Original Article

Prevalence and correlates of depression in a rural adult population in Northwest India

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Abstract

Background: Mental disorders are showing a discerning upward trend globally and it is projected that by 2030, depression would be the leading cause of disease burden globally. Depression has not only confined the developed world but is increasingly seen as a major public health problem in the developing world too. **Methods:** A stratified two-stage design was used to conduct a house-to-house survey in selected villages among consenting eligible members of the family. A three-part questionnaire, with the first part eliciting sociodemographic information was used. Patient Health Questionnaire (PHQ-9), the second part of the questionnaire was used to screen those positive for depression and Beck's Depression Inventory (BDI-II). The third part was used for rating the depression. Data thus collected was analyzed and Chi-square test was used as test of significance. **Results:** The prevalence of depression was found to be 8.94% (73/816). Beck's Depression Inventory (BDI- II) for rating the depression revealed that mild depression was present in nearly half of the cases (47.95%), while 39.7% and 9.5% of the cases had moderate and severe depression, respectively. Among the various variables, literacy level, marital status, alcohol intake, chronic illness, and socioeconomic status were significantly associated with the depression. **Conclusions:** Prevalence of depression to the tune of 8.94% in rural adults seems to be a cause of concern for the health planners. Prevention and treatment of depression must be taken on priority and as a challenge by the health professionals.

Keywords: Depression, prevalence, risk factors, rural adults

Introduction

Depression often described by powerful and expressive metaphor "The Black dog," is one of the most common mental health problems.[1] Depression refers to a wide range of mental health problems characterized by depressed mood, loss of interest or pleasure, decreased energy, feelings of guilt or low self-worth, disturbed sleep or appetite, and poor concentration. Depending on the number and severity of symptoms, a depressive episode can be categorized as mild, moderate, or severe. When mild, people can be treated without medicines but when depression is moderate or severe, they may need medication and professional talking treatments.[2]

A wide variety of factors determine the onset of depression. Various sociodemographic factors including age, gender, marital status, education etc., are associated risk factors for depression. Besides these, genetic factors, life events, coping strategies, presence of chronic diseases, personality types, spiritual and religious beliefs of a person, positive family history among others all have bearing on whether an individual experiences depression.

Figures in global burden of disease (GBD) 2010 showed depressive disorders to be the leading cause of disability adjusted

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life years (DALYs) lost and the second leading cause of years lost to disabilities (YLDs) in 2010.[3,4] It is projected that by 2030, depression will be the leading cause of disease burden globally.[5]

Depression can be reliably diagnosed and treated in primary care but the treatment gap for major depression has been estimated to be 56.3% which means that nearly half of the patients with depression remain undiagnosed for years or inadequately treated.[6]

In India, the National Mental Health Survey (2015–2016) found the total budget available for mental health was less than 1% in most of the states.[7] Hence, considering the gravity of the situation, there is a need to mobilize more resources for dealing with mental disorders in Indian population and it is essential that appropriate problem statement is known and documented.

While going through literature review it was found that there is paucity of research work on depression in Northwest India. It was with this purpose that the current study was conducted to estimate the burden of depression in terms of its prevalence and the various risk factors related to it among rural adult population.

Material and Methods

The methodology used for the present study has been developed by the Institute for Research in Medical Statistics as an alternative to probability proportion to size (PPS) methodology generally used in vaccination surveys. The study has been approved by the institutional ethics committee vide letter no: IEC/T6c/2015/232 dated 4/11/2015.

The sample size was calculated with prevalence 21.9% and with precision of 20%. Using the formula, sample size $n = Z^2 PQ/L^2$ (Z = constant (1.96), *P* = prevalence, Q = 1-p, L = Precision) the sample size obtained was 343. For cluster sampling, with a design effect of 2, the sample size was calculated to be 680. Assuming a nonresponse of 15%, the total sample was worked out at 800.

