DOI: 10.7860/JCDR/2015/14100.6426

Original Article

Community Medicine Section

Screening Depression Among Elderly in a City of Southeast Asia

ABHISHEK GUPTA[1], UDAY MOHAN[2], SHIVENDRA KUMAR SINGH[3], MANISH K MANAR[4], SARVADA CHANDRA TIWARI[5], VIJAY KUMAR SINGH[6]

ABSTRACT

Introduction: Changing family structure (Joint to Nuclear), increased life expectancy above 60 years of age, generation and communication gap, financial dependency on children leads to conflict among family members. This may sometime lead to old age home settlement of elderly people. All these condition leads to isolation and insecurity among elderly people and this condition affect the mental status of elderly people which may sometime lead to depression among Old Age Homes residents and family living elderly people.

Objective: To study the prevalence of depression and diagnosed systemic morbidities among elderly people. To study the predictors of depression among study subjects.

Materials and Methods: A descriptive cross-sectional study was conducted among elderly people (age ≥60 years) residing in old age homes (OAHs) and in community/families in Lucknow, India. Multistage sampling technique was used to include required sample of subjects from the community and for OAHs all the elderly people living in OAHs were included. Geriatric depression scale was used to screen depression.

Results: Depression was 27.7% among elderly people residing in OAHs while it was 15.6% those residing at their own homes. In community most frequent morbidity was hypertension (17.7%) while 41.1% elderly people had no diagnosed morbidity. In OAHs out of total the musculoskeletal morbidity (33.7%) was most frequent and 18.8% had no diagnosed morbidity. On multivariate analysis financial dependency and education were found to be statistically significant.

Conclusion: Depression was more common among elderly living in Old Age Homes as compare to those living in community. Hypertension, musculoskeletal morbidities and eye related morbidities were most frequent diagnosed morbidities. Financial Dependency & Education were found to be primary predictors of depression.

Keywords: Education, Financial dependency, Old age home

INTRODUCTION

According to United Nations Department of Economic and Social Affairs/Population Division New York, 2004 world's 65+ populations in 1950 was 5.2 %, in 2000 it was 6.9% and it is projected that it will be 15.9% of total population by the year 2050. Similarly 65+ population of Asia will be 16.8% by the year 2050 [1]. With more old people living longer, the households are getting smaller and congested, causing stress in joint or extended families and sometime leads to old age home settlement. Isolation & insecurity are felt among elderly people due to the change in lifestyles & generation gap. All these condition affect mental status of elderly which may sometime leads to depression. Estimates of the prevalence of depression that include older adults' ranges widely, depending on the definition and procedure used for counting a case of depression. In a review the prevalence of major depression ranges from 14% to 42% in institutional living and from 1% to 16% among elderly living in private households [2]. Numerous studies have examined depression in the general community and in old age homes separately but there are very few studies of depression in elderly that compare between community and old age homes i.e. effect of type of living. So the present study is important as it would throw light on this issues and problems related to elderly people. The present study would accelerate further scientific knowledge in the same field.

AIM OF THE STUDY

The study was conducted to find the prevalence of depression, diagnosed systemic morbidities and predictors of depression among elderly people living in OAHs and in community.

MATERIALS AND METHODS

It was a cross-sectional descriptive study, conducted from May 2012 to December 2013 among elderly people (age ≥ 60) [3] who were enrolled in old age homes (OAHs) and from general population living in Lucknow city. Two sets of elderly population were covered with inclusion criteria of age ≥60 years, participants residing in community or OAHs for ≥6 months (permanent or temporary resident). Mini mental state examination (MMSE) was the screening test performed on each participant to assess cognitive impairment and those who scored ≥ 20 on MMSE were taken to be part of study [4-6]. The purpose of MMSE was to show that the Geriatric Depression Scale (GDS) which has been used among participants is not valid for cognitively impaired subjects (MMSE <20) [7].

