



Original article

Prevalence and sociodemographic determinants of common mental disorders (CMDs) symptoms in a rural adult population of Haryana, North India

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Abstract

Objectives: Common mental disorders (CMDs), including depression, anxiety, and somatoform disorders, affect all stages of life and impact individuals, families, and communities. This study aimed to determine the magnitude of CMDs and their sociodemographic determinants in the adult population of a rural block in North India.

Material and Methods: A cross-sectional, quantitative, community-based study was conducted among adult residents of a rural block in Haryana, North India, using a multistage random sampling technique. The Hindi version of the General Health Questionnaire (GHQ-12), a well-validated tool, was used to screen participants for CMDs. Scores of 4 or above denoted the presence of CMDs. Bivariate analyses were performed to determine the associations between CMDs and sociodemographic characteristics.

Results: Of the 180 residents selected for the study, most were women (60.0%) and aged between 31 and 50 years (52.3%). The prevalence of CMDs symptoms in the study population was 20.0%. The presence of CMDs symptoms was significantly higher among those who were aged 60 years or older [OR=12.33, 95% CI 3.21–47.38], widowed, divorced or separated [OR=7.50, 95% CI 1.09–51.52], illiterate [OR= 6.25, 95% CI 2.84–13.77], had monthly family income below 10,000 INR [OR=3.33, 95% CI 1.54–7.20], had any chronic physical illness [OR=8.28, 95% CI 3.70–18.56] and had a family history of any psychiatric illness [OR=5.56, 95% CI 1.52–19.42].

Conclusion: The burden of CMDs was quite high among adults in rural North India. The presence of CMDs was closely associated with sociodemographic characteristics. Primary care and community-based settings need to screen for, diagnose, and manage CMDs to address this growing problem.

Key words: common mental disorders (CMDs), prevalence, determinants, General Health Questionnaire (GHQ-12), rural North India

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Introduction

Common mental disorders (CMDs) are defined as depressive non-psychotic symptoms, anxiety, and somatic complaints that affect the performance of daily activities,

including depressive and anxiety disorders¹. The World Health Organization World Mental Health Survey estimated the global lifetime prevalence of CMDs between 25.9 and 32.6%². Further, the Global Burden of Disease (GBD) Survey found that mental health and substance use disorders account for the majority of years lived with disability (YLD), with depressive and anxiety disorders comprising more than half of those YLDs³. While CMDs remain an important preventable cause of disability and lost productivity⁴, they negatively affect a wide range of health, economic and social outcomes^{5, 6}. Additionally, their comorbidities with other health problems are also quite high, further worsening an individual's prognosis^{7–9}.

Approximately 70% of India's population lives in rural areas with limited access to quality healthcare facilities and

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services¹⁰). Although establishing primary health centres (PHCs) has helped improve the affordability and accessibility of healthcare to some extent, it has been largely ineffective in addressing the needs of people diagnosed with or at risk of noncommunicable disorders (NCDs), including mental disorders^{11–13}. Approximately one out of 27 individuals diagnosed with any mental disorder, such as depression, actually receive care¹⁴. The National Mental Health Survey (NMHS)¹⁵, conducted across 15 states in India, estimated that 10% suffer from common mental disorders (CMD), including depression, anxiety, emotional stress, risk of suicide, and substance use; thus, around 150 million Indians need care for mental disorders. This report also indicated that the prevalence of mental disorders was two to three times higher in urban areas than in rural areas¹⁶. However, relatively few studies have used standardized tools to assess the burden of CMD, especially in rural settings. Thus, further evidence is needed on the burden of mental disorders, especially in rural communities, using standardized tools and methods.

Given this context, this study was conducted in a rural community in northern India. It aimed to outline the prevalence of CMDs, such as depression, anxiety, and suicidal ideation, and the sociodemographic factors associated with these conditions in this population.

Material and Methods

Study population, design & settings

This community-based cross-sectional study was conducted in the Raipur Rani Community development block of the Panchkula district in Haryana, North India. The Raipur Rani block, a predominantly rural block, is approximately 35 km from the union territory of Chandigarh, the capital of Haryana state. The block includes 48 villages, of which two villages, Kheri and Badauna Kalan (Figure 1), were purposefully selected for the study, as they constitute the field practice area of the Department of Community Medicine, Postgraduate Institute of Medical Education & Research (PGIMER), Chandigarh. The village of Kheri has a health post run by the department (Figure 1), and resident doctors from the Department of Community Medicine provide preventive, promotive, and curative services in addition to health promotion activities to the underserved population of these two villages.

