Assessment of depression in a rural population of productive age group using patient health questionnaire

Dahire P L[1], Ankushe R T[2*], Bagade V G[3]

[1]Assistant Professor, [2]Professor and Head, [3]PG Student, Department of Community Medicine, SRTR Government Medical College, Ambajogai, Maharashtra, INDIA.
Email: rajtulank@yahoo.com

Abstract
Background: Health is pivotal for the growth, development, and productivity of a society and is vital for a happy and healthy life. It has been stated that No Health without mental health. Depression is a disorder of major public health importance, in terms of its prevalence, suffering, dysfunction, morbidity and economic burden. It has been estimated that the burden of depression will increase to 5.75% of total burden of disease and it would be second cause of disability adjusted life years (DALYS) second only to ischasemic heart disease. Objectives: To assess the prevalence of depression in a rural population of productive age group using Patient Health Questionnaire-12(PHQ-12) and to study various risk factors associated with depression. **Methods:** A community based cross sectional study was planned in field practice area of community medicine department S R T R Government Medical College, Ambajogai, Maharashtra. Systematic random sampling technique was used and a total 216 individuals between 20 to 60 years of age group were interviewed using a pretested structured Patient Health Questionnaire-12 after obtaining informed written consent. **Results:** Prevalence of depression was 36.57% in study subjects (52.43%Women and 26.86% men).Mild depression was present in 30.09% of study population followed by moderate depression (6.48%) Factors like Female gender, nuclear family, unmarried and others (which includes widowed, divorced, separated), lower socioeconomic status, those having associated co morbid conditions were found to be independent predictors of depression. **Conclusion:** Depression was found to be more prevalent in females than males in a rural population of productive age group. Depression, more specifically mild depression is a significant problem in rural population which needs to be addressed for effective implementation of mental health promotion.
Key Word: Depression, Patient Health Questionnaire-12 (PHQ-12).

*Address for Correspondence:
Dr. R.T. Ankushe, Professor and Head, Department of Community Medicine, SRTR Government Medical College, Ambajogai, District-Beed Maharashtra, INDIA.
Email: rajtulank@yahoo.com

Access this article online	
Quick Response Code:	Website: www.medpulse.in
	Accessed Date: 02 May 2019

INTRODUCTION

Health is pivotal for the growth, development, and productivity of a society and is vital for a happy and healthy life. The definition of Health as per the World Health Organization includes physical, social, spiritual and mental health, and not merely an absence of disease or infirmity.[1] It has been stated that No Health without mental health.[2] This underlines the fact that mental health is an integral and essential component of health. Depression is a common mental disorder, characterized by persistent sadness and a loss of interest in activities that you normally enjoy, accompanied by an inability to carry out daily activities, for at least two weeks.[3] Depression is a disorder of major public health importance, in terms of its prevalence, suffering, dysfunction, morbidity and economic burden. It has been estimated that the burden of depression will increase to 5.75% of the total burden of disease and it would be

second cause of disability-adjusted life years(DALYs) second only to Ischaemic heart disease.[4] Depression was found to be the most common disability in a study conducted by the World Health Organization in fourteen primary care settings worldwide.[5]Depression is estimated to affect 340 million people globally.[6]The prevalence of the psychiatric disorder is reported to differ between countries and within countries across various ethnicities.[7] In 2013, India accounted for 15% of global DALYs attributable to mental, neurological and substance use disorder(31 million DALYs) with depression accounting for 37% (11.5 million DALYs).[8] As per National Mental health Survey 2015-16, the lifetime prevalence of depression in India was 5.25% among individuals aged 18+ years. WHO has declared World Health Day theme for the year 2017 as 'Depression - Let's talk'. In India, very few community-based studies have been conducted on depression in rural population of productive age group. With reference to above background, this study was conducted to provide data on the prevalence of depression in a rural population of productive age group using the Patient Health Questionnaire(PHQ-12)and study its associated risk factors.

MATERIALS AND METHODS

A Community based cross-sectional study was carried out in rural field practice area of Swami Ramanand Teerth Rural Government Medical College, Ambajogai, Maharashtra. Duration of study was3 months from 1st November 2017 to 31st January 2018.