Participants with serious morbidities as mental illness, cancer, advanced heart disease or chronic renal disease on the basis of their current medical reports, were excluded from the study. Old age homes were of two types: 1) private type in which inmates paid some amount per month & 2) public type which was free of cost. Out of a total 5 OAHs, two were operated by government sponsored NGO's, two were private & one was government operated. All of these were situated in urban area of Lucknow. Elderly people living in OAHs were contacted after taking permission from In-charges of old age homes and verbal consent from participants. All of them gave consent to participate in study. Of these 6 were excluded from the study because they were unable to get a score of ≥ 20 on MMSE. Thus a total 101 subjects were included in the study. Using prevalence of psychosocial problem in elderly people as 42% [8] sample size from community was 141. Multistage sampling technique was used to obtain required number of participants from the community.

In 1st stage, out of 9 Legislative Constituencies (LC) of Lucknow district, 5 LC were included in the study which represented the urban population. In 2nd stage a list of polling stations was obtained from the website of Chief Electoral Officer, Uttar Pradesh [9] for each of the Legislative Constituencies. Out of these 28 polling stations were selected from each LC & 29 polling stations from largest LC by the method of simple random sampling.

In 3rd stage from each selected polling station, a list of all the voters was taken from the website of Chief Electoral Officer, Uttar Pradesh, India. A list of voters aged ≥60 years was separated & 5 elderly people were selected from each polling station by simple random sampling technique. Of five selected participants first was approached & if the individual gave consent and scored ≥ 20 on MMSE, then interview was further continued, if not the next individual was approached and so on. If first individual gave consent and scored ≥ 20 on MMSE, rest were not contacted from that poll station. Thus from each polling station, only one person was selected. A total of 204 subjects were approached in community, of which 49 refused to participate (40 refusals were by their by care takers due to their personal reasons and only 9 refusals were by participants). Fourteen subjects were excluded as they were unable to get score ≥ 20 on MMSE. Thus a total of 141 subjects were finally included as study participants.

Tool which was used to screen out Depression among participants was Geriatric Depression Scale – Hindi Version (GDS-H) [10]. Participants with any systemic chronic/serious disease were considered as diagnosed cases if they showed prescription of government health facility (at least secondary level) or specialist private practitioner or investigation reports with drugs that were being used regularly along with clinical sign and symptoms.

Parameters

Dependent variable: Depression.

Independent variables: Age, Number of children, Religion, Caste, Female sex, marital & living status, Education, Financial Dependency, Systemic Morbidities, Living Status, Feeling of Neglect Feeling of Loneliness.

Tools of data collection

1. **Mini Mental State Examination (MMSE):** MMSE instrument was used in translated Hindi version. The MMSE can have a maximum score of 30 points. Score <20 on MMSE has increased chance of dementia & thus used as cut-off [4-6].
2. **Geriatric Depression Scale (GDS-H):** Depression was assessed with the help of Hindi version of Geriatric Depression Scale [6,7,10-13]. It comprise of 30 self-rating questions with either yes or no response. GDS-H is widely used scale for assessing depressed mood among ≥60 aged person [6]. It has demonstrated 92% sensitivity and 89% specificity. Its psychometric properties have been found to be consistently good for clinical and research settings [14]. It is a reliable screening tool for depressive symptoms in elderly people with mild cognitive impairment [15]. Cut off point used for depression was score ≥ 22 on GDS-H. This cut off was taken from a study conducted in India [10]. This cut-off was tested in a pilot study and confirmed by psychiatrist in Department of Geriatric Mental Health, King George's Medical University Lucknow, India.
3. **Socioeconomic Status (SES):** It was assessed by a tool "A scale for the assessment of socioeconomic status'' [16]. SES of individual (elderly people) was assessed in both the groups.
4. **Loneliness:** Subjects were asked 'Do you feel lonely at the present moment? The loneliness parameter was dichotomized into 'Not lonely' & 'lonely'.
5. **Neglect:** Participant were asked 'Do you feel neglected/ Ignored by your children/Caretaker ?': No =0, Yes =1

The schedule was pretested on elderly people of ≥ 60 years living in community. Necessary modifications were made in the schedule to overcome the difficulties.

