Depressive symptoms in late life in urban and semi-urban areas of South-West Greece: An undetected disorder?

Konstantinos Argyropoulos¹,², Christos Bartsokas¹, Argyro Argyropoulou¹, Philippos Gourzis⁴, Eleni Jelastopulu¹
¹Department of Public Health, School of Medicine, University of Patras, ²Department of Psychiatry, Panarcadian General Hospital of Tripolis, ³Health Centre of Andravida, ⁴Department of Psychiatry, University Hospital of Patras, Greece

ABSTRACT

Objective: The objective of this study was to estimate the prevalence and probable under-diagnosis of depressive symptoms in elderly of an urban and semi-urban area in Greece.

Materials and Methods: A cross-sectional study was conducted among the members of 4 days care centers for older people (KAPI), three in the municipality of Patras, West-Greece, and in one in Tripolis, Peloponnese, Greece. A total of 378 individuals took part in the study, aged >60 years. A questionnaire was developed to collect basic demographic data, including three questions from the European Health Interview Survey, regarding self-reported or by a physician-diagnosed depression. Moreover, to all participants the Greek validated version of the Geriatric Depression Scale-15 (GDS-15) was applied, to screen for depressive symptoms.

Results: According to GDS-15, 48.1% of the studied population screened positive for depressive symptoms (38.6% moderate, 9.5% severe), whereas having ever been affected with chronic depression reported 19.0% by themselves. In 162 members of KAPI of Patras and in 106 of Tripolis, who never reported have been affected by depression and depressive symptoms were observed in 27.7% and 44.7%, respectively. In 28 individuals from Patras, who reported not to know if they have depression and in 10 from Tripolis, depressive symptoms were observed in 60.7% and 90%, respectively, applying the GDS-15.

Conclusion: Except the high prevalence, the present study reveals a remarkable under-detection of depressive symptoms in older adults. Various interventions in primary care are necessary so as to increase detection rates of depression among the elderly.

Key words: Day care centers, depression, Geriatric Depression Scale-15, late life

INTRODUCTION

Depression is an important public health issue that affects approximately 121 million people worldwide.[1] It is estimated that by 2020, depression will be the second leading cause of morbidity after ischemic heart disease.[1] Lifetime prevalence of depression estimates varied widely, 8.6% in Europe,[2] 16.9% in the US, and 3% in Japan.[3] Furthermore, about 14% of the global burden of disease has been attributed to neuropsychiatric disorders.[4] The prevalence of major depression is approximately 2 times higher in women than in men.[5] Furthermore, the increased rates of depressive symptoms are observed in women after the birth of a child (postpartum depression), in the unemployed, in older people and after cardiovascular[6] and neurological disturbances.[7]

At the ages over 65-year-old, depression is the most common mental health problem and probably the most frequent cause of emotional suffering in late life. The aging of the world...
population results in the increasing prevalence of depression in the elderly and is estimated to affect one in seven people. Moreover, the prevalence of major depression in higher age groups is estimated to be 1–4% in the community and of subsyndromal depression (includes depressive syndromes such as dysthymia, bereavement, adjustment disorder with depressed mood, and minor depression) 15–30%. However, depression is not a natural part of aging and with appropriate treatment it is often reversible. Untreated, depression poses a critical impact on well-being and the quality of life of the elderly, leading to serious functional impairment, reduced quality of life, high rates of suicide attempts, increased health care utilization and health expenditures.

Despite the fact that persons with depression often seek help in primary care, they are not recognized as having depressive symptoms by the general practitioner. Consequently, depression is under-detected and under-treated in primary health care. It has been noticed that only 11% (in China) to 61% (in Belgium) of patients with severe mood disorders received any care in the year before.

Among the elderly, the major risk factors for depression are the female gender, co-morbidity where the prevalence of depression range from 10% to 43%, social network losses, low social support, cognitive deficits, and negative life events.

In Greece, the prevalence of depression in people over 60-year-old shows high variability, ranging from 6% to 70% depending on study design and studied population groups.