Inclusion criteria
1. Those individuals aged 20 to 60 years included in this study.
2. Those individuals willing to participate in the study.

Exclusion criteria
1. Those individuals who reside in study area less than 6 months were excluded.
2. Individuals, more than 60 years of age were excluded.

Sample size: The Sample size was calculated by using formula $n = \frac{Z^2 pq}{d^2}$, where n= Minimum sample size

required for the study, z =1.96, d- absolute precision (d =0.05), p- prevalence, q=1-p and by taking 15% prevalence of depression.[9] Calculated sample size was 196. Considering 10% non-response rate, the corrected sample size was 216.

Sampling Technique: A total of 216 individuals were selected from our field practice area (sampling frame of 2185 individuals) by using systematic random sampling method and sampling interval of 10. 1st individual is selected from 1st 10 individuals of sampling frame by lottery method and then subsequent individuals were selected at interval of 10 till to get the required sample size of 216. The purpose of the study was explained to participants and written informed consent was taken from them in the local language. Data regarding socio-demographic factors such as age, sex, religion, education, marital status, type of family, occupation, socioeconomic status, and morbid condition etc; was collected using pre-designed and pre-tested proforma.

A Tool used for assessment of depression: Depression was assessed by using Patient Health Questionnaire(PHQ-12) whose reliability and validity as a screening tool was tested in Indians.[10]Patient Health Questionnaire-12 consists of 12 questions with a maximum score of 12. Each question has yes or no responses with 1 score for each yes response. Those who scored 4 or more were considered as having depression. Ethical clearance was obtained from the Institutional ethics committee of our college.

Statistical Analysis: Data was compiled and analyzed using Microsoft Excel, Epi Info version-6 software and SPSS-21. Frequency distributions were calculated for almost all independent variables. Odds ratio and its 95% confidence intervals were calculated. Chi-square test was used to determine statistical significance between Depression and independent variables and $p< 0.05$ was considered to be as statistically significant. Those study participants who found moderate to severe depression were referred to college hospital for psychiatric evaluation and management.

RESULTS

TABLE 1: Distribution of study participants according to Socio-demographic characteristics

Variables		Frequency (n=216)	Percentage (%)
Age Group	(20-29)	68	31.48
	(30-39)	67	31.0
	(40-49)	40	18.51
	(50-60)	41	18.98
Gender	Male	134	62.03
	Female	82	37.96
Religion	Hindu	146	67.59

|			
	Muslim	43	19.90
	Other	27	12.50
Type of family	Nuclear	48	22.22
	Joint	168	77.78
Socioeconomic status #	Upper middle and above	126	58.33
	Middle class and below	90	41.67
Occupation	Not working	14	6.48
	Working	202	93.51
Education status	Illiterate	30	13.88
	Literate	186	86.11
Marital status	Married	173	80.09
	Unmarried and others*	43	19.90

Modified BG Prasad Classification * Others includes widow/widower/separated/divorced.

Table no 1 showed sociodemographic characteristics of study participants. Out of 216 study participants enrolled in the study, there were 134 males (62.03%) and 82 females (37.96%). The mean age of the study population was 36.6($\pm$11.o1) years. Majority of the study population were Hindu (67.59%), working (93.5%), literate (86.1%), married(80.1%), living in a joint type of family(77.8%) and belonged to upper socioeconomic class(58.4%) as per modified B. G Prasad classification.