The level of significance was set at $p < 0.05$. Appropriate statistical software was used for analysis. The study was approved by the ethical review board of King George Medical University prior to study.

RESULTS

Demography of elderly people was studied in terms of Age group, Sex, Religious group, Marital status, Educational profile, Children and Morbidity Status for both the groups. In Community, the elderly population comprised 58.2%, 32.6% and 9.2% whereas in old age homes the elderly were 28.7%, 37.6% and 33.7% in age groups 60 to <70 years, 70 to <80 years in ≥80 years respectively. Majority in both the groups were male (70.9% in Community and 53.5% in OAHs). Majority of elderly people in both the groups belonged to Hindu Religious group i.e., 80.9% in Community and 99% in OAHs, 78.7% elderly people in the community and 31.7% in OAHs were married, 18.4% in Community and 54.5% in OAHs were widow/ widower, 1.4% in Community and 7.9% in OAHs were divorced/ separated and the rest 1.4% in Community and 5.9% in OAHs were unmarried. In Community 16.3% elderly people were illiterate followed by 28.4 % 10th pass, 24.8% Graduate/Diploma and 21.3 % Postgraduate & above while in OAHs 21.8 were illiterate, 14.9% primary pass, 11.9% 10th pass, 28.7% Graduate/Diploma and 22.8% Postgraduate & above. In Community, 95.7% individuals and 57% in OAHs had at least one male child and the rest in both the groups had either no child or only female child. 58.9% of elderly people in the community have at least one type of diagnosed systemic morbidity while it was 81.2% in OAHs.

In community most frequent morbidity was hypertension (17.7%) followed by eye related morbidity (14.9%) while 41.1 % elderly had no diagnosed morbidity. In OAH out of total the musculoskeletal morbidity (33.7%) was most frequent followed by eye related morbidity (24.8%) and 18.8 % had no diagnosed morbidity [Table/ Fig-1].

Out of 242 study subjects 34.0 % were diagnosed as depressed in age group ≥ 80 years. Depression among elderly females was 28.4 % while among males it was 16.2 %. Elderly people those who were single (living without partner) 30.3% were depressed, on the other hand it was 14.0% among elderly who were married & living with partner. Elderly people with no child or only female child were found to be more depressed (32.0%). Depression was 27.7% among elderly people residing in OAHs while it was 15.6% those residing at their own homes. Among financially independent elderly 10.0 % were depressed while it was 32.3% among those who were totally dependent. Relation of depression with age group, sex, marital & living status, children, residential status, financial dependency and with feeling of loneliness was statistically significant [Table/Fig-2].

On multivariate analysis education and financial dependency were found to be primary predictors for depression [Table/Fig-3].

Type of Morbidity#	Community n=141		Old age homes (n=101)	
	n	%	n	%
Diabetes Mellitus	12	8.5	08	7.9
Hypertension	25	17.7	24	23.8
Musculoskeletal	14	9.9	34	33.7
Cerebrovascular	05	3.5	02	2.0
Respiratory	07	5.0	13	12.9
Cardiovascular	06	4.3	10	9.9
Gastrointestinal	05	3.5	08	7.9
Renal	07	5.0	02	2.0
Psychiatric	07	5.0	03	3.0
Ear related	02	1.4	08	7.9
Eye related	21	14.9	25	24.8
Malignancy	05	3.5	01	1.0
Others	06	4.3	06	5.9
No diagnosed morbidity	58	41.1	19	18.8

[Table/Fig-1]: Morbidity status of elderly by their living place
Multiple responses