The aim of the present study was to estimate a possible under-detection of depression in members of the daycare centers for older people (KAPI) in the municipality of Patras and Tripolis in Greece. Further objectives were to estimate the prevalence of depressive symptoms in older people, to investigate the possible risk factors and to compare with other findings for Greece.

**MATERIALS AND METHODS**

A cross-sectional study was conducted among the registered and active members of the four KAPI in the municipality of Patras and Tripolis, West-Greece, and Peloponnesse, respectively, in the time period from March 2011 to October 2012. The choice of age (60 years and over) was made according to the age limit of registration for the KAPI. An anonymous questionnaire was developed to collect basic demographic, medical, and socioeconomic data including three questions from the “European Health Interview Survey (EHIS)” regarding self-reported and/or by a physician-diagnosed depression, in the last 12 months or during the lifetime course (HS.4, HS.5, HS.6). None of the participants suffer from cognitive deficits according to their medical records and prescribed medications. All of the participants who state suffering from depression in the last 12 months or during a lifetime period were confirmed according to their medical history data and their prescribed medications for depression.

Moreover, to all participants the Greek validated version of the Geriatric Depression Scale-15 (GDS-15) was applied, to screen for depressive symptoms. The scores of the GDS-15 were compared to the corresponding answers of the EHIS questions. Associations between the GDS-15 score and various recorded basic parameters were made.

During the study period, the same researcher visited either in the morning or in the afternoon, one of the four centers, and distributed the questionnaires to the members. In the most cases, a face to face interview was performed since the great majority expressed to do so. A total of 600 members were registered in the four KAPI. About 400 persons (active members) visit daily one of the KAPI, of whom 378 agreed to participate in the study. The majority of the nonactive members do not visit the centers for several reasons such as serious health problems or moving to another area.

The GDS-15 was first developed by Yesavage et al., (1982) has been tested and used extensively in many countries to assess depressive symptoms in elderly, in community, in acute, and in long-term care settings. It is a brief questionnaire, in which participants are asked to respond to the 15 closed questions by answering yes or no, in reference to how they felt on the day of administration. The GDS-15 has been standardized and adapted in a Greek elderly population and was found to have a 92% sensitivity and a 95% specificity. The severity of depression was assessed according to Fountoulakis et al. Scores 0–5 are considered normal, 6–10 indicate moderate depression, and 11–15 indicate severe depression.

The study was approved by the plenary meeting of the Medical School of Patras and the Ethics Committee of the University of Patras, Greece. Participants were informed about the aims and procedures of the study and provided written informed consent for participation. Moreover, the board of both KAPI at the municipality of Patras and Tripolis approved the research protocol and the conduction of the study.

All questions were coded and entered into an electronic database. Statistical analysis was performed with Statistical analysis was performed using SPSS for Windows (version 17.0, SPSS, Chicago, IL, USA). Demographic and socioeconomic information were evaluated using descriptive statistics. The Chi-square test was used to test the difference between categorical variables. A $P < 0.05$ was considered as statistically significant.
RESULTS

A total of 378 individuals (239 from three KAPI in Patras and 139 from KAPI in Tripolis) took part in the study (response rate 94.5%), 55% males, and mean age 74 years. Table 1 shows the demographic and socioeconomic characteristics of the study population.

According to the results of the GDS-15, 48.1% (45% in Patras, 53.3% in Tripolis) of the studied population revealed to have depressive symptoms, 38.6% of moderate and 9.5% of severe form [Figure 1]. Having ever been affected with chronic depression reported 19.0%, of them 12.7% being diagnosed by a medical doctor, and 11.9% having received medication. Nearly, 10% reported having experienced depressive symptoms during the last 12 months.