Table 2: Distribution of Study population on basis of PHQ-12 Score(N=216)

Depression on basis of PHQ-12 Score	PHQ-12 Score	Number	Percentage
No Depression	(0-3)	137	63.42%
Mild Depression	(4-6)	65	30.09%
Moderate Depression	(7-9)	14	06.48%
Severe Depression	(10-12)	00	00.00%

Table 2 shows the distribution of study population as per PHQ-12 SCORE. Out of 216 study respondents interviewed, 79 were having depression as per PHQ12 Score (36 male and 43 female). 30.09% of study population were having mild depression and 06.48% population having moderate depression. No study respondent showed severe depression.
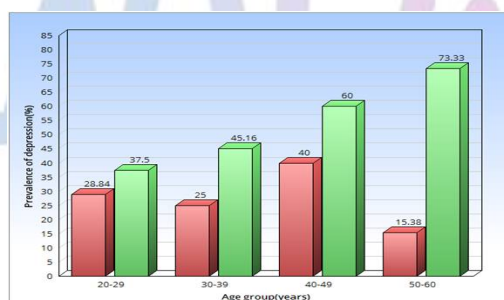
Figure 1: Age-wise and Gender wise distribution of depression in a rural population

Above bar diagram showed that the prevalence of depression among female was increased with increase in age but no such trend was observed in the male.

Table 3: Risk factors for depression (N=216)

Sr. No	Variables	Depression (%)	Total (%)	P value	OR(95% CI)
1	Age Group				
	(20-29)	21(30.9)	68(31.5)		Reference
	(30-39)	23(34.3)	67(31.0)		0.774(0.342-1.754)
	(40-49)	20(50.0)	40(18.5)		0.906(0.403-2.039)
	(50-60)	15(36.6)	41(18.9)	0.249	1.733(0.713-4.211)
2	Gender				
	Male	36(26.9)	134(62)		
	Female	43(52.4)	82(37.9)	**0.0001***	3.001(1.684-5.348)
3	Religion				
	Hindu	52(35.6)	146(67.6)		Reference
	Muslim	17(39.5)	43(19.9)		0.940(0.401-2.203)
	Other	10(37.0)	27(12.5)	0.895	1.112(0.412-2.997)
4	Type of family				
	Joint	53(31.5)	168(77.8)		

	Nuclear	26(54.1)	48(22.3)	**0.004***	2.564(1.333-4.934)
5		**Socio-economic status**			
	Upper middle and above	37(29.4)	126(58.4)		
	Middle class and below	42(46.7)	90(41.7)	**0.009***	2.105(1.197-3.701)
6		**Occupation**			
	Working	74(36.6)	202(93.5)		
	Not working	05(35.7)	14(6.5)	0.944	0.961(0.310-2.975)
7		**Education status**			
	Literate	62(33.3)	186(86.1)		
	Illiterate	17(56.7)	30(13.9)	**0.013***	2.615(1.194-5.727)
8		**Marital status**			
	Married	54(30.9)	173(80.1)		
	Unmarried and others	25(58.1)	43(19.9)	**0.001***	3.061(1.542-6.071)
9		**Co-morbid Condition**			
	Absent	54(30.9)	175(81.0)		
	Present	25(60.9)	41(18.9)	**0.0003***	3.501(1.731-7.084)

*p value significant

Table 3 shows that the females were more likely to suffer from depression as compared to male (p=0.000). The study subjects living in a nuclear type of family were 2.56 times more likely to suffer from depression as compared to those living in a joint type of family(p=0.004). The other variables that had a significant association with prevalence of depression were the lower socioeconomic class (middle class and below), illiterates, those living alone without a spouse i.e., unmarried, widowed, divorced, and presence of other co-morbid conditions. There was no significant association between age (p=0.249), religion (p=0.895), and occupation (p=0.944) and the prevalence of depression.