Characteristics (n = 242)		Depression (By GDS-H#)			Chi square	p- value
		Absent N (%)	Present N (%)	Total N (%)		
Age Group (years)	60 - <70	93 (83.8)	18 (16.2)	111 (100.0)	6.60	0.037
	70 - <80	68 (81.0)	16 (19.0)	84 (100.0)		
	≥ 80	31 (66.0)	16 (34.0)	47 (100.0)		
Sex	Male	129 (83.4)	25 (16.2)	154 (100.0)	5.06	0.024
	Female	63 (71.6)	25 (28.4)	88(100.0)		
Marital & Living Status	Living without Partner*	69 (69.7)	30 (30.3)	99 (100.0)	9.50	0.002
	Married & living with Partner	123 (86.0)	20 (14.0)	143 (100.0)		
Children	At least One Male Child	158 (82.3)	34 (17.7)	192 (100.0)	4.94	0.026
	No Child or Only Female child	34 (68.0)	16 (32.0)	50 (100.0)		
Education	Illiterate	33 (73.3)	12 (26.7)	45 (100.0)	17.18	0.002
	Upto Primary	21 (75.0)	07 (25.0)	28 (100.0)		
	Upto 10th	44 (84.6)	08 (15.4)	52 (100.0)		
	Upto Graduate/Diploma	43 (67.2)	21 (32.8)	64 (100.0)		
	Postgraduate or Above	51 (96.2)	02 (3.8)	53 (100.0)		
Residential Status	Residing at community	119 (84.4)	22 (15.6)	141 (100.0)	5.27	0.022
	Residing at OAHs	73 (72.3)	28 (27.7)	101 (100.0)		
Financial dependency	Independent	90 (90.0)	10 (10.0)	100 (100.0)	12.93	0.002
	Partially dependent	60 (75.0)	20 (25.0)	80 (100.0)		
	Totally dependent	42 (67.7)	20 (32.3)	62 (100.0)		
Feeling of Loneliness	Present	38 (66.7)	19 (33.3)	57 (100.0)	7.30	0.007
	Absent	154 (83.2)	31 (16.8)	185 (100.0)		
Morbidity Status	Absent	66 (85.7)	11 (14.3)	77 (100.0)	2.80	0.094
	Present	126 (76.3)	39 (23.6)	165 (100.0)		

[Table/Fig-2]: Relationship between depression and demographic characteristics
*Unmarried/ Widow/Widower/ Divorce/Separated # Geriatric Depression Scale Hindi Version

Variables		Unadjusted Odd's Ratio	Adjusted Odd's Ratio	95% C.I.
Age Group (years)	60 - <80	Reference		
	≥ 80	2.44	-	-
Sex	Male	Reference		
	Female	2.04	-	-
Marital & Living Status	Married & living with Partner	Reference		
	Living without Partner*	2.67	-	-
Children	At least One Male Child	Reference		
	No Child /Only Female child	2.18	-	-
Education	Illiterate	9.27	2.73	0.47 – 15.75
	Upto Primary	8.50	3.70	0.65 - 21.04
	Upto 10th	4.63	2.63	0.48 – 14.41
	Upto Graduate/ Diploma	12.45	12.47	2.59 – 59.91
	Postgraduate or Above	Reference		
Residential Status	Residing at home	Reference		
	Residing at OAHs	2.07	-	-
Financial dependency	Independent	Reference		
	Partially dependent	3.00	3.19	1.22 – 8.34
	Totally dependent	4.28	4.52	1.46 – 13.37
Feeling of Loneliness	Absent	Reference		
	Present	2.48	-	-

[Table/Fig-3]: Multi logistic Regression Analysis for Depression
*Unmarried/ Widow/Widower/ Divorce/Separated

DISCUSSION

Among the elderly population residing in the community it was found that the number of male respondents was much higher than female, the difference mainly being because males were more eager to participate in the study as compared to females. Being a male dominating society there were more participation of males than females. The reason for total absence of Sikhs and only a minor population of Muslims in the OAHs may be due to joint family system still being present in these religions. Similar findings were also observed in studies conducted in Lucknow [17,18].

