ORIGINAL ARTICLE
pISSN 0976 3325 | eISSN 2229 6816
Open Access Article
www.njcmindia.org

# A Community Based Study of Depression and Its Risk Factors among Geriatric Population Inperiurban Areas of Tamilnadu

**Devi Kittu[1], Logesh Wari[2]**

**Financial Support:** None declared
**Conflict of Interest:** None declared


**How to cite this article:**
Devi Kittu, Logesh Wari. A Community Based Study of Depression and Its Risk Factors among Geriatric Population Inperiurban Areas of Tamilnadu. Natl J Community Med 2017; 8(8):471-476.

**Author's Affiliation:**
[1]Associate Professor, Community Medicine, Indira Gandhi Medical College and Research Institute (IGMC&RI), Pondicherry; [2]Medical Officer, Community Medicine, Melmaruvathur Adhiparasakthi institute medical sciences, Melmaruvathur

**Correspondence:**
Dr K. Devi,
devi.kittu@rediffmail.com

**Date of Submission:** 10-05-17
**Date of Acceptance:** 23-08-17
**Date of Publication:** 31-08-17

## ABSTRACT

**Background:** Geriatric depression is an important public health problem. There is a dearth of community studies from India investigating geriatric depression and its associated risk factors. This study aimed to establish the prevalence and factors associated with geriatric depression in asemiurbanpopulation of Melmaruvathur.

**Methods:** This was a community based cross sectional study conducted in semiurban areas of Melmaruvathur. 200 individuals in the geriatric age group were randomly selectedand were interviewedusing standard Geriatric depression scale and the result wasanalyzed using the statistical software SPSS 20.

**Results:** Prevalence of geriatric depression was 65% with 14.5% mild and 50.5% with severe depression. Depression was significantly associated with elders in the age group of 60-69 years. The proportion of severe depression was significantly higher among those participants whose spouse had expired (85.56% vs 14.44%). The proportion of depression was significantly higher among the elders who gave a previous history (92.13%) of depression. The proportion of elders who require home care was also significantly associated with depression.

**Conclusions:** Geriatric depression is highly prevalent in thesemiurbanareas of Melmaruvathur. Age, status of spouse, previous history of depression, elders whorequires home care was the significant factors that was associated with depression in geriatric population.

**Key words:** Depression, Geriatric, periurban, prevalence, riskfactors.

## INTRODUCTION

Depression is a medical illness characterized by persistent sadness, discouragement, and loss of selfworth.It may be accompanied by reduced energy and concentration, sleep problems (insomnia), decreased appetite, weight loss, and bodily aches.[1] In the United States, 13–27% of adults aged 65 and above living in the community suffer from subclinicaldepression.[2] Depression is a widespread problem in older people. The prevalence of depression has been reported to be 15.2–44% in Korea[3,4],19.8–33.5% in Japan[4] and 20.1% in urban elders in Taiwan.[5] A robust growth in the number of elderly people in the general population in recent years is termed as "greying of the world". Population ageing is due to demographic transition in which there is a shift from high mortality/high fertility to low mortality/low fertility, resulting in an increased proportion of older people in the total population. India is presently undergoing such demographic transition. The life expectancy in India has almost doubled from 32 years in 1947 to 63.4 years in 2002.[6]The World Health Organization estimated that the overall prevalence rate of depressive disorders among the elderly generally varies between 10% and 20% depending on cultural

situations.[7,8] The community-based mental health studies in India have revealed that the point prevalence of depressive disorders in the elderly Indian population varies between 13% and 25%.[9,10] Although India is the second most populated country in the world in terms of elderly population of 60 years and above[7] depression in the elderly is not yet perceived as a public health problem in India. A very few community-based studies have been conducted in India so far, to address this issue.Most of the previous studies on geriatric depression have focused on its high prevalence rate. There are few predictive studies on depression among the elderly in India. They have not attempted to reduce the occurrence ofdepression among the elderly.

The findings from this study may provide some valuable information about depression in the elderly in India and contribute to identifying factors that can be modified by nursing interventions.

## OBJECTIVES

The objectives of this study were to assess the prevalence of depression among elderly population in semiurban areas of Melmaruvathur and to study the risk factors associated with depression among the elderly population.