Of the 162 subjects who reported never been affected by a depression in Patras and of 106 in Tripolis, 27.7% and 44.7% screened positive for moderate and severe depressive symptoms, respectively. In 28 (11.7%) individuals who reported not to know if they have/had depression in Patras and 10 (7.2%) in Tripolis, depressive symptoms were observed in 60.7% and 90%, respectively, applying the GDS-15 [Table 2]. Depressive symptoms were more frequent in women members of the three KAPI of Patras than in men (54.6% vs. 37.4%, \( P = 0.027 \)), not married, including divorced and widowed, than married (55.6% vs. 38.9%, \( P = 0.038 \)), and the participants living alone at home (62% vs. 38.1%, \( P = 0.003 \)). Furthermore, depression was more frequent in older adults with chronic diseases compared to elderly without co-morbidity (50.8% vs. 27.5%, \( P = 0.02 \)) and the participants with lower educational level (52.6% vs. 31.3%, \( P = 0.007 \)) [Table 3]. In addition, the semi-urban area of Tripolis depressive symptoms was also more frequent in women (62.9% vs. 45.5%, \( P = 0.012 \)) comparison to men, not married, including divorced and widowed, (85.6% vs. 38.9%, \( P < 0.001 \)) and in subjects without children (91.7% vs. 49.2%, \( P = 0.001 \)). Depressive symptoms were more common in elderly with chronic diseases compared to elderly without co-morbidity (62.4% vs. 4.5%, \( P < 0.001 \)), in participants with low monthly income (63.7% vs. 25.8%, \( P = 0.001 \)), and in older adults suffering from insomnia (88.6% vs. 6.7%, \( P < 0.001 \)) [Table 4].

DISCUSSION

The present study reveals a high percentage (48.1%) of the members of open daycare centers for older people in urban area of Patras and semi-urban area of Tripolis, to suffer from both moderate and severe depressive symptoms. These findings differ from the results of previous studies in Greece, where lower rates of depression in similar populations were observed.\[26,29,30\] On the other hand, the study of Mamplekou et al., conducted in various Greek islands and Cyprus, revealed rates of 25% and 35% for severe depression (GDS score >10), while 54% and 70% scored above the depression

![Figure 1: Distribution of the severity of depressive symptoms based on the scores of the Geriatric Depression Scale-15 (n = 378, in %). About 0–5 no depression, 6–10 moderate depression, and 11–15 severe depression.](image)

| Table 1: Demographic and socioeconomic characteristics of the study population |
|---------------------------------|------------------|
| Characteristics                | n or %           |
| Total recorded patients         | 378              |
| Male (%)/female (%)             | 208 (55)/170 (45) |
| Sex ratio (male/female)         | 1.22 (208/170)   |
| Mean age (minimum-maximum) in years | 74 (60-97)   |
| Nationality                    | 99.5/0.5         |
| Educational level              | 64.8/30.4/4.8    |
| Financial level                | 65.9/22.0/1.1/10.8 |
| Day care center                | 63.2/36.8        |
| Patras (urban)/Tripolis (semi urban) (in %) | 62.2/1.6/3.29.6 |
| Married status                 | 92/8              |
| Children                       | 13.8/15.5/70.7   |
| Yes/no (in %)                  | Co-morbidity     |
| Frequency of visiting KAPI (in %) | Yes/no (in %)   |
| <1 monthly/<1 weekly/almost daily | 78.7/21.3       |

| Table 2: Comparison of results between GDS-15 and EHIS question HS.4 |
|---------------------------------------------------------------|
| Self-reported depression according to EHIS | Depression (GDS-15) |
| ----------------------------------------- | ------------------ |
| No (%) | Moderate (%) | Severe (%) | Total n (%) |
| HS.4* Patras (n=239)                      |                   |
| Yes | 6.1 77.6 16.3 49 (20.5) |
| No  | 72.2 22.8 4.90 162 (67.8) |
| Do not know | 39.3 39.3 21.4 28 (11.7) |
| HS.4* Tripolis (n=139)                     |                   |
| Yes | 4.3 73.9 21.7 23 (16.5) |
| No  | 59.4 34.0 6.60 106 (76.3) |
| Do not know | 10 70.0 20.0 10 (7.2) |

