 ($p<0.01$) and 3.36 ($p<0.01$) times. Women were 1.34 ($p<0.01$) and 1.29 times more likely to have mental health problems in Model-I and Model-II respectively. Those who were currently married were 1.31 ($p<0.1$) times more likely to have mental health problems in Model-I. The corresponding increase in likelihood among those widowed was 1.49 ($p<0.05$) and among others, it was 2.94 ($p<0.1$). Education is seen to be a significant predictor. Increasing education level are associated with decreased prevalence of mental health concerns. Those who had completed primary school education, secondary education, high school completed, and college and above were respectively 0.62 ($p<0.01$), 0.74 ($p<0.05$), 0.55 ($p<0.01$) and 0.52 ($p<0.01$) times less likely to have a mental health problem in Model-I. In Model-2, those who had completed primary school and high school were respectively 0.56 ($P<0.05$) and 0.38 ($P<0.01$) times less likely to have the mental health problem. Type of employment has significant connection with mental health status. The study showed that the self-employed were 1.31 ($p<0.05$) times and those working in the informal sector were 1.65 ($p<0.01$) times more likely to have the mental health problem using Model-I. Working status is also a significant predictor. It was seen that those who were not currently working were 1.37 ($p<0.05$) times in Model-I and 1.56 ($p<0.01$) times in Model-II more likely to have mental health problems than those are working. Muslims were found to be 1.54 ($p<0.01$) times more likely to have mental health problems (using Model-I). Those who were currently consuming tobacco at 'less than daily' frequency were 1.92 times more likely to have the mental disorder in Model-II. Wealth index was also found to have an association with mental health. Respondents belonging to the middle wealth quintile were 0.71 ($p<0.01$) less likely to have mental health problems. The richer and richest were respectively 0.61 ($p<0.01$) and 0.5 ($p<0.01$) times less likely to have a mental health problem (as seen in Model-I). Using Model-II, it was seen that the richest were 0.51 ($P<0.1$) times less likely to have a mental disorder. There are significant regional differences were seen in the mental health status of the respondent. Those who lived in Karnataka, Maharashtra, Rajasthan, Uttar Pradesh and West Bengal were respectively 2.39 ($p<0.01$), 1.41 ($p<0.01$), 2.44 (0.01), 1.37 ($p<0.05$) and 2.25 ($p<0.01$) times more likely to have mental health problems (using Model-I). In Model-II, the respective figures were 8.35 ($p<0.01$), 2.01 (0.05), 5.01 ($p<0.01$), 2.25 ($p<0.01$) and 2.37 ($p<0.01$) times. The study did not find a statistically significant association of substance use with mental health disorder.

Table 4: Logistic regression model estimates the odds ratios and confidence Interval for the effect of Mental Health by socio-economic and demographic Characteristics among age 18 and above in India, 2007-10

Background variable	Model-I	C.I.	Model-II	C.I.
Age in years				
18-34®				
35-59	2.03***	[1.68-2.45]	2.29***	[1.33-3.94]
60+	3.43***	[2.70-4.36]	3.36***	[1.76-6.14]
Sex				
Male®				
Female	1.34***	[1.14-1.59]	1.29	[0.60-2.76]
Place of residence				
Urban®				
Rural	0.97	[0.82-1.15]	1.23	[0.79-1.91]
Marital status				
Never married®				
Currently married	1.31*	[0.98-1.75]	1.23	[0.53-2.86]
Widowed	1.49**	[1.03-2.17]	1.09	[0.39-3.01]
Others	2.94*	[0.99-8.72]	1.12	[0.09-13.23]
Educational status				
No formal education®				
Less than primary	0.81	[0.63-1.04]	0.89	[0.49-1.60]
Primary school completed	0.62***	[0.50-0.77]	0.56**	[0.34-0.93]
Secondary school completed	0.74**	[0.58-0.93]	0.59*	[0.33-1.04]
High school completed	0.55***	[0.43-0.71]	0.38***	[0.20-0.69]
College and above	0.52***	[0.38-0.70]	0.76	[0.33-1.77]
Employment				
Public sector®				
Private sector	0.91	[0.70-1.18]	0.87	[0.47-1.62]
Self-employed	1.31**	[1.05-1.64]	1.44	[0.83-2.51]
Informal employment	1.65***	[1.27-2.15]	1.58	[0.84-2.99]
Currently working				
Yes®				
No	1.37***	[1.16-1.62]	1.56*	[0.99-2.47]
Caste				
Schedule tribe				
Schedule caste	1.27	[0.95-1.69]	0.90	[0.51-1.58]
Others	1.23	[0.95-1.60]	0.80	[0.47-1.36]
Religion				
Hindu®				
Muslim	1.54***	[1.19-1.99]	0.66	[0.29-1.52]
Others	0.96	[0.68-1.34]	0.84	[0.41-1.73]
Wealth quintile				
Poorest®				
Poor	0.86	[0.68-1.09]	0.79	[0.47-1.32]
Middle	0.71***	[0.56-0.90]	0.90	[0.52-1.55]
Richer	0.61***	[0.48-0.78]	0.65	[0.37-1.16]
Richest	0.50***	[0.39-0.65]	0.51*	[0.26-1.00]
Region				
Assam®				
Karnataka	2.39***	[1.80-3.18]	8.35***	[3.68-18.97]
Maharashtra	1.41***	[1.09-1.81]	2.01**	[1.13-3.59]
Rajasthan	2.44***	[1.87-3.17]	5.01***	[2.45-10.27]
Uttar Pradesh	1.37**	[1.07-1.75]	2.25***	[1.29-3.92]
West Bengal	2.25***	[1.73-2.92]	2.37***	[1.39-4.04]

Tobacco uses currently		
No®		
Less than daily	1.92	[[0.65-5.65]
Daily	1.01	[0.55-1.87]
Alcohol uses currently		
No®		
Yes	0.83	[0.58-1.18]

Note: ® Reference category, ***P<0.01, **P<0.05, *P<0.1.