## METHODS

A Community based Cross-sectional study was conducted from January 2014- December 2014 in Maduranthagam which is the field practice area of Department of Community Medicine, Melmaruvathur AdhiParasakthiInstitute of Medical Sciences. (MAPIMS) in Tamilnadu, India.

The study included participants whose age was more than 60 years who agreed to participate and providing consent. A sample size of 180 was calculated assuming a prevalence of depression as 13%[11] in geriatric subjects at 95% confidence interval and a sample error of 5%. The formula used for calculation was $\mathbf{N = Z_{1-\alpha/2}^2 * p * q/(d)^2}$.This was adjusted for 10% non-response rate, bringing the total sample size to 199 which is approximated to 200. A total sample size of 200 elders was selected randomly from senior citizen list maintained by Maduranthagam senior citizen society for the study within the study period.A total sample of 200 elderly subjects was covered.

A pre-tested structured questionnaire was administered to collect information on identification data and socio-demographic characteristics. Depression will be assessed by using standard Geriatric depression scale[12]. A short (15 item) form of the geriatric depression scale was used, along with a semi-structured questionnaire specially designed for the study

The Dean of the college will be contacted and the purpose of the study was explained to him in detail. Initially, the questionnaire was pretested among 10 community members in another center. Pretesting was done among patients in the same age brackets, in a similar setting in another area to screen for potential problems in the questionnaire after which the questionnaire was finalized. Information was gathered using a proforma which was prepared as a structured format covering all the relevant aspects including the demographic details and information regarding presence of any health problems like diabetes mellitus, hypertension, cardiac ailments and chronic arthritis.

Totally, 200 elderly subjects were included in the study. The purpose of the study and the contents of the form were explained to participants in detail. The pre-tested questionnaire and detailed consent form was given individually to all the participants in the study.The purpose of the study and the contents of the form was explained to participants in detail. One to one interview was conducted to collect the data.

Data would be analyzed using SPSS version - 22. Descriptive statistics, frequency, means (SD) etc would be estimated as appropriate. Chi -square test and t-test would be used to find the association between the attributes. Multiple logistic regressions would be used to find independent predictors of depression among geriatric population.

## RESULTS

All the participants willingly participated in the study. The overall prevalence of depression was 65% (130/200)of which 14.5% (29/200)had mild depression and 50.5% (101/200)was severely depressed. Of these 101 were femalesand 99 were males. Overall majority of them were in the 60-69 age category 131(65.6%). Gender wise 58.6% among the males and 82.2% among females belonged to 60-69 age category.

Table 1 shows the factors associated with geriatric depression by using chisquare test. Among the socio demographic variables studied 58.87%elderly subjects in the age group of 60-69 years were depressed and 41.13% were not depressed. While among the older population (>70 year) 79.66% suffered depression and 20.34% were not depressed. This difference was statistically significant. Looking at the sleep patterns, the proportion of depression was significantly higher among the ones who had a disturbed sleep (72.44%) when compared to

those without depression (27.56%). The proportion of depression was significantly higher among those participants whose spouse had expired (85.56%vs14.44%). Also the proportion of depression was significantly higher among those with previous history of depression as compared to the ones without depression (92.13%vs7.87%). Among the ones who had depression the proportion dementia (75.86%) was significantly higher than among the ones who did not have dementia (24.14%). Depression was significantly higher among the elders who require home care (80.72%).