Kot Balwal block, a part of Jammu in Northwest India, where the study was conducted was stratified into four strata. Stratification was done in accordance with the population size of the villages located in the block. Villages were identified as primary sampling units while households located within villages were identified as secondary sampling units.

Stratification
Strata 1 villages- population <500
Strata 2 villages- population 500–999
Strata 3 villages- population 1000–1999
Strata 4 villages- population >2000

Four villages from each stratum were selected by simple random technique. Therefore, a total of 20 villages were selected. In the selected 20 villages, 40 households with at least one member above the age of 18 years at the time of study were selected. Only one adult per house hold was interviewed. Thus, the overall sample size consisted of 800 households.

Due permission was sought from the Institutional Ethical Committee (IEC) of the Govt. Medical College, Jammu for the conduct of the present study.

Before actual start of data collection, a pilot study was conducted in the psychiatric OPD under expert guidance to see the feasibility, comprehensibility of the study questionnaire, and the time taken to administer it.

Investigators approached the first selected village accompanied by the local ASHA worker and house to house visits were conducted to collect the required data. Only one consenting eligible member of the family aged 18 and above was interviewed. A second visit was made to interview those who were not present at the time of the first visit. The study was conducted for a period of one year. In all, a total of 816 rural adults who fulfilled the inclusion criteria were interviewed during the study period.

Before beginning the interview, each participant was briefed about the purpose of the study in their local dialect. They were assured that all the information collected from them would be kept confidential.

The study questionnaire was administered by the investigator in a comprehensible local dialect. Informed written consent was obtained from those willing to participate. Interview began with the collection of sociodemographic details and other personal information from the respondent. Then, the respondents were administered Patient Health Questionnaire (PHQ-9)[8,9] which was meant as a screening tool to shortlist the respondents who were suspected of having depression. In all, a total of 73 were found positive on screening with PHQ-9 and were further administered Beck's Depression Inventory (BDI- II)[9-11] for rating of the depression.

The data thus collected was analyzed and Chi-square test was used as test of significance.

Results

The sociodemographic data revealed that the majority (92.7%) of the individuals were Hindu by religion and 88.7% of the surveyed population were literate [Table 1]. Of these, nearly 20% were educated up to primary level, 48% up to secondary level, and nearly 19% were graduates. 45.3% of the respondents were employed and 36.7% were the housewives. About 27% of the surveyed population had history of chronic illness while only 0.7% and 1.4% had family history of psychiatric illness and previous history of depression, respectively. Alcohol consumption was reported by 5.3% of the respondents and all of them were males. It was found that more than two-third of the surveyed population were below the age of 45 years. Females outnumbered males in the 46–60 year age group while males

were on the higher side in the geriatric age group. Depression was found to be present in a total of 73 out of 816 persons, thus yielding a crude prevalence of 8.94%. Regarding the category of depression, mild depression was present in nearly half of the cases (47.95%) while 39.7%and 9.5% of the cases had moderate and severe depression, respectively [Table 2].

Table 3 depicts that illiterates are at higher risk of being depressed than literates and the relationship between literacy level and depression was found to be statistically significant ($P < 0.05$). There was no significant association of employment status with the depression (P value > 0.05). The results revealed a statistically significant association between marital status and depression ($P < 0.05$). Also evident is that people who do not consume alcohol had 70% less odds of the outcome, i.e. depression and the association of alcohol with depression was statistically significant ($P < 0.05$). Among the other variables, having a chronic illness and people in lower class were found to have a significant association with the disease ($P < 0.05$).

Table 1: Distribution of surveyed population by age and gender

Age group	Total *n* (%)	Male *n* (%)	Female *n* (%)
≤30	355 (43.5)	167 (47.04)	188 (52.95)
31-45	257 (31.4)	77 (29.9)	180 (70.03)
46-60	141 (17.2)	53 (37.5)	88 (62.41)
≥61	63 (7.7)	35 (55.55)	28 (44.44)
Total	816 (100)	332 (100)	484 (100)

Table 2: Spectrum of depression in the study population

Depression category	No. of Patients	Percentage (%)
Minimal depression	2	2.74
Mild depression	35	47.95
Moderate depression	29	39.73
Severe depression	7	9.59
Total	73	100

Discussion

India is a developing country with a population of over 1.2 billion of whom one third is residing in rural areas with immense diversity in the social and cultural practices. A host of factors like poverty, low education, social exclusion, gender disadvantage, conflicts etc., which are the major social determinants of mental disorders continue to be widely prevalent in our nation.