Discussions

As mentioned earlier, this study aimed at examining the severity of mental disorder and how socio-economic determinants affected the mental health of the study population. The result from this study shows that prevalence of mental health disorder varies by characteristics. Age was seen to have a significant effect on mental health disorder. Older people (60+ years) were more likely to have mental health problems. The findings validated WHO's report that the prevalence of mental disorder is the highest among older people (20%), and around 6.6% of all disability endorsed to mental disorders (WHO, 2017). A study of mental disorders among the elderly in India indicated that there were severe mental disorders among the elderly, women were more at risk of mental health problems than men (Grover et al., 2015).

Further, a cross-sectional community-based study of elderly people using General Health Questionnaire-12, Mini-Mental State Examination, and Geriatric Depression Scale showed high prevalence of mental disorders. This study reveals that around 34% respondents scored two or above on GHQ-12, showing potential mental illness. Results of the study showed that women (78%) had a higher prevalence of mental disorder as compared to men (42%). Prevalence of depression and anxiety were 22% and 11% respectively in the study population (Nair et al., 2015). Results from the Indian study also indicated that about 18 percent elderly were suffering from mental disorders with the problem being more severe among those from the disadvantaged socio-economic sections (Tiwari et al., 2014). A study of the elderly in Shanghai (China) showed that about one-third of the elderly were suffering from mild or severe mental disorders (Tong et al., 2011). The prevalence of mental health disorder varies with place of residence. Respondents living in the rural area were found to be at higher risk of severe mental disorder than respondents living in urban areas. Evidence from several studies had suggested that mental disorders are more prevalent in rural areas and among people of poor socioeconomic status (Subbaraman et al., 2014; Prost et al., 2012). A cross-sectional study of youth showed that prevalence of common mental disorder was 7.9%. It was 9.12% in urban areas and about 6.6% in rural places (Fernandes et al., 2013).

A recent study found that women were more likely to suffer from depression and anxiety, while men are more prone to violence and substance use disorders (Smith et al., 2018). The World Health Organization reported that depression is the leading cause of disability as measured by years lived with disability (YLDs) and fourth leading contributor to the global burden of disease. It is projected to reach the second place by 2020. A community-based cross-sectional study showed that about 75% of those with mental disorders faced stigma. Female and high-income people had the high stigma towards mentally ill people (Venkatesh et al., 2015). A study of women living in rural area indicated a high prevalence of common mental disorder which is unrecognized and is associated with adverse health (Soni et al., 2016). Females were

more likely than men to have mental health issue. Results of the study showed that 78% of the women had mental disorders. In comparison, it was 42% among men. Prevalence of depression and anxiety was 22% and 11% respectively in the study population (Nair et al., 2015). An Indian study reported that a greater proportion of women suffer from depression which is underdiagnosed and untreated. Indian women suffering from mental disorders face several treatment challenges, such as insufficient number of mental health professionals, lack of awareness, stigma, the disadvantaged position of women, the pressure of having to multiple roles in society, increased levels of stress and domestic violence (Bohra et al., 2015). Various studies from different parts of the world show that this is a near universal issue (Semenova, 2018; Das et al., 2016; Das-Munshi et al., 2016; Nayak et al., 2010; Shidhaye et al., 2010; Patel and Prince, 2010; Das et al.,2008; Rosenfield and Mouzen, 2013; Travasso et al., 2014)

Education has emerged as a significant predictor. Increasing education levels lead to decreasing mental health concerns. Analysis with Model-I shows that those who had completed primary schooling, secondary education, completed high school, studied up to college level and above were progressively less likely to have a mental health problem. It is also seen that employment type and status; education and socioeconomic condition of respondent had a significantly higher association with mental illness. A cross-sectional survey describes the prevalence of depression, healthcare seeking and association with socio-economic determinants among respondents. A study using patient health questionnaire-5 showed that about 6% of the population had high prevalence of mental disorder. The study also reveals that low education, low standard of living and caste increased the risk of mental disorder (Mathias et al., 2015). Mental health is also associated with the wealth index. Results show that those belonging to the middle, richer and richest wealth quintile were less likely to have a mental health problem. A case-control study conducted reveal that multidimensional poverty was strongly associated with caste, gender and mental illness among respondents (Trani et al., 2015). In the Indian context, mental health disorders are a challenge for researchers because of the vast diversity in culture, habits, standard of living, attitudes, etc. The findings of this study have produced some insights about the predictors associated with mental health disorder, such as the age of the respondent, sex, place of residence, educational attainment, and wealth quintile.

Limitations of the Study

The precision of the study depends on the accuracy and reliability of data and their sources. This is based on self-reported data which may be subject to recall bias. Another limitation of this study is that compare to India's population, sample size of the survey was small. This sample size may not be representative of whole population.

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