The two villages, Kheri and Badauna Kalan, have 274 and 180 households, with total populations of 1,142 and 744, respectively (Annual Health Survey, 2017). The average age of the population in both villages was approximately 38 years, with a literacy rate of 68.6%. The age- and sex-wise distributions of the population are shown in Table 1.

The most common occupation of village residents was agriculture, followed by poultry farming. These two vil-

lages have average characteristics similar to the 48 villages in this block in terms of size, population composition, socioeconomic status, and the residents' occupations.

Sample size and sampling technique

In the absence of reliable data on CMDs from the region, the prevalence was considered to be 12.2% based on a previous meta-analysis of studies from India and South Asia¹⁷. The sample size was 119, using this prevalence and a confidence interval of 95% with an absolute precision of 5%. A multiplication factor of 1.5 was applied to adjust for the effect of cluster sampling for the design effect. Thus, a final sample size of 180 participants was included.

A multistage random sampling technique was used to identify community members for the study, which was conducted in two phases: (i) households and (ii) participants. A list of all households in the two selected villages was obtained using the family folders maintained by the female healthcare worker at the health centre of the department, and they were numbered consecutively. The two villages, Kheri and Badauna Kalan, had 274 and 180 households, respectively, with an adult population (i.e., ≥ 18 years of age) of 824 and 524, respectively. A total of 180 households were selected using a systematic random sampling technique with a proportional number of households from each village. A list of all adult family members in each selected household was prepared, and one member from each selected household was chosen using the Kish method¹⁸. The study questionnaire was then administered to the selected individuals by a trained female health worker under the direct supervision of one of the investigators.

Study tools

A pretested structured study questionnaire consisting of two sections was used. The first part contained details on sociodemographic characteristics, that is, name, age, sex, religion, caste category, marital status, education, employment status, occupation, monthly family income, type of family, presence of any mental illness in the family, presence of any chronic physical illness such as diabetes, hypertension, TB, HIV, cardiovascular diseases, chronic respiratory diseases such as asthma or COPD, hypothyroidism, gout, chronic kidney diseases. Specific questions were asked regarding the participants' history of mental disorders, family history of prior mental disorders, and history of treatment for mental disorders.

The local language version of the General Health Questionnaire (GHQ), a well-validated screening tool for assessing mental health, was used to screen for CMDs. Since its development by Goldberg in the 1970s, it has been extensively used in different settings and cultures^{19–23}. The questionnaire was originally developed as a 60-item instrument; however, several abbreviated versions of the questionnaire



Figure 1 Maps of the surveyed villages. a. Kheri, b. Badona Kalan.

Table 1 Population composition of the survey area for the villages of Kheri and Badauna Kalan

Age-group (years)	Kheri			Badauna Kalan		
	Males	Females	Total	Males	Females	Total
0–17	180	140	320	120	100	220
18–59	362	304	666	226	188	414
≥60	84	72	156	62	48	110

have been developed, including the GHQ-30, GHQ-28, GHQ-20, and GHQ-12. The 12-item General Health Questionnaire (GHQ-12) was developed for use as a screening tool for general (i.e., non-psychotic) mental health problems in primary care or community-based settings²⁴. The scale asks whether the respondent has experienced a particular symptom or behaviour in the past two weeks. Each item is rated on a four-point scale (*less than usual, no more than*

usual, rather more than usual, or much more than usual), and when using the GHQ-12, the total score can reach either 12 or 36, depending on the selected scoring methods. The most common scoring methods are the bimodal (0-0-1-1) and Likert (0-1-2-3) scoring styles. The GHQ-12 is a consistent and reliable instrument used with general population samples²⁵. The Hindi version of the tool used in this study has been validated in Indian settings and has been found to

be reliable for measuring psychological distress in the general population^{26–29}.