**Table 1: Chi square analysis to find the risk factors of Depression among participants:**

| Variables | Depression (n=130) (%) | No Depression (n=70) (%) | Total (n=200)(%) | Chi-square test | |
|---|---|---|---|---|---|
| | | | | Chi square value | p- value |
| **Age** | | | | | |
| 60-69years | 83(58.87) | 58(41.13) | 141(70.5) | 7.90 | 0.005* |
| 70 and above | 47(79.66) | 12(20.34) | 59(29.5) | | |
| **Gender** | | | | | |
| Male | 58(58.59) | 41(41.41) | 99(49.5) | 3.54 | 0.06 |
| Female | 72(71.29) | 29(28.71) | 101(50.5) | | |
| **Religion** | | | | | |
| Hindu | 127(66.15) | 65(33.85) | 192(96) | 2.77 | 0.09 |
| Muslim | 03(37.5) | 05(62.5) | 8(4) | | |
| **Literacy** | | | | | |
| Illiterate | 81(67.5) | 39(32.5) | 120(60) | 0.82 | 0.36 |
| Literate | 49(61.25) | 31(38.75) | 80(40) | | |
| **Occupation** | | | | | |
| Not working | 107(65.64) | 56(34.36) | 163(81.5) | 0.16 | 0.68 |
| Working | 23(62.16) | 14(37.84) | 37(18.5) | | |
| **Pension** | | | | | |
| Yes | 26(68.42) | 12(31.58) | 38(19) | 0.24 | 0.62 |
| No | 104(64.20) | 58(35.80) | 162(81) | | |
| **Family type** | | | | | |
| Nuclear | 65(63.11) | 38(36.89) | 103(51.5) | 0.33 | 0.56 |
| Joint | 65(67.01) | 32(32.99) | 97(48.5) | | |
| **Substance abuse** | | | | | |
| Present | 25(67.57) | 12(32.43) | 37(18.5) | 0.13 | 0.71 |
| Absent | 105(64.42) | 58(35.58) | 163(81.5) | | |
| **Sleep pattern** | | | | | |
| Disturbed | 92(72.44) | 35(27.56) | 127(63.5) | 8.46 | 0.004* |
| Satisfactory | 38(52.05) | 35(47.95) | 73(36.5) | | |
| **Spouse** | | | | | |
| Living with spouse | 53(48.18) | 57(51.82) | 110(55) | 30.39 | 0.000* |
| Spouse expired | 77(85.56) | 13(14.44) | 90(45) | | |
| **Comorbidity** | | | | | |
| Present | 116(64.09) | 65(35.91) | 181(90.5) | 0.69 | 0.40 |
| Absent | 14(73.68) | 5(26.32) | 19(9.5) | | |
| **Previous history** | | | | | |
| Present | 82(92.13) | 7(7.87) | 89(44.5) | 51.90 | 0.000* |
| Absent | 48(43.24) | 63(56.76) | 111(55.5) | | |
| **Dementia** | | | | | |
| Present | 88(75.86) | 28(24.14) | 116(58) | 14.32 | 0.000* |
| Absent | 42(50) | 42(50) | 84(42) | | |
| **Requires home care** | | | | | |
| Present | 67(80.72) | 16(19.28) | 83(41.5) | 15.41 | 0.000* |
| Absent | 63(53.85) | 54(46.15) | 117(58.5) | | |

*p value <0.05 is significant

Table 2 gives the univariate analysis of the significant risk factors for depression among elderly. The significant risk factors namely age, disturbed sleep pattern, spouse expired, previous history of depression, dementia, requirement of home care were fitted in the logistic regression model to see the independent effect by controlling the confounders.

Table 3 shows the logistic regression model of risk factors for depression among elderly. Except, for abnormal sleep pattern and dementia the other factors like the age, spouse, previous history of depression, requires home care was found to be significantly associated with depression among elderly. Elders in the age group 60-69 were at higher risk of developing depression. (OR = 2.49; 95% CI=

0.99 – 6.22). Elderly subjects whose spouse was expired or not living with their spouse had higher risk of developing depression. (OR = 0.27; 95% CI= 0.12 -0.62). Previous history of depression put them at 9.99(95% CI = 3.91 – 25.48) times the risk of developing depression. Elders who require home care had a higher risk of developing depression in their old age. (OR = 2.97; 95% CI = 1.30 – 6.80).

**Table2: Univariate analysis of risk factors of depression among respondents:**

| Variables | OR# | 95% CI | P value |
|---|---|---|---|
| Age | 2.73 | 1.33-5.60 | 0.006* |
| Sleep pattern | 0.413 | 0.22-0.75 | 0.004* |
| Spouse | 0.15 | 0.07-0.31 | 0.000* |
| Past history of depression | 15.37 | 6.51-36.27 | 0.000* |
| Dementia | 3.14 | 1.71-5.74 | 0.000* |
| Requires home care | 3.58 | 1.86-6.91 | 0.000* |