*Do you have or have ever had depression in your life? GDS-15 – Geriatric Depression Scale-15; EHIS – European Health Interview Survey
Table 3: Depression in association to various demographic-socioeconomic characteristics in members of KAPI in Patras

| Characteristics                  | Depression according to GDS-15 (in %) | No | Moderate | Severe | Total n (%) |
|----------------------------------|--------------------------------------|----|----------|--------|-------------|
| **Gender**                       |                                      |    |          |        |             |
| Male                             |                                      | 53.2 | 36.1   | 6.1   | 100 (54.8) |
| Female                           |                                      | 46.5 | 35.7   | 12.9  | 100 (45.2) |
| **Marital status**               |                                      |    |          |        |             |
| Married                          |                                      | 62.7 | 34.8   | 2.5   | 100 (62.7) |
| Other                            |                                      | 37.3 | 65.2   | 2.5   | 100 (37.3) |
| **Educational level**            |                                      |    |          |        |             |
| <6 years                         |                                      | 60.7 | 32.2   | 7.1   | 100 (60.7) |
| ≥6 years                         |                                      | 39.3 | 67.8   | 2.1   | 100 (39.3) |
| **Family Income (€)**            |                                      |    |          |        |             |
| <1000                            |                                      | 55.2 | 37.5   | 7.1   | 100 (55.2) |
| 1000≤2000                        |                                      | 42.2 | 55.2   | 2.5   | 100 (42.2) |
| >2000                            |                                      | 63.2 | 27.7   | 9.1   | 100 (63.2) |
| **No response**                  |                                      |    |          |        |             |
| Yes                              |                                      | 49.6 | 40.4   | 10.1  | 100 (49.6) |
| No                               |                                      | 50.4 | 59.6   | 9.9   | 100 (50.4) |
| **Co-morbidity**                 |                                      |    |          |        |             |
| Yes                              |                                      | 43.9 | 51.8   | 4.3   | 100 (43.9) |
| No                               |                                      | 56.1 | 48.2   | 5.9   | 100 (56.1) |
| **Living conditions**            |                                      |    |          |        |             |
| Alone                            |                                      | 38.8 | 51.7   | 10.5  | 90 (38.8)  |
| Not alone                        |                                      | 61.2 | 48.3   | 11.0  | 90 (61.2)  |

*P<0.05, **P<0.01. GDS-15 – Geriatric Depression Scale-15

Table 4: Depression in association to various demographic socioeconomic characteristics in members of KAPI in Tripolis

| Characteristics                  | Depression according to GDS-15 (in %) | No | Moderate | Severe | Total n (%) |
|----------------------------------|--------------------------------------|----|----------|--------|-------------|
| **Gender**                       |                                      |    |          |        |             |
| Male                             |                                      | 54.5 | 41.6   | 3.9   | 100 (54.5) |
| Female                           |                                      | 37.1 | 45.2   | 6.2   | 100 (37.1) |
| **Marital status**               |                                      |    |          |        |             |
| Married                          |                                      | 61.2 | 36.5   | 2.4   | 100 (61.2) |
| Other                            |                                      | 38.8 | 63.5   | 4.6   | 100 (38.8) |
| **Insomnia**                     |                                      |    |          |        |             |
| Yes                              |                                      | 11.4 | 70.9   | 17.7  | 100 (11.4) |
| No                               |                                      | 88.6 | 29.1   | 82.3  | 100 (88.6) |
| **Family income (€)**            |                                      |    |          |        |             |
| <1000                            |                                      | 36.3 | 51.0   | 12.7  | 100 (36.3) |
| 1000≤2000                        |                                      | 74.3 | 22.9   | 2.8   | 100 (74.3) |
| >2000                            |                                      | 100.0 | 0.0   | 0.0   | 100 (100.0) |
| **Co-morbidity**                 |                                      |    |          |        |             |
| Yes                              |                                      | 37.6 | 51.3   | 11.1  | 100 (37.6) |
| No                               |                                      | 62.4 | 48.7   | 8.9   | 100 (62.4) |
| **Children**                     |                                      |    |          |        |             |
| Yes                              |                                      | 50.8 | 42.1   | 7.1   | 100 (50.8) |
| No                               |                                      | 49.2 | 57.9   | 12.9  | 100 (49.2) |