The evidence reveals that the rate of depressive illness has increased over the years.[12,13] Epidemiological studies conducted all over India have revealed varying prevalence rates. Upon literature review, prevalence was found to be ranging from nearly 5% to 15%.[14-16] In fact, wide variations have also been reported in other studies across the world.

The overall prevalence of depression in the current study was found to be 8.94% (73/816). Further, the prevalence on the basis of sex was 11.98% (58/816) and 4.51% (15/816) in females and males, respectively. The results of the current study are almost in agreement with those reported by other investigators.[13,17-19] In a study conducted in Ethiopia, Hussein G *et al.*[20] reported a 7.4% prevalence of measured depression, with the females being 1.62 times more likely to have depression compared to males. The authors also reported that alcohol users and people with 2 or > chronic diseases were more likely to have depression and these results are in congruence

Table 3: Correlates of depression in study population

Variable	Depressed	Nondepressed	OR (CI)	Test of significance
Education status/literacy level				
Illiterate	16 (21.92)	5 (6.85)	3.8 (1.31-11.06)	χ^2 value-21.54 P<0.001 (significant)
Literate*	57 (78.0)	68 (93.1)		
Employment status				
Employed	21 (28.76)	27 (36.98)	Ref.	
Unemployed	5 (6.85)	4 (5.48)	0.62 (0.15-2.61)	χ^2 value 1.61, P 0.663 (Not-significant)
Housewife	47 (64.38)	42 (57.53)	0.70 (0.34-1.41)	
Marital status				
Divorced/widow/widower	19 (26.0)	3 (4.1)	9.8 (2.24-43.8)	χ^2 value=19.07 P<0.001 (significant)
Married	45 (61.64)	56 (76.71)	1.25 (0.49-3.15)	
Unmarried	9 (12.3)	14 (19.2)	Ref.	
Alcohol intake				
No	64 (87.67)	70 (95.89)	0.30 (0.07-1.17)	χ^2 value 4.48, P 0.031 (significant)
Yes	9 (12.33)	3 (4.11)		
Chronic illness				
Yes	32 (43.82)	10 (13.70)	4.92 (2.18-11.07)	χ^2 value 22.15, P<0.001 (significant)
No	41 (56.16)	63 (86.30)		
Socioeconomic status				
Upper class**	16 (21.92)	30 (41.10)	Ref.	χ^2 value-20.66, P-< 0.05 (significant)
Middle class	38 (43.84)	42 (57.53)	0.58 (0.28-1.25)	
Lower class***	19 (26.03)	1 (1.37)	35.62 (4.46-291.1)	

with the results of the current study. Moledina SM *et al.*[21] in a study conducted among Asian community in Dar es Salaam, Tanzania reported a 6.5% prevalence of depression.

However, in contrast, lower prevalence rates were reported by Mathias K *et al.* in Uttrakhand[15] India and Zhou X *et al.* in China.[22]

Probable reasons for variation could be its relation with biology, diverse sociocultural norms of the surveyed population and family support system of the individuals, differing set of screening tools used, and varying sampling methods and case definitions used for diagnosis in studies etc. Moreover, social stigma associated with disorders might lead to varying estimates.

The present study revealed that more than 50% of the respondents positive for depression were in the age group of 31–45 years and the mean age of the cases (screened positive) was 41.5 years. People in their middle years had a slightly higher risk of depression than those under 30 years and over 50 years of age. Similar findings have been reported in other studies.[15,23] The results further revealed that higher number of females were screened positive for depression than males. This finding is one of the most consistent finding in the previous studies.[24] Various explanatory factors that have been put forward are greater help seeking behaviours among the females, self-disclosures by women, gender differences in roles etc., to name a few.