*p value < 0.05 was considered significant
#OR= Crude/unadjusted Odds Ratio

**Table 3: Logistic regression model of risk factors for depression:**

| Variables | Sig | Exp(B) | 95% CI |
|---|---|---|---|
| Age | 0.05* | 2.49 | 0.99-6.22 |
| Sleep pattern | 0.34 | 0.67 | 0.29-1.53 |
| Spouse | 0.002* | 0.27 | 0.12-0.62 |
| Past history of depression | 0.000* | 9.99 | 3.91-25.48 |
| Dementia | 0.11 | 1.85 | 0.85-3.99 |
| Requires home care | 0.01* | 2.97 | 1.30-6.80 |
| Constant | 0.78 | 0.87 | - |

## DISCUSSION

This study attempted to find the prevalence and the factors associated with depression among the elderly in a South Indian community. The overall prevalence of depression among the Geriatric population is 65% in our study. The prevalence rates in past Indian studies have widely varied, ranging from 6%[7] to 55.2%.[13]In literature from the west depression prevalence rate of 13.3–18.3% has been reported.[14,15]This rate was higher than other studies which reported it as 15–44%[16,17,4],33.5% in Japan,[18] 21.7–29.9% in Taiwan[19] and 30.8% in China.[20]

The distribution of depression in our study with prevalence of severe depression of 50.5% and mild depression of 14.5% The low positive predictive value[21] as well as doubtful external validity of screening instruments[22] may yield many false positive cases and may inflate the prevalence rates of geriatric depression in community settings. Concerns regarding the different cut-off values used to diagnose depression across various settings also exist.[21] This is an issue that needs to be addressed in community studies of depression. The prevalence of depression among Korean elderly women was higher than that among Korean men (women 66.1%, men 47.3%; severe cases of depression: women 23.4%, men 16.5%). This finding was similar to the result of Gautam, Saito, and Kai (2007).[23] Korean society is based on the Confucian idea under which women's roles and positions are limited especially in this generation. Because of socially fixed limitations in roles that Korean women are expected to perform, Korean elderly women may have a high rate of depression. Further research is needed to explore the reason for the high prevalence of depression in the Korean elderly and strategies for decreasing depression in the elderly.

The meager expectations by families of their elderly relatives may also contribute towards high tolerance of depressive symptoms and functional impairment.[24] Elderly people report depressive symptoms when they are distressed, when they are ill or are worried about the implication of their symptoms. Stressful life events and inability to cope with psychosocial problems may also lead the elderly to mention such symptoms. Consequently, the difficulty in separating distress from depression becomes a major issue.[25]While psychiatrists suggest that brief screening instruments can easily identify people with depression[26], most general practitioners (GPs) would argue that many of those identified are distressed [25]. The kind of response to the nature of questions asked as a part of the screening instrument regarding energy, hopelessness, memory, concentration etc are very likely to be influenced by the socio-cultural background that the individual is a part of. This includes religion, beliefs regarding the purpose of life and the expected social role at different age categories which more often than not is a set of unwritten rules that individuals are expected to naturally adapt themselves to. As an example, in some religions the belief is, that whatever one experiences, it is a result of one‟s past karma and that one has to bear it without complaining. This code of functioning would be imposed by the individual on him or herself well supported by the social surroundings by what is called the collective mind. So in spite of being in psychological pain the individual would not say that it is so. The reverse may happen in a different cultural background. The depression seen in the community and which many GPs encounter is often viewed as a result of personal and social stress, lifestyle choices or as a product of habitual maladaptive patterns of behavior. Consequently, the general population and primary care physicians often uphold psychological and social models for depression.[24] Psychiatrists, with their biomedical frameworks, would on the other hand argue for disease models[26]The relationship between poverty, social isolation, physical health and mental health is complex and needs a constant and dynamic assessment to be understood.