*P<0.05, **P<0.01. GDS-15 – Geriatric Depression Scale-15

cut-off of five, respectively.[27] A recent study in four KAPI of municipality in Attica indicates an overall prevalence rate of 30.3%, more detailed 22.2% for moderate, and 8.1% for severe depressive symptoms, measured with GDS-15.[28] Even lower rates were observed in the study of Argyriadou et al., conducted in a health center in northern Greece, where the prevalence of mild to moderate depression in women and men was estimated to be 29.9% and 19.6%, respectively, according to Geriatric Depression Screening Scale. In the study of Papadopoulos et al., which was conducted in a rural area in central Greece, the prevalence of depressive symptoms was 39%, 27% of mild (GDS-15 >6), and 12% of severe type (GDS-15 >10).[29]

A study conducted in UK with the largest community sample of people aged 75 years and higher showed lower rates of moderate and severe depressive symptoms (GDS-score ≥3 = 34.6%, ≥6 = 8.0%, ≥8 = 3.1%) than the present study.[35] However, it must be noted that different thresholds were used as compared to our study.

Except the high prevalence of depressive symptoms, the present study reveals that a remarkable percentage of the study population is not aware of having depression and was never been diagnosed with this condition. The low self-reported percentage of diagnosed depression in contrary to the results obtained by the GDS-15 screening, suggests a substantial under-detection in the specific population group. As other studies had shown, depression seems to be the most under-diagnosed disease in primary health care and especially patients in early stages of disease are less likely to be detected.[36,27] It is estimated that only 35–55% are recognized by primary care physicians,[36] although it is known, that depression is one of the most common disorders in older adults who are seeking help in primary health care.[29,38] Our findings come to support these high rates of under-diagnosis since one in two of the participants screened with depressive symptoms, is not recognized and does not receive the appropriate medication. Moreover, it has been observed that depressive disorders are not only under-recognized[38] but also under-treated and often not in line with current medical standards.[48] Other studies reveal that only 19% of patients are receiving appropriate anti-depressive treatment,[41] or that 43% of patients who have been diagnosed with depression by their general practitioner were prescribed an antidepressant,[16] 34% are not being treated appropriate and 41% remain without treatment.[32] Several reasons are described in the literature for under-diagnosis and under-treatment of depression in older adults. The study of Bartels pointed out that elderly people with depressive symptoms are less likely to use special mental health care but prefer to access the general health care system.[43] However, general practitioners are more likely to under-detect depression due to lack of experience, lack of continuous training in mental health, or due to their attitude regarding depression as a “natural” consequence of ageing and as accessory symptom of a physical disease.[45] Last but not least, stigmatization of depressed individuals may lead to low recognition, treatment discontinuation and nonadherence of therapy in older patients.[45]

Depression, even the most severe forms, is one of the diseases with high treatment effectiveness if diagnosed.
at an early stage. Studies have shown, that various interventions, combining enhanced strategies of physicians and patient education, specialist services support, as well as monitoring of medication compliance have a positive effect on recognition, management, and outcome of the disease. Consequently, it is wishful to train primary care physicians, as well as nurses and social workers to raise the awareness of recognizing depression, especially in older adults. The application of the short and user-friendly GDS-15 by general practitioners would increase the ability to detect and treat depression in the elderly population, as shown in this study.

The present study revealed women having higher rates of depression than men, a result, which is in agreement with other studies conducted in Greece and other countries. Other aggravating factors for depression in the present study, as well as in several other studies, are the low education level, being not married, including being widowed or divorced and in patients with chronic diseases, which is confirmed by previous studies.