Table4: Multivariate analysis of the association of risk factors with depression

	Variables	Depression No (%)	OR(95%CI)	P value
	(20-29)	21(30.88)	Reference	
	(30-39)	23(34.32)	0.923(0.319-2.672)	0.883
Age Group	(40-49)	20(50)	0.911(0.339-2.445)	0.852
	(50-60)	15(36.58)	0.546(0.187-1.595)	0.269
	Male	36(26.86)	Reference	
Gender	Female	43(52.43)	2.701(1.358-5.372)	**0.005***
	Hindu	52(35.61)	Reference	
	Muslim	17(39.53)	0.924(0.338-2.528)	0.878
Religion	Other	10(37.03)	1.024(0.312-3.359)	0.969
Type of family	Joint	53(31.54)	Reference	
	Nuclear	26(54.16)	0.341(0.153-0.758)	**0.008***
	Upper middle and above	37(29.36)	Reference	
Socioeconomic status	Middle class and below	42(46.66)	2.758(1.368-5.561)	**0.005***
	Working	74(36.63)	Reference	
Occupation	Not working	05(35.71)	0.999(0.225-4.427)	0.999
	Literate	62(33.33)	Reference	
Education status	Illiterate	17(56.67)	0.441(0.173-1.120)	0.085
	Married	54(30.85)	Reference	
Marital status	Unmarried and Others	25(58.13)	5.107(2.145-12.158)	**0.000***
	Absent	54(30.85)	Reference	
Co-morbid Condition	Present	25(60.98)	4.792(2.034-11.293)	**0.000***

*p value significant

Table 4 shows the result of multiple logistic regression analysis. Multiple logistic regression analysis revealed that in our study population, Female gender, nuclear family, unmarried and others (which includes widowed, divorced, separated), lower socioeconomic status, those having associated co morbid conditions were found to be independent predictors of depression. Age, religion, education status, occupational status was not found to have a significant effect on the prevalence of depression.

DISCUSSION

As per PHQ-12 SCORE of 4 or more, the prevalence of depression in a rural population of productive age group was found to be 36.57%. The similar result was revealed by study conducted in a rural area of Ahmednagar district, Maharashtra.[11]

Table 5: Different studies on depression

Sr.No	Study	Place	Sample Size	Screening tool used for depression	Prevalence of depression
1	Soni S *et al*, 2016	Bihar, India	450	Geriatric Depression scale	39.6%
2	Sengupta P *et al*, 2015	Ludhiana, India	3038	Geriatric Depression scale	8.9%
3	Poongothai S *et al*, 2009	Chennai, India	25455	Patient Health Questionnaire(PHQ-12)	15.1%
4	Goyal A *et al* 2014	Faridkot ,Panjab	100	Geriatric Depression scale	77%
5	Prachet R *et al*, 2013	Dharwad, Karnataka, India.	218	Geriatric Depression scale	29.4%
6	Rajkumar AP *et al*, 2009	Vellore, India	1000	Geriatric Mental State	12.7%
7	Kamble SV *et al*, 2009	Ahmednagar, Maharashtra, India	494	Goldberg and Bridges' scale	31.4%
8	Sinha SP *et al*, 2013	Kancheepuram, Tamil Nadu, India	103	Geriatric Depression scale	42.7%
9	Jain RK *et al*, 2007	Mumbai, India	196	Geriatric Depression scale	45.9%
10	Taqui AM *et al* 2007	Karachi, Pakistan	400	Geriatric Depression scale	19.5%
11	Present study	Ambajogai, Maharashtra, India	216	Patient Health Questionnaire(PHQ-12)	36.6%

Table 5 shows different studies on depression from various regions The much lower result was revealed in studies conducted by Sengupta *et al* (8.9%), Prachet *et al* (29.36%), Rajkumar *et al* (12.7%), Taqui *et al* (19.5%).[12-14,18] Compared to the present study, the result of other studies was much higher.[15-17] Baseline characteristics of the study population, the different tool used for assessment of depression and different sample size might be contributed to this wide variation in the prevalence of depression. Female gender, nuclear family, low socioeconomic status, Illiterate, those living alone without spouse (unmarried/widow/separated/divorced) are associated with depression. Similar findings were observed by Sengupta *et al* and Kamble *et al*.[11-12] On multiple logistic regression analysis, the present study revealed that Female gender, nuclear family, those living alone without spouse, low socio economic status, associated comorbid conditions were strong predictor of depression where as Sengupta *et al* observed only female gender and nuclear family as predictor of depression.[12] The present study revealed that co morbid condition is associated with depression. A similar finding was seen in Pracheth *et al*.[13] There was no significant association between depression and Gender, co morbid conditions in Goyal *et al* .[17]

CONCLUSION

The prevalence of depression in a rural population of productive age group was 36.57%. We found that socioeconomic factors and morbid conditions were major risk factors for depression. Depression, more specifically mild depression is a significant problem in rural population which needs to be addressed for effective implementation of mental health promotion. Such kind of study helps to persuade family physician regarding the importance of early detection and treatment of depression. Early detection is probably the first step in the pathway to manage depression and this need to happen in variety of settings like homes, workplaces, educational institutions, health care and community settings through informed and trained persons.