Among elderly living in community 58.9% had one or more morbidities and almost similar findings were observed in a study conducted in Andhra Pradesh [19]. On the other hand in OAHs, 81.2% of elderly people had one or more morbidities which was higher than subjects residing in community.

Many studies conducted in different part of India like in Chandigarh [20], in urban area of Udaipur [8], among urban elderly of Bengaluru [21] and in OAHs of Calcutta [22], showed higher prevalence of different morbidities as compared to present study which may be attributed to the fact that only those diagnosed earlier were considered as case in the present study.

Prevalence of depression among elderly people residing in community was 15.6 % and in OAHs was 27.7 %. Studies in Indian setting showed that prevalence of depression among elderly in community ranges from 11.6% to 31.1% [23-25]. While most of the studies conducted in other part of world showed community prevalence ranging from 17.3% to 22.07% [26-28]. A review based on 122 studies in the Western countries reported the prevalence of major depression between the range of 0.9 % to 9.4 % in private households and from 14 % to 42 % in institutional settings [2,29], whereas a study in United Kingdom on residents in OAHs found 40% prevalence [30]. The prevalence rates have varied in different

studies and these variation were most probably due to clinical criteria used to measure depression, the cultural settings and the population diversity [31]. There is evidence indicating higher rates of depression in OAHs compared to the community [27,32].

The family has been consistently reported to be a source of strength and security for the elderly people in providing them with social, financial and emotional support [33] which is associated with their well-being. Therefore it is obvious that study subjects who were residents of OAHs reported higher prevalence of depression due to their feeling of isolation (loneliness) from their families [34] and can also be reason for higher rate of morbidities in OAHs as compare to community.

Result showed that female respondents are more likely to be depressed and elderly married & living with partner have reduced risk of being depressed and similar findings were found in other studies [17,35-37].

Present study also showed that education and financial dependency were primary predictors whereas age group, sex, marital & living status, children, residential status, feeling of loneliness were found to be secondary predictors of depression. Studies conducted in different part of world also showed similar finding [38-40].

CONCLUSION

Depression was more common among elderly living in OAHs (27.7%) as compare to those living in community (15.6%). Similarly it was more among those who were single (living without partner) than those who were married and living with their partner. Elderly females were more depressed than elderly males. Hypertension, musculoskeletal morbidities & eye related morbidities were most frequent diagnosed morbidities among elderly people. Education and Financial Dependency were found to be primary predictors of depression.

SUGGESTIONS

Among all important predictors found in present study only financial dependency, education, are only modifiable and primary predictors for depression. So based on this following recommendations should be emphasized - Revision old age pension based on inflation, Government sponsored or public-private partnership based OAHs/ day care centre/recreational centre with better infrastructure and facilities should be established at block/sub-district level especially for economically vulnerable sections of society with facilities like health check-up (physical as well as mental), diagnosis and management for different morbidities. Recreational activities/games to improve literacy, mental activities and social relationships to overcome their loneliness.

DECLARATION

I hereby declare that some part of article titled “Screening Depression among Urban Elderly in a City of Southeast Asia” has also been presented as poster under title “Study of Depression in Geriatric Population: Old Age Home and Community in Lucknow India” in 20th IEA World Congress of Epidemiology, Alaska, USA on Sunday, 17 August 2014 by Prof. Uday Mohan, Department of Community Medicine & Public Health, K G Medical University, UP, Lucknow, India who was the part of original study as one of the co-author.

REFERENCES

[1] Population Foundation of India, New Delhi, Aug 2007. Available from: http://www.prb.org/pdf07/futurepopulationofindia.pdf. (accessed on 21 March 2014)

[2] Djernes JK. Prevalence and predictors of depression in populations of elderly: a review. *Acta Psychiatr Scand*. 2006;113(5):372-87. Review. PubMed PMID: 16603029.