The limitations of the present study derive from the fact that, the prevalence of depression depends on the cut-off scores are used to distinguish between no depression, moderate and severe form of depression, and the validity of this threshold against the clinical diagnosis. The observed variations in the mentioned studies, may be attributed to different characteristics of the rural, urban, and island populations; the cut-off score and the tools that have been used to estimate depression or to other parameters that were not measured. Even though the prevalence of depression seems to be high in the studied population, if the registered members of KAPI who do not visit the day care centers due to various reasons would have been included, very possibly the prevalence of depressive symptoms would be higher. However, the study was conducted in a specific population, that is, the members of daycare centers for older people and thus our findings cannot be generalized for the whole older population.

**CONCLUSION**

Depression in the older population shows a high prevalence associated with specific demographic and socioeconomic characteristics and appears to be an under-diagnosed disease. To respond to this problem and to focus on prevention and early detection of depression in older adults, it is necessary to create a strong supportive network and simultaneously to strengthen the already existing programs, institutions and services in the community, and primary health care.

**ACKNOWLEDGMENTS**

The authors sincerely thank the Board of the 3 days care centers (KAPI) in the municipality of Patras and in one KAPI of Tripolis for their permission and facilitation of the present research, as well as all the KAPI members, who kindly agreed to participate in this study.

**REFERENCES**

1. World Health Organization. Depression. WHO; 2009. Available from: http://www.who.int/mental_health/management/depression/definition/en/index.html. [Last accessed on 2014 May 02].
2. Ayuso-Mateos JL, Vázquez-Barquero JL, Dowrick C, Lehtinen V, Dalgard OS, Casey P, et al. Depressive disorders in Europe: Prevalence figures from the ODIN study. Br J Psychiatry 2001;179:308-16.
3. Andrade L, Caraveo-Anduaga JJ, Berglund P, Bijl RV, De Graaf R, Vollebergh W, et al. The epidemiology of major depressive episodes: Results from the International Consortium of Psychiatric Epidemiology (ICPE) Surveys. Int J Methods Psychiatr Res 2003;12:3-21.
4. Prince M, Patel V, Saxena S, Maj M, Maselko J, Phillips MR, et al. No health without mental health. Lancet 2007;370:859-77.
5. Kuehner C. Gender differences in unipolar depression: An update of epidemiological findings and possible explanations. Acta Psychiatr Scand 2003;108:163-74.
6. Surfees PG, Wainwright NW, Luben RN, Wareham NJ, Bingham SA, Khaw KT. Depression and ischemic heart disease mortality: Evidence from the EPIC-Norfolk United Kingdom prospective cohort study. Am J Psychiatry 2008;165:515-23.
7. Rickards H. Depression in neurological disorders: Parkinson’s disease, multiple sclerosis, and stroke. J Neurol Neurosurg Psychiatry 2006;78 Suppl 1: i48-52.
8. The Swedish National Institute of Public Health. Healthy Ageing – A Challenge for Europe. A SHORT VERSION. Stockholm; 2007. Available from: http://www.fhi.se/PageFiles/4174/S2007_01_Healthy_ ageing_eng0708.pdf. [Last accessed on 2014 May 06].
9. Mojtahedi R, Olsson M. Major depression in community-dwelling middle-aged and older adults: Prevalence and 2- and 4-year follow-up symptoms. Psychol Med 2004;34:623-34.
10. Unöder J. Diagnosis and treatment of older adults with depression in primary care. Biol Psychiatry 2002;52:285-92.
11. Lavretsky H, Kumar A. Clinically significant non-major depression: Old concepts, new insights. Am J Geriatr Psychiatry 2002;10:239-55.
12. Tiemeier H, Bretelier MM, Hofman A, Stijnen T. A multivariate score objectively assessed health of depressed elderly. J Clin Epidemiol 2005;58:1134-41.
13. Ensink KT, Schuurman AG, van den Akker M, Metsemakers JF, Kester AD, Knottnerus JA, et al. Is there an increased risk of dying after depression? Am J Epidemiol 2002;156:1043-8.
14. Andrews G, Issakidis C, Sander M, Kort K, Corry J, Lapsley H. Utilising survey data to inform public policy: Comparison of the cost-effectiveness of treatment of ten mental disorders. Br J Psychiatry 2004;184:526-33.
15. Bijl RV, Ravelli A. Current and residual functional disability associated with psychopathology: Findings from the Netherlands Mental Health Survey and Incidence Study (NEMESIS). Psychol Med 2000;30:657-68.
16. Leccubier Y. Widespread underrecognition and undertreatment of anxiety and mood disorders: Results from 3 European studies. J Clin Psychiatry 2007;68 Suppl 2:36-41.
17. Leccubier Y. Recognizing and effectively treating depression. CNS Spectr 2008;13:5-9.
18. Tylee A, Walters P. Underrecognition of anxiety and mood disorders in primary care: Why does the problem exist and what can be done? J Clin Psychiatry 2007;68 Suppl 2:27-30.
19. Rollman BL, Weinreb L, Korsen N, Schulberg HC. Implementation of guideline-based care for depression in primary care. Adm Policy Ment Health 2006;33:43-53.
20. Steffens DC, Skoog I, Norton MC, Hart AD, Tschanz JT, Plassman BL, et al. Prevalence of depression and its treatment in an elderly population: The Cache County study. Arch Gen Psychiatry 2000;57:501-7.
21. Wang PS, Aguilar-Gaxiola S, Alonso J, Angermeyer MC, Borges G, Bromet EJ, et al. Use of mental health services for anxiety, mood, and substance disorders in 17 countries in the WHO world mental health surveys. Lancet 2007;370:841-50.
22. Charney DS, Reynolds CF 3rd, Lewis L, Lebowitz BD, Sunderland T, Alexopoulos GS, et al. Depression and Bipolar Support Alliance consensus statement on the unmet needs in diagnosis and treatment of mood disorders in late life. Arch Gen Psychiatry 2003;60:664-72.
23. Bruce ML. Psychosocial risk factors for depressive disorders in later life. Biol Psychiatry 2002;52:175-84.
24. Cole MG, Endukuri N. Risk factors for depression among elderly community subjects: A systematic review and meta-analysis. Am J Psychiatry 2003;160:1147-56.
25. Schoevers RA, Bee-kman AT, Deeg DJ, Geerlings MI, Jonker C, Van Tilburg W. Risk factors for depression in later life: results of a prospective community based study (AMSTEL). J Affect Disord 2000;59:127-37.