Statistical analyses

Data were entered into a Microsoft Excel spreadsheet. Descriptive statistics were calculated. Descriptive data for the GHQ-12 scores were presented as means and standard deviations. The bimodal (0-0-1-1) scoring method was used to calculate the GHQ-12 scores, with total scores ranging from 0 to 12. The threshold for screening positive for CMDs was a score of 4 or higher²⁸. Categorical comparisons across various sociodemographic characteristics between individuals who screened positive and negative for CMDs were made using the chi-square or Fischer's exact tests. Relative differences in screening positive for CMDs across sociodemographic categories were compared using odds ratios and 95% confidence intervals. Data analysis was performed using IBM SPSS for Windows version 21.0 (IBM Corp., Armonk, NY, USA). The level of significance was set at $P < 0.05$.

Ethical considerations

Ethical approval was obtained from the Institute Ethical Committee (IEC), Postgraduate Institute of Medical Education and Research (PGIMER), Chandigarh, India (vide Letter No. IEC/243/2017). Written informed consent was obtained from all participants before the interview. All consenting adults who understood the questions and instructions and were not limited by any severe illness or cognitive impairment that prevented them from completing the interview were included. Adequate time was spent building rapport with each participant. The interviews were conducted in a place that offered privacy, and efforts were made to ensure that no other family members were present at the time of the interview. Confidentiality of the data collected was maintained. Study participants who screened positive for CMDs were counselled and referred to a psychiatrist on the research team to confirm the diagnosis and further management. Prior to the study, approval was obtained from local village administrative bodies to ensure their cooperation.

Results

Overall, 180 community-dwelling adults aged 18 years or older were selected through multistage sampling and interviewed for the study. The ages of the participants ranged from 18 to 76 years, with a mean age of 42.5 ± 23.4 years. The majority (52.3%) were aged between 31–50 years, female (60.0%), had a primary level of education (22.2%), living in a joint family (55.5%), married (85%), unemployed (57.3%), worked as homemakers (44.4%), and had a monthly family income below INR 10,000 (63.2%; Table 2).

The presence of any chronic physical illness, such as

Table 2 Sociodemographic characteristics of the study sample (N=180)

Variables	Frequency (N)	Percentage (%)
Sex		
Male	72	40.0
Female	108	60.0
Age-group (years)		
18–30	20	11.1
31–40	48	26.7
41–50	46	25.6
51–60	33	18.3
>60	33	18.3
Religion		
Hindu	150	83.3
Muslim	10	5.6
Sikh	20	11.1
Marital status		
Unmarried	17	9.4
Married	153	85.0
Widowed/Divorced/Separated	10	5.6
Type of family		
Nuclear	107	59.4
Joint/extended	73	41.6
Education		
Illiterate/No formal education	44	24.4
Up to Primary level (5th class)	39	21.7
Up to Middle level (8th class)	39	21.7
Up to Matriculation	33	18.3
10+2/Intermediate	18	10.0
Graduate and above	7	3.9
Employment status		
Employed/Retired with pension	77	42.7
Unemployed	103	57.3
Occupation		
Farming	18	10.0
Unskilled labour	22	12.7
Skilled worker	20	11.9
Govt. Job	12	6.7
Private Job	18	10.0
Housewife	80	44.4
Not working/retired	10	5.6
Total monthly family income (INR)		
≤5,000	17	9.4
5,001–10,000	97	53.8
10,001–15,000	41	22.7
15,001–20,000	13	7.2
>20,000	25	13.8
Presence of any chronic physical illness		
Yes	52	28.8
No	128	61.2
History of any psychiatric illness in family		
Yes	14	7.7
No	166	92.3

INR: Indian National Rupee.

diabetes, hypertension, coronary artery disease, stroke, asthma, COPD, and arthritis, was reported by 28.8% of the study participants, whereas the presence of any psychiatric illness in any family member was reported by 7.7% of the participants (Table 2).

A total of 36 (20.0%) participants screened positive for CMDs. The participants' mean GHQ-12 score was 1.77 ± 0.54 (Table 3).

Table 4 shows the associations between different sociodemographic characteristics and the presence of CMDs. Factors such as age, sex, marital status, education, average monthly family income, presence of any chronic illness, and family history of any psychiatric illness were significantly associated with the presence of CMDs ($P < 0.05$).