When various risk factors in relation to depression were analyzed, it was found to be significantly higher among illiterates, divorced/widowed female respondents, and among people from lower class compared to upper class. Similar associations have also been reported in various other studies.[25,26] The current study found no significant association between the employment status of the respondents and depression, in contrast to the finding of many studies that support a significant association between the two. But it is also pertinent to mention that duration of unemployment is an important factor that determines the occurrence of depression.[27,28]

Depression is often seen in primary health care settings. Out of more than eight million doctor visits each year in the US for depression, more than half are in the primary care setting. Similar to this, in the UK, more than a third of all visits with a general practitioner are estimated to involve a mental health component. Importantly, 90% of patients receiving treatment and care for their mental health receive it in a primary care setting. Being a heterogeneous condition, developing an epidemiologic framework for depression in primary care is the need of the hour. The focus must be on effective screening for and diagnose major depressive disorders in the primary care setting. The current study conducted in primary care settings reenforces a need to identify and treat depression in primary care setting through development of adequate support systems.[29]

Limitations

Some of the limitations of the study include that PHQ-9 is a screening—not diagnostic—tool and has been critiqued as being overly simplistic and risks labelling components of normal human experience as a disorder.[8,15] Also, a cross-sectional study cannot attribute causality to apparent risk factors. Furthermore, due to the nature of the study, interviewer bias cannot be ruled out. But, nonetheless, the study has generated useful baseline data on the prevalence of depression in the area.

Conclusions

An overall prevalence of 8.6% in rural adult population is a cause of concern among the health planners. Authors recommend that mental health be integrated as a part of primary health care and early cases of depression may be detected for remedial measures.

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Conflicts of interest

There are no conflicts of interest.

References

1. Daniels AM, Vale JA. Did Sir Winston Churchill suffer from the 'black dog'? J R Soc Med 2018;111:394-406.
2. World Health Organization. Depression, WHO; 2018. Available from: https://www.who.int/news-room/fact-sheets/detail/depression. [Last accessed on 2019 Aug 14].
3. Ferrari AJ, Charlson FJ, Norman RE, Patten SB, Freedman G, Murray CJ, *et al.* Burden of depressive disorders by country, sex, age, and year: Findings from the Global Burden of Disease Study 2010. PLoS Med 2013;10:e1001547.
4. Whiteford HA, Degenhardt L, Rehm J, Baxter AJ, Ferrari, Erskine HE, *et al.* Global burden of disease attributable to mental and substance use disorders: Findings from the Global Burden of Disease Study 2010. Lancet 2013;382:1575-86.
5. World Federation for Mental Health. DEPRESSION: A Global Crisis World Mental Health Day, October 10 2012. World Federation for Mental Health PO Box807 Occoquan, VA 22125, USA. Available from: https://www.who.int/mental_health/management/depression/wfmh_paper_depression_wmhd_2012.pdf. [Last accessed on 2019 Aug 14].
6. Kohn R, Saxena S, Levav I, Saraceno B. The treatment gap in mental health care. Bull World Health Organ 2004;82:858-66.
7. Gururaj G, Varghese M, Benegal V, Rao GN, Pathak K, Singh LK, *et al.* and NMHS collaborators group. National Mental Health Survey of India, 2015-16: Summary. Bengaluru, National Institute of Mental Health and Neuro Sciences, NIMHANS Publication No. 128, 2016.
8. Kroenke K, Spitzer RL, Williams JB. The PHQ-9: Validity of a brief depression severity measure. J Gen Intern Med 2001;16:606-13.
9. Smarr KL, Keefer AL. Measures of depression and depressive symptoms. Arthritis Care and Research. Am Coll Rheumatol 2011;63:454-66.
10. Beck AT, Ward CH, Mendelson M, Mock J, Erbaugh J. An

inventory for measuring depression. Arch Gen Psychiatry 1961;4:561-71.