26. Stylianosopoulou C, Koulirakis G, Karagianni V, Babatsikou F, Koutis C. Prevalence of depression among elderly on open care centers for older people. Vima Asklipiou 2010;5:490-504.

27. Mampelouli E, Bouzitiouk V, Psaltopoulou T, Zeimbekis A, Tsakoundakis N, Papaerakleous N, et al. Urban environment, physical inactivity and unhealthy dietary habits correlate to depression among elderly living in eastern Mediterranean islands: The MEDIS (MEDiterranean ISlands Elderly) study. J Nutr Health Aging 2010;14:449-55.

28. Arvaniti A, Livaditis M, Davis E, Samakouri M, Xenitidis K. Mental health problems in the elderly in residential care in Greece – A pilot study. Aging Ment Health 2005;9:142-5.

29. Papadopoulos FC, Petridou E, Argyropoulou S, Kontaxakis V, Desypris N, Anastasiou A, et al. Prevalence and correlates of depression in late life: A population based study from a rural Greek town. Int J Geriatr Psychiatry 2005;20:350-7.

30. Argyriadou S, Melissopoulou H, Krania E, Karagiannidou A, Vlachonicolis I, Lionis C. Dementia and depression: Two frequent disorders of the aged in primary health care in Greece. Fam Pract 2001;18:87-91.

31. European Health Interview Survey (EHIS) Questionnaire. English Version. Eurostat Working Group on Public Health Statistics; 2007/2008. Available from: http://www.ec.europa.eu/health/ph_information/implementation/wp/systems/docs/ev_20070310_ehis_en.pdf. [Last accessed on 2014 May 06].