**Predictors of depression:** In our study depression was significantly associated with factors like age, status of spouse, previous history and home care among geriatric population.The association of severe depression with a disturbed sleep pattern, substance abuse, not working, death of spouse and co-morbidities is clearly brought out while gender and literacy did not seem to have any influence on the prevalence of depression. Also higher age was associated with more chance of severe depression both among males and females.[27]In this study, the predictorsof depression in the Korean elderly were perceived health status, TMIG-IC, hand-grip strength, and social activities. Among them, perceived health status was the most powerful predictor of elderly depression.[28] Similarly, Demura and Sato (2003)[29] reported that self evaluation of health status showed a moderatelysignificant relationship with depression (r=.599, p<.001) in a group of elderly female Japanese. Depression was significantly more prevalent in those who had faced a stressful event in the past two years, in those lacking emotional support from a close confidant and in those suffering some systemic illness or sensory deprivation. The commonest stressor faced was the death of their spouse or child. This was statistically the most significant finding in those depressed (P=0.0007).[30]In the qualitative meta-analysis, risk factors identified by both univariate and multivariate techniques in at least two studies each were disability, new medical illness, poor health status, prior depression, poor self-perceived health, and bereavement. In the quantitative meta-analysis, bereavement, sleep disturbance, disability, prior depression, and female gender were significant risk factors.[31]

When we suggest a realistic strategy to diminish geriatric depression and to relieve it, we should also focus on increasing perceived health status by encouraging social and physical activities. Activity-related indices such as the frequency of going outdoors were found useful indicators that predict functional and psychological changes among community-dwelling elderly in Japan[32] and Nepal[23]. We need to conceive strategies to relieve depression and to reduce it's prevalence. Furthermore, physical conditions including health status and social activity may be considered important factors when planning an intervention for depressive elderly. If they have stressful life events such as the loss of loved ones and chronic illness interrupting daily activities, such events may trigger a depressive mood and result in suicide.

## CONCLUSION

Geriatric depression is highly prevalent in the semiurban areas of Melmaruvathur. Sixty-five percent of the community-dwelling elderly had depression. Depression was significantly associated with factors like age, status of spouse, previous history and home care among geriatric population. There is a need for screening instruments to be tailored to the socio-cultural framework of the community. The primary care physician and the general practitioners can however keep his mind open and be extra alert to a possibility of depression in senior citizens when these factors are found as a part of history taking and examination so that they can identify depression at an early stage and efforts may be taken to tackle them effectively either at their level or by further referral.

## REFERENCES


1. Medical Encyclopedia. Depression-elderly. Retrieved October 31, 2008, from http://www.nlm.nih.gov/medlineplus/ency/article/001521.htm#Definition.
2. National Institute of Mental Health. (2004). Depression Research at the National Institute of Mental Health. Retrieved October 30, 2008, from http://www.nimh.nih.gov/ publicat/depresfact.cfm.
3. Lee M, Choi EK, Jung IK, KwakDI.Epidemiological study of geriatric depression in aKorean urban area. Korean Journal of Geriatric Psychiatry. 2000;6:154–163.
4. Lee Y,ShinkaiS.Correlates of cognitive impairment and depressive symptoms among olderadults in Korea and Japan. International Journal of Geriatric Psychiatry. 2005;20:576–586.
5. Chiu HC, ChenCM, Huang CJ, Mau LW. Depressive symptoms, chronic medical conditionsand functional status:A comparison of urban and rural elders in Taiwan. International Journal of Geriatric Psychiatry. 2005;20:635–44.
6. UN population Division: World population prospects, the 2000 revision. New York: United Nations publication; 2001, www.un.org/spanish/esa/population/wpp2000h.pdf
7. Rangaswamy SM, editor. Geneva, Switzerland: World Health Organization; 2001. The World Health Organization (WHO). World Health Report: Mental Health: New Understanding New Hope, www.who.int/whr/2001/en/whr01_en.pdf
8. Wig NN. World Health Day, 2001. Indian J Psychiatry. 2001; 43:1–4.
9. Nandi DN, Ajmany S, Ganguli H, Banergee G, Boral GC, Ghosh A et al. The incidence of mental disorders in one year in a rural community in West Bengal, Indian J Psychiatry. 1976;18:79-87
10. Ramachandran V, Menon SM, Arunagiri S, Socio-cultural factors in late onset depression.Indian J Psychiatry. 1982;24:268-273
11. Rajkumar AP, Thangadurai P, Senthilkumar P, Gayathri, Prince M, Jacob KS. Nature, prevalence and factors associated with depression among the elderly in a rural south Indian community. IntPsychogeriatr. 2009;21(2):372–378
12. Sherry A. The Geriatric depressive Scale – Short form. AJN 2007 Oct; 107(4):60-69.
13. Nandi PS, Banerjee G, Mukherjee SP, Nandi S, Nandi DN. A study of psychiatric morbidity of the elderly population of a