11. Steer RA, Ball R, Ranieri WF, Beck AT. Dimensions of the beck depression inventory-II in clinically depressed outpatients. J Clin Psychol 1999;55(1):117-28.
12. Nandi DN, Banerjee G, Mukherjee SP, Ghosh A, Nandi PS, Nandi S. Psychiatric morbidity of a rural Indian community. Changes over a 20-year interval. Br J Psychiatry 2000;176:351-6.
13. Centre for Disease Control and Prevention. MMWR Morbidity and Mortality Weekly Report. MMWR/October 1, 2010;59:1229-35.
14. Poongothai S, Pradeepa R, Ganesan A, Mohan V. Prevalence of depression in a large urban South Indian population — The Chennai urban rural epidemiology study (Cures – 70). PLoS One 2009;4:e7185.
15. Mathias K, Goicolea I, Kermode M, Singh L, Rahul Shidhaye R, Sebastian MS. Cross-sectional study of depression and help-seeking in Uttarakhand, North India. BMJ Open 2015;5:e008992.
16. Tanner JL, Reinherz HZ, Beardslee WR, Fitzmaurice GM. Change in prevalence of psychiatric disorders from ages 21 to 30 in a community sample. J Nerv Ment Dis 2007;195:298-306.
17. Kessler RC, McGonagle KA, Zhao S, Nelson CB, Hughes M, Eshleman S, *et al*. Lifetime and 12-month prevalence of DSM-III-R psychiatric disorders in the United States: Results from the Nationals Comorbidity Survey. Arch Gen Psychiatry 1994;51:8-19.
18. Burden of mental and behavioural disorders. The World Health Report 2001:20-25. World Health Organisation Geneva; 2001.
19. Molla GL, Sebhat HM, Hussen ZN, Mekonen AB, Mersha WF, Yimer TM. Depression among Ethiopian adults: Cross-sectional study. Psychiatry J 2016;1468120:1-5.
20. Hussien G, Tesfaye M, Hiko D, Fekadu H. Assessment of prevalence and risk factors of depression among adults in Gilgel Gibe Field Research Center, South West Ethiopia. J Depress Anxiety 2017;6:260.
21. Moledina SM, Bhimji KM, Manji KP. Prevalence and associated factors of depression in an Asian community in Dar es Salaam, Tanzania. Psychiatry J 2018;9548471:1-5.
22. Zhou X, Bi B, Zheng L, Li Z, Yang H, Song H, *et al*. The prevalence and risk factors for depression symptoms in a rural Chinese sample population. PLoS One 2014;9:e99692.
23. Muhammad Gadit AA, Mugford G. Prevalence of depression among households in three capital cities of Pakistan: Need to revise the mental health policy. PLoS One 2007;2:e209.
24. Kessler RC, McGonagle KA, Swartz M, Blazer DG, Nelson CB. Sex and depression in the National Comorbidity Survey I: Lifetime prevalence, chronicity and recurrence. J Affect Disord 1993;29:85-96.
25. Danesh NA, Landeen J. Relation between depression and sociodemographic factors. Int J Ment Health Syst 2007;1:4.
26. Shittu R, Odeigah L, Issa B, Olanrewaju G, Mahmoud A, Sanni M. Association between depression and social demographic factors in a Nigerian family practice setting. Open J Depress 2014;3:18-23.
27. Chen L, Li W, He J, Wu L, Yan Z, Tang W. Mental health, duration of unemployment, and coping strategy: A cross-sectional study of unemployed migrant workers in eastern china during the economic crisis. BMC Public Health 2012;12:597.
28. Stankunas M, Kalediene R, Starkuvien S, Kapustinskiene V. Duration of unemployment and depression: A cross-sectional survey in Lithuania. BMC Public Health 2006;6:174.
29. Ferenchick E, Parashar R, Alan PH. Depression in primary care: Part 1- screening and diagnosis. BMJ 2019;365:1794.