32. Fountoulakis KN, Tsolaki M, Iacovides A, Yesavage JA, O'Hara R, Kazis A, et al. Development and validation of a geriatric depression screening scale: A preliminary report. J Psychiatr Res 1992;17:37-49.

33. 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 1992;17:37-49.

34. Kraus KL, Greenberg SA. The Geriatric Depression Scale (GDS). Hartford Institute for Geriatric Nursing; 2007. Available from: http://www. consultgerin.org/uploads/Files/trythis/try_this_4.pdf. [Last accessed on 2014 May 08].

35. Osborn DP, Fletcher AE, Smeeth L, Stirling S, Nunes M, Breeze E, et al. Geriatric Depression Scale Scores in a representative sample of 14 545 people aged 75 and over in the United Kingdom: Results from the MRC Trial of Assessment and Management of Older People in the Community. Int J Geriatr Psychiatry 2002;17:375-82.

36. Wittchen HU, Pittrow D. Prevalence, recognition and management of depression in primary care in Germany: The Depression 2000 study. Hum Psychopharmacol 2002;17 Suppl 1:S1-11.

37. Thompson C, Osterk L, Peveler RC, Baker N, Kinmonth AL. Dimensional perspective on the recognition of depressive symptoms in primary care: The Hampshire Depression Project 3. Br J Psychiatry 2001;179:317-23.

38. Lyness JM, Caine ED, King DA, Cox C, Yehdono Z. Psychiatric disorders in older primary care patients. J Gen Intern Med 1999;14:249-54.

39. Olsson I, Myklethun A, Dahl AA. Recognition and treatment recommendations for generalized anxiety disorder and major depressive episode: A cross-sectional study among general practitioners in Norway. Prim Care Companion J Clin Psychiatry 2006;8:340-7.

40. Manea L, Gilbody S, McMillan D. Optimal cut-off score for diagnosing depression with the Patient Health Questionnaire (PHQ-9): A meta-analysis. CMAJ 2012;184:E191-6.

41. Young AS, Klap R, Sherbourne CD, Wells KB. The quality of care for depressive and anxiety disorders in the United States. Arch Gen Psychiatry 2001;58:55-61.

42. Katon W, von Korff M, Lin E, Bush T, Ormel J. Adequacy and duration of antidepressant treatment in primary care. Med Care 1992;30:67-76.

43. Bartels SJ, Coakley EH, Zubitsky C, Ware JH, Miles KM, Areán PA, et al. Improving access to geriatric mental health services: A randomized trial comparing treatment engagement with integrated versus enhanced referral care for depression, anxiety, and at-risk alcohol use. Am J Psychiatry 2004;161:1455-62.

44. Alvidrez J, Areán PA. Physician willingness to refer older depressed patients for psychotherapy. Int J Psychiatry Med 2002;32:21-35.

45. Sirey JA, Bruce ML, Alexopoulos GS, Perlick DA, Raue P, Friedman SJ, et al. Perceived stigma as a predictor of treatment discontinuation in young and older outpatients with depression. Am J Psychiatry 2001;158:479-81.

46. Chapman DP, Perry GS. Depression as a major component of public health for older adults. Prev Chronic Dis 2008;5:A22.

47. Blazer DG. Self-efficacy and depression in late life: A primary prevention proposal. Aging Ment Health 2002;6:315-24.

48. Alexopoulos GS. New concepts for prevention and treatment of late-life depression. Am J Psychiatry 2001;158:835-9.

49. Kessler RC. Epidemiology of women and depression. J Affect Disord 2003;74:5-13.

50. Licht-Strunk E, van der Windt DA, van Marwijk HW, de Haan M, Bee-kman AT. The prognosis of depression in older patients in general practice and the community: A systematic review. Fam Pract 2007;24:168-80.

Source of Support: Nil, Conflict of Interest: None declared