Table 3 Presence of Common Mental Disorders (CMDs) and GHQ-12 scores for the study sample (N=180)

Common mental disorders (CMDs)	N (%)
Present (GHQ score ≥ 4)	36 (20.0)
Absent (GHQ score < 4)	144 (80.0)
GHQ-12 scores	
Mean \pm SD	1.77 \pm 0.54
0	72 (40.0)
1–3	72 (40.0)
4–8	34 (18.8)
9–12	2 (1.2)

GHQ: General Health Questionnaire.

Table 4 Association between Common Mental Disorders (CMDs) and socio-demographic and disease-related characteristics (N=180)

Variables	Total N (%)	CMDs Present N (%)	CMDs Absent N (%)	OR (95% CI)	P-value
Gender					
Male	72 (40.0)	14 (19.4)	58 (81.6)	1 (Reference)	0.88
Female	108 (60.0)	22 (20.4)	86 (79.6)	1.05 (0.50–2.23)	
Age-group (in years)					
18–30	40 (22.2)	3 (7.5)	37 (82.5)	1 (Reference)	$< 0.00001^*$
31–59	104 (57.8)	15 (14.4)	89 (85.6)	2.07 (0.56–7.61)	
60 & above	36 (20.0)	18 (50.0)	18 (50.0)	12.33 (3.21–47.38)	
Religion					
Hindu	150 (83.3)	32 (21.3)	118 (78.7)	1 (Reference)	0.61
Muslim	10 (5.5)	2 (20.0)	8 (80.0)	0.92 (0.19–4.56)	
Sikh	20 (11.2)	2 (10.0)	18 (90.0)	0.41 (0.09–1.85)	
Marital status					
Single	17 (9.4)	2 (11.8)	15 (88.2)	1 (Reference)	0.03*
Currently married	153 (85.1)	29 (18.9)	124 (81.1)	1.75 (0.38–8.10)	
Widowed/Divorced/Separated	10 (5.5)	5 (50.0)	5 (50.0)	7.50 (1.09–51.52)	
Education					
Literate	136 (75.5)	16 (11.8)	120 (88.2)	1 (Reference)	$< 0.0001^*$
Illiterate	44 (24.5)	20 (45.4)	24 (54.6)	6.25 (2.84–13.77)	
Employment status					
Employed/retired with pension	74 (41.1)	12 (16.2)	62 (73.8)	1 (Reference)	0.29
Unemployed	106 (58.9)	24 (22.6)	82 (77.4)	1.5 (0.70–3.26)	
Type of family					
Nuclear	107 (59.4)	20 (26.8)	87 (73.2)	1 (Reference)	0.59
Joint/extended	83 (40.6)	16 (20.8)	57 (19.2)	1.22 (0.58–2.55)	
Monthly family income (in INR)					
$< 10,000$	78 (43.3)	24 (30.8)	54 (69.2)	3.33 (1.54–7.20)	0.002*
$\geq 10,000$	102 (56.7)	12 (11.8)	90 (88.2)	1 (Reference)	
Presence of chronic physical illness					
Absent	128 (71.1)	12 (9.8)	116 (90.2)	1 (Reference)	$< 0.0001^*$
Present	52 (28.9)	24 (46.2)	28 (53.8)	8.28 (3.70–18.56)	
History of psychiatric illness in family					
Absent	169 (95.9)	30 (17.7)	139 (72.3)	1 (Reference)	0.007*
Present	11 (6.1)	6 (54.5)	5 (45.5)	5.56 (1.52–19.42)	

*Statistically significant. IND: Indian National Rupee.

Discussion

In our study, 20.0% of the participating adults screened positive for CMDs in a rural community in North India. The prevalence of CMDs varies widely across populations, as shown by World Mental Health surveys that used similar methods in more than two dozen settings³⁰. The rates of CMDs also vary greatly across populations in India, with a median rate of 10% in adult populations³¹, which is much lower than that observed in our study, potentially suggesting a higher burden of CMD in the rural North Indian population. Being single, widowed or divorced, illiterate, living in a nuclear family, having a lower family income, having any chronic physical illness, and having a history of mental illness were significantly associated with CMDs in the rural adult population of North India.

Our findings provide strong evidence of the role of socioeconomic status and education as factors associated with CMDs. A high level of inequity in the distribution of CMDs across socioeconomic strata has previously been reported, with significantly increased rates of depression among lower socioeconomic groups^{32–34}.