[3] Central Statistics Office Ministry of Statistics and Programme Implementation, Government of India. Situation Analysis of the Elderly in India, New Delhi June 2011. Available from: http://mospi.nic.in/mospi_new/upload/elderly_in_india.pdf. (accessed on 21 March 2014)

[4] Folstein MF, Folstein SE, McHugh PR. "Mini-mental state". A practical method for grading the cognitive state of patients for the clinician. *J Psychiatr Res*. 1975;12(3):189-98. PubMed PMID: 1202204.

[5] Crum RM, Anthony JC, Bassett SS, Folstein MF. Population-based norms for the Mini-Mental State Examination by age and educational level. *JAMA*. 1993;269(18):2386-91. PubMed PMID: 8479064.

[6] Kurlowicz L: The Geriatric Depression Scale: Best practice in nursing care to older adults. Revised. In Best Practices in Nursing Care to Older Adult, Issue 2. Edited by Boltz M, Greenberg SA. NYU College of Nursing; 2007.

[7] Montorio I, Izal M. The Geriatric Depression Scale: a review of its development and utility. *IntPsychogeriatr*. 1996;8(1):103-12. Review. PubMed PMID: 8805091.

[8] Prakash R, Choudhary SK, Singh US. A study of morbidity pattern among geriatric population in an urban area of Udaipur, Rajasthan. *Indian J Community Med*. 2004;29:35–40.

[9] Chief Electoral Officer, Uttar Pradesh. Available from: www.ceouttarpradesh.nic.in (Accessed on Jan 2012)

[10] Ganguli M, Dube S, Johnston JM, Pandav R, Chandra V, Dodge HH. Depressive symptoms, cognitive impairment and functional impairment in a rural elderly population in India: a Hindi version of the geriatric depression scale (GDS-H). *Int J Geriatr Psychiatry*. 1999;14(10):807-20. PubMed PMID: 10521880.

[11] Sheikh JI, Yesavage JA, Brooks JO 3rd, Friedman L, Gratzinger P, Hill RD, Zadeik A, Crook T. Proposed factor structure of the Geriatric Depression Scale. *Int Psychogeriatr.* 1991;3(1):23-28. PubMed PMID: 1863703.

[12] Yesavage JA. Geriatric Depression Scale. *Psychopharmacol Bull*. 1988;24(4):709-11. PubMed PMID: 3249773.

[13] Yesavage JA, Brink TL, Rose TL, Lum O, Huang V, Adey M, et al. Development and validation of a geriatric depression screening scale: a preliminary report. *J Psychiatr Res*. 1982-1983;17(1):37-49. PubMed PMID: 7183759.

[14] Mitchell AJ, Bird V, Rizzo M, Meader N. Which version of the geriatric depression scale is most useful in medical settings and nursing homes? Diagnostic validity meta-analysis. *Am J Geriatr Psychiatry*. 2010;18(12):1066-77. PubMed PMID: 21155144.

[15] Debruyne H, Van Buggenhout M, Le Bastard N, Aries M, Audenaert K, De Deyn PP, et al. Is the geriatric depression scale a reliable screening tool for depressive symptoms in elderly patients with cognitive impairment? *Int J Geriatr Psychiatry.* 2009;24(6):556-62. doi: 10.1002/gps.2154. PubMed PMID: 19132643.

[16] Tiwari SC, Kumar A, Kumar A. Development & standardization of a scale to measure socio-economic status in urban & rural communities in India. *Indian J Med Res*. 2005;122(4):309-14. PubMed PMID: 16394322.

[17] Gupta A, Mohan U, Tiwari SC, Singh SK, Singh VK. Dimensions and determinants of quality of life among senior citizens of Lucknow, India. *Int J Med Public Health* 2014;4:477-81. DOI: 10.4103/2230-8598.144122.