REFERENCES

1. Preamble to the Constitution of WHO as adopted by the International Health Conference, New York, 19 June- 22 July 1946 by the representatives of 61 states (Official Records of WHO, no. 2, p.100) and entered into force on 7 April 1948.
2. Prince M, Patel V,Saxena S,Maselko MJ,Phillips MR,Rahma A. "no health without mental health-a slogan with substance." lancet, 2007: 859-877.
3. WHO. Depression. Cited on (Mar 10 2018), Available from;www. who.int/mental health/management/depression/en/
4. Lopez AD, Mathers CD,Ezzati M,Jamison DT,Murray CJ. "Global Burden of Disease and Risk Factors." The World Bank, 2006.
5. World Health Report(2011)WHO, Geneva ,Switzerland.
6. Goldberg DP, Lecrubier Y (1995) Form and frequency of mental disorders across centers. In: Ustun TB, Sartorius N, editors. Mental Illness in general health care: An

international study. Chichester: John Wiley and Sons on behalf of the World Health Organization. Pp.323-34.

7. Saravanan MSP, Fredrick T, Ramamoorthy M, Jayaraman Y, Vaithianathan H, David JK. Prevalence of depression and risk factors among women in Poonamalle, Tamilnadu, India. Stanley Medical Journal.2016;3 (4):36-43.

8. Charlson FJ, Baxter AJ, Cheng HG, Shindhaye R, Whiteford HA. The burden of mental, neurological, and substance use disorders in China and India: a systematic analysis of community representative epidemiological studies. Lancet. 2016; 388:376-89.

9. Poongothai S,Pradeepa R, Ganesan A, Mohan V (2009) Prevalence of depression in a large Urban Indian Population-The Chennai Urban Rural Epidemiology Study(Cures-70).PLoS ONE 4(9):e7185

10. Poongothai S, Pradeepa R, Ganesh A, Mohan V (2009) Reliability and validity of a modified PHQ- 9 item inventory (PHQ-12) as a screening instrument for assessing depression in Asian Indians (CURES - 65). J Assoc Physicians India 57: 147–52.

11. Kamble SV, Dhumale GB, Goyal RC, Phalke DB, Ghodke YD. Depression among elderly persons in a Primary Health Centre area in Ahmednagar, Maharashtra.Indian J Public Health 2009;53:253-5.

12. Sengupta P, Benjamin AI. Prevalence of depression and associated risk factors among the elderly in urban and rural field practice areas of a tertiary care institution in Ludhiana. Indian J Public Health. 2015;59:3-8

13. Pracheth R, Mayur SS, Chowti JV. Geriatric Depression Scale: A tool to assess depression in the elderly. Int J Med Sci Public Health. 2013; 2: 31-5.

14. Rajkumar AP, Thangadurai P, Senthilkumar P, Gayathri K, Prince M, Jacob KS. Nature, prevalence and factors associated with depression among the elderly in a rural south Indian community. IntPsychogeriatrics. 2009; 21(2):372-8.

15. Sinha SP, Shrivastava SR, Ramasamy J. Depression in an Older Adult Rural Population in India. MEDICC Review. 2013; 15(4):41-4.

16. Jain RK, Aras RY. Depression in the geriatric population in urban slums of Mumbai. Indian J Public Health. 2007; 51: 112-3.

17. Goyal A, Kajal KS. Prevalence of Depression in Elderly Population in the Southern Part of Punjab. Family Med Prim Care. 2014; 3(4):359-61.

18. Taqui AM, Itrat A, Qidwai W, Qadri Z. Depression in the elderly: Does family system play a role? A cross-sectional study. BMC Psychiatry. 2007; 7: 57.