The proportion of adults at risk of CMDs in our study was higher than that reported by the National Mental Health Survey¹⁰. The NMHS estimated a lower CMD prevalence in rural than in urban populations. Moreover, our study was based on a rural population, which is expected to have a lower prevalence of CMDs than urban populations^{11, 35}. Possible reasons for these differences could be the tools used in this study compared with those used in the NMHS and other Indian studies. An adapted version of the MINI International Neuropsychiatric Interview was used for the NMHS, whereas the GHQ-12 was used. Recent research has reported that compared with the MINI, the GHQ-12 has a sensitivity of 68.7% and specificity of 73.1%³⁶. The higher prevalence of CMDs symptoms in our study may also be due to the presence of chronic physical illness in approximately 30% of the study participants; one-fifth of the participants were elderly (>60 years of age), and approximately the same proportion were widowed, divorced, or separated. The NMHS, although a robust survey, had some methodological limitations, particularly the use of an adapted MINI with information about the validity of the adapted tool currently lacking and the selection of only some states based on the availability of interested partners¹⁰, which may be potential sources of bias. The value of data collected using suitable study designs, such as ours, should provide more accurate pooled estimates of mental disorders across India.

Estimates indicate that only 15–25% of those with severe mental disorders in developing countries receive treatment, with even lower numbers for CMDs³⁰. The integration of mental healthcare into primary care could provide an answer to the huge burden of mental disorders because

individuals diagnosed with mental illness most often present first in primary care settings. Further, CMDs should be manageable at the primary care level by non-specialist healthcare workers and primary care doctors and nurses per the recommendations of the World Health Organization³⁷. However, such basic training is not currently provided to healthcare workers or doctors in primary care. While the National Mental Health Policy³⁸ and the World Health Organization's Mental Health Action Plan³⁹ recommend community-based services to be delivered by primary care workers, its execution is not uniform across the country, and, wherever present, it is not delivered or evaluated regularly. Further, awareness campaigns aimed at reducing the fear of stigmatization concerning mental illnesses in rural areas are needed, as stigma for mental illnesses is especially high in rural areas of India⁴⁰.

Limitations

First, the study was restricted to a single block in a single district; hence, it may not be representative of the entire rural adult population of North India. Although these results could generalize to other rural populations in the province, their generalizability beyond similar rural populations might be questionable. Second, social desirability could have impacted the response bias. Both fear of stigmatization and social desirability imply that the rate of mental health impairment in this study could have been underestimated and may actually have been higher.

Another limitation is that this was a cross-sectional study; thus, no causal inference could be drawn from the results, and only associations could be established. Suicidal ideation was captured using a single GHQ-12 question, which only provides insight into one's thoughts; this is a risk indicator and not a definitive clinical assessment of suicide risk, which requires further clinical assessment. Although alcohol and tobacco use may be risk factors for CMDs, we did not assess these factors in our study. More men had left the village for seasonal work in factories and farms located in nearby villages and towns and, hence, were unavailable for interviews during the daytime when data collection took place. This led to a higher proportion of women being included in the study, which was a potential source of bias.

Conclusion

In conclusion, we found a notably large proportion of adults from a rural community in North India who screened positive for CMDs that were undetected and unrecognized and might have been associated with adverse impacts on their overall health and well-being. Our findings showed that CMDs were closely associated with sociodemographic characteristics (i.e., age, marital status, education, type of family, income, presence of any chronic physical illness,

and positive family history of psychiatric illness) among a rural adult sample in North India. Further research is needed to assess, screen, diagnose, and manage CMDs in primary healthcare and community-based settings in India to address the growing burden of CMDs in rural populations.

Conflict of interest: None.

Funding: No funding was received for this study.

Ethics approval and consent to publish: The study protocol was approved by the Institute Ethical Committee (IEC), Post graduate Institute of Medical Education and Research (PGIMER), Chandigarh, India (vide Letter No. IEC/243/2017). Written informed consent was obtained from all the participants before their inclusion in the study.

Data availability: Data collected for the study are with the corresponding author and can be obtained upon reasonable request.

Author contributions: MAB and AKA conceived the idea for this study. MAB and AM performed the data analysis. MAB wrote the first draft of the manuscript, which was then edited and improved by AM and AKA. All authors have approved the final draft of the manuscript for submission.

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