[18] Gupta A, Mohan U, Tiwari SC, Singh SK, Singh VK. Quality of Life of Elderly People and Assessment of Facilities Available in Old Age Homes of Lucknow, India. *Natl J Community Med*. 2014;5(1):21-4.

[19] Nallapu SS, Sai TS. Estimation of lifestyle diseases in elderly from a rural community of Guntur District of Andhrapradesh. *J Clin Diagn Res*. 2014;8(4):JC01-4. doi: 10.7860/JCDR/2014/8050.4239. Epub 2014 Apr 15. PubMed PMID: 24959465; PubMed Central PMCID: PMC4064858.

[20] Bhatia S, Swami HM, Thakur JS, Bhatia V. A study of health problems and loneliness among the elderly in Chandigarh. *Indian J Community Med*. 2007;32:255-8. Available from: http://www.ijcm.org.in/text.asp?2007/32/4/255/37689.

[21] Srinivasan K, Vaz M, Thomas T. Prevalence of health related disability among community dwelling urban elderly from middle socioeconomic strata in Bangaluru, India. *Indian J Med Res*. 2010; 131:515-21. PubMed PMID: 20424302.

[22] Sarkar S. Morbidity profile of aged population of old age home in Calcutta. *Indian J Public Health.* 2003;47(2):78. PubMed PMID: 15129859.

[23] Barua A, Ghosh MK, Kar N, Basilio MA. Prevalence of depressive disorders in the elderly. *Ann Saudi Med*. 2011;31(6):620-24. doi: 10.4103/0256-4947.87100. PubMed PMID: 22048509; PubMed Central PMCID: PMC3221135.

[24] Barua A, Kar N. Screening for depression in elderly Indian population. *Indian J Psychiatry*. 2010;52(2):150-53. doi: 10.4103/0019-5545.64595. PubMed PMID: 20838503; PubMed Central PMCID: PMC2927885.

[25] Tiwari SC, Pandey NM. Status and requirements of geriatric mental health services in India: an evidence-based commentary. *Indian J Psychiatry.* 2012;54(1):8-14. doi: 10.4103/0019-5545.94639. PubMed PMID: 22556431; PubMed Central PMCID: PMC3339228.

[26] Mokhber N, Majdi M, Ali-Abadi M, Shakeri M, Kimiagar M, Salek R, et al. Association between Malnutrition and Depression in Elderly People in Razavi Khorasan: A Population Based-Study in Iran. *Iran J Public Health*. 2011;40(2):67-74. Epub 2011 Jun 30. PubMed PMID: 23113074; PubMed Central PMCID: PMC3481766.

[27] Rovner BW, Kafonek S, Filipp L, Lucas MJ, Folstein MF. Prevalence of mental illness in a community nursing home. *Am J Psychiatry*. 1986;143(11):1446-49. PubMed PMID: 3777239

[28] Majdi MR, Ghayour-Mobarhan M, Salek M, Shakeri MT, Mokhber N. Prevalence of depression in an elderly population: A population-based study in Iran. *Iranian Journal of Psychiatry and Behavioral Sciences*. 2011;5(1):17-21.

[29] Tiwari SC, Pandey NM, Singh I. Mental health problems among inhabitants of old age homes: A preliminary study. *Indian J Psychiatry*. 2012;54(2):144-48. doi: 10.4103/0019-5545.99533. PubMed PMID: 22988321; PubMed Central PMCID: PMC3440908.

[30] Mann AH, Schneider J, Mozley CG, Levin E, Blizard R, Netten A, et al. Depression and the response of residential homes to physical health needs. *Int J Geriatr Psychiatry*. 2000;15(12):1105-12. PubMed PMID: 11180466.