rural community in West Bengal. Indian J psychiatry. 1997; 39:122-9

14. Lindesay J, Briggs K, Murphy E. The Guy's / Age concern survey: Prevalence rates of cognitive impairment, depression and anxiety in an urban elderly population. Br J Psychiatry. 1989;155:332–8
15. Beekman AT, Copeland JR, Prince MJ. Review of community prevalence of depression in later life. Br J Psychiatry. 1999;17(4):307–11.
16. Ham BJ, Kim JK, Cho MJ. The prevalence, incidence, and risk factors of dementia and depressive disorders of the elderly residing in the community: A two stage one-year follow-up study.Korean Journal of Geriatric Psychiatry. 1999;3:140–148
17. Kim JM, Shin IS, Yoon JS, Stewart R. A comparison of the prevalence and correlates of latelife depression in urban and rural populations in Korea. International Journal of Geriatric Psychiatr. 2002;17:409–15.
18. Wada T, Ishine M, Sakagami T, Okumiya K, Fujisawa M. Murakami S. Depression in Japanese community-dwelling elderly prevalence and association with ADL and QOL. Archives of Gerontology and Geriatric. 2004;39:15–23.
19. Chong MY, Tsang HY, Chen CS, Tang TC, Chen CC, Yeh TL. Community study of depression in old age in Taiwan: Prevalence, life events and socio-demographic correlates. The British Journal of Psychiatry. 2001;178:29–35.
20. Gao S, Jin Y, Unverzagt FW, Liang C, Hall K. Ma SF. Correlates of depressive symptoms in rural elderly Chinese. Geriatric Psychiatry. 2009;doi: 10.1002/gps.2271.
21. Arthur A, Jagger C, Lindesay J, Graham C, Clarke M. Using an annual over-75 health check to screen for depression: validation of the short Geriatric Depression Scale (GDS15) within general practice. International Journal of Geriatric Psychiatry. 1999;14:431–9.
22. Korner A. et al. Rating scales for depression in the elderly: external and internal validity, Journal of Clinical Psychiatry. 2007;68:384–9.
23. Gautam R, Saito T, Kai I. Leisure and religious activity participation and mental health:Gender analysis of older adults in Nepal. Retrieved from http://www.biomedcentral.com /1471-2458/7/299. BMC Public Health. 2007; doi: 10.1186 /1471-24587-299.
24. Jacob KS, SenthilKumar P, Gayathri K, Abraham S, Prince MJ. The diagnosis of dementia in the community. International Psychogeriatrics. 2007;19:669–78
25. Heath I. Commentary: there must be limits to the medicalisation of human distress. BMJ.1999;318:439–40
26. Kessler D, Lloyd K, Lewis G, Gray DP. Cross sectional study of symptom attribution and recognition of depression and anxiety in primary care. BMJ. 1999;318:436–9.
27. Bharatwaj RS, Vijaya K, Rajaram P. Prevalence of Urban Geriatric Depression - A Cross sectional Study in Pondicherry. Int J Med Health Sci. 2013;2(3):286-91.
28. Sin MK, LoGerfo J, Belza B, Cunningham S. Factors influencing exercise participation and quality of life among elderly Korean Americans. Journal of Cultural Diversity. 2004;11: 139–145.
29. Demura S, Sato S. Relationships between depression, lifestyle and quality of life in the community dwelling elderly: A comparison between gender and age groups. Journal of Physiological Anthropology and Applied Human Science. 2003;22:159–166.
30. Deshpande SS, Gadkari M, Raje SS. Screening for depression and its risk factors in geriatric population: A rural community based study. Asian J Psychiatr. 2011 Dec;4(4):284-7. doi: 10.1016/j.ajp.2011.08.001. Epub 2011 Oct 13.
31. Cole MG, Dendukuri N. Risk factors for depression among elderly community subjects: a systematic review and meta-analysis. Am J Psychiatry. 2003 Jun;160(6):1147-56.
32. Kono A, Kai I, Sakato C, Rubenstein LZ. Frequency of going outdoors: a predictor of functional and psychological change among ambulatory frail elders living at home. The Journals of Gerontology,Series A, Biological Sciences and Medical Sciences. 2004;59:275–80.