[31] Evans M, Mottram P. Diagnosis of depression in elderly patients. *Adv Psychiatr Treat* 2000;6(1):49–56.
[32] Grayson P, Lubin B, Van Whitlock R. Comparison of depression in the community-dwelling and assisted-living elderly. *J Clin Psychol*. 1995;51(1):18-21. PubMed PMID: 7782469.
[33] Kramer EJ, Kwong K, Lee E, Chung H. Cultural factors influencing the mental health of Asian Americans. *West J Med*. 2002;176(4):227-31. PubMed PMID: 12208826; PubMed Central PMCID: PMC1071736.
[34] Cano A, Scaturo DJ, Sprafkin RP, Lantinga LJ, Fiese BH, Brand F. Family Support, Self-Rated Health, and Psychological Distress. *Prim Care Companion J Clin Psychiatry.* 2003;5(3):111-17. PubMed PMID: 15154021; PubMed Central PMCID: PMC406377.
[35] Luppa M, Sikorski C, Luck T, Weyerer S, Villringer A, König HH, et al. Prevalence and risk factors of depressive symptoms in latest life--results of the Leipzig Longitudinal Study of the Aged (LEILA 75+). *Int J Geriatr Psychiatry*. 2012;27(3):286-95. doi: 10.1002/gps.2718. Epub 2011 Apr 27. PubMed PMID: 21538535
[36] Gupta A, Mohan U, Tiwari SC, Singh SK, Singh VK. Home away from Home: Quality of Life, Assessment of Facilities and Reason for Settlement in Old Age Homes of Lucknow, India. *Ind J Comm Health*. 2014:26(2):165-69.
[37] Bhamani MA, Karim MS, Khan MM. Depression in the elderly in Karachi, Pakistan: a cross sectional study. *BMC Psychiatry*. 2013;13:181. doi: 10.1186/1471-244X-13-181. PubMed PMID: 23819509; PubMed Central PMCID: PMC3704964
[38] Akhtar H, Khan AM, Vaidhyanathan KV, Chhabra P, Kannan AT. Socio-demographic Predictors of Depression among the Elderly Patients Attending Out Patient Departments of a Tertiary Hospital in North India. *Int J Prev Med*. 2013;4(8):971-75. PubMed PMID: 24049626; PubMed Central PMCID: PMC3775177.
[39] Kim JM, Shin IS, Yoon JS, Stewart R. Prevalence and correlates of late-life depression compared between urban and rural populations in Korea. *Int J Geriatr Psychiatry*. 2002;17(5):409-15. PubMed PMID: 11994928.
[40] Cole MG, Dendukuri N. Risk factors for depression among elderly community subjects: a systematic review and meta-analysis. *Am J Psychiatry.* 2003;160(6):1147-56. Review. PubMed PMID: 12777274.

PARTICULARS OF CONTRIBUTORS:
1. Assistant Professor, Department of Community Medicine, Hind Institute of Medical Sciences, Barabanki, Uttar Pradesh, India.
2. Professor, Department of Community Medicine & Public Health, K.G. Medical University, UP, Lucknow, India.
3. Associate Professor, Department of Community Medicine & Public Health, K.G. Medical University, UP, Lucknow, India.
4. Assistant Professor, Department of Community Medicine & Public Health, K.G. Medical University, UP, Lucknow, India.
5. Professor, Department of Geriatric Mental Health, K.G. Medical University, UP, Lucknow, India.
6. Assistant Professor, Department of Community Medicine & Public Health, K.G. Medical University, UP, Lucknow, India.

NAME, ADDRESS, E-MAIL ID OF THE CORRESPONDING AUTHOR:
Dr. Abhishek Gupta,
362-H, Patel Nagar, Indira Nagar Lucknow, U.P.-226016, India.
E-mail: ab23kgmc@gmail.com

FINANCIAL OR OTHER COMPETING INTERESTS: As declared above.

Date of Submission: **Mar 20, 2015**
Date of Peer Review: **Jun 07, 2015**
Date of Acceptance: **Jul 08, 2015**
Date of Publishing: **Sep 01, 2015**