



Journal of Medical Sciences

ISSN 1682-4474

science
alert

ANSI*net*
an open access publisher
<http://ansinet.com>

JMS (ISSN 1682-4474) is an International, peer-reviewed scientific journal that publishes original article in experimental & clinical medicine and related disciplines such as molecular biology, biochemistry, genetics, biophysics, bio-and medical technology. JMS is issued four times per year on paper and in electronic format.

For further information about this article or if you need reprints, please contact:

Dr. Ugur Cavlak
Saltak Mah. 1521 Sok
No: 22/2 20100 Denizli, Turkey

Tel: +90 258 2655487
E-mail: ucavlak@yahoo.com

Relation Between Depressive Symptoms and Physical Functioning in a Sample Based on Turkish Institutionalized Elderly: Exploring Sex Differences

¹Ugur Cavlak, ²Mustafa Ahmet Dirik and ³Beyza Akdag

The purpose of this study was to explore how depressive symptoms affect physical functioning in the institutionalized elderly and to show gender differences. One hundred and thirty-three subjects aged 65 and older living rest home (60 women and 73 men) with mean age of 75.27 ± 6.71 years were included in the study and were examined using Beck Depression Inventory and depression was defined as a score of ≥ 13 on the inventory. Physical functioning level of the elderly was evaluated by using Functional Independence Measure and Rivermead Mobility Index. Women in the study pool suffered from more depressive symptoms than men. The older women and men with a high Beck Depression Inventory score showed a decreased physical functioning ($p < 0.05$). Among variables, such as age, duration of stay, duration of work, marital status, education level, occupation and regular exercise, a significant correlation was detected with depression scores ($p < 0.05$). Depression scores were found to be important correlates of the diagnosis of depression. There was some evidence of possible gender in the diagnosis of depression. Physical functioning scores decreased with depressive symptoms.

Key words: Depressive symptoms, gender differences, institutionalized elderly, physical functioning

INTRODUCTION

Depression has been shown to be associated with decreased physical function and increased morbidity and mortality for various diseases. The hypothesis that depressed mood may promote functional decline is grounded in theory and is supported by empirical evidence of a relation between symptoms of depression and poor health status^[1-5]. Depression in older people is likely to be very high, even after allowing for the effect of associated social isolation and physical disability^[6-8]. Depression is an important but inadequately diagnosed mood disorders in elderly, as a result of chronic diseases, functional disability and insufficiencies in socioeconomic status, as well as of a typical disease presentation^[9,10].

Gender differences in depression are of great psychosocial and medical interest. Most clinical and epidemiological studies of depression have found higher prevalence rates among females. In community studies the point and lifetime prevalence rates of major depressive disorders across cultures were approximately twice as high in females as in males^[1,6,11-16]. As understood above studies, depression, although highly prevalent, are understudied in the elderly people. Depression is characterized by exercise worry, physical symptoms including restlessness, muscle tension, sleep disturbance and irritability, along with impairment in adaptive functioning^[17-19]. Health care of the highest quality promotes successful aging by alleviating suffering, extending life, enhancing function and promoting wisdom.

As many older people with depression respond favorably to treatment, there are potential benefits inherent in the early detection and treatment of depressive disorders. For the above reasons, independently from the main admittance complaint, every older adult should be examined for depression. The Beck Depression Inventory (BDI) is widely used so as to evaluate the elderly to identify depressive symptoms^[20,21].

The aims of the present study were to assess the influence of depressive symptoms on functional independence and mobility ability and to determine its relation with physical functioning among the institutionalized elderly.

MATERIALS AND METHODS

Study population: Participants included 133 adults, ages 65 to 90 who accepted to participate in the study. Participants were recruited from four different rest homes in Denizli, Afyon, Izmir which are located in the west of Turkey. The design was a cross-sectional study carried out between March-June 2004. Adults interested in the

study were questioned by a trained physical therapist on disorders which may affect the physical functioning and underwent an examination standardized indexed such as The BDI, The Functional Independence Measure (FIM) and Rivermead Mobility Index (RMI).

Individuals who were 65 years of age or older and who appeared to meet inclusion criteria were evaluated. Individuals with relevant co-morbid musculoskeletal, somatic or psychiatric disorders that might have influenced the pattern of depressive symptoms or physical functioning were excluded from the study. One hundred thirty three institutionalized adults were selected randomly. All gave their informed consent for participation.

The information collected during the visit included: socio-demographic data, which included personal information, socioeconomic aspects of life, general health status, education level, age, gender, occupation and habits such as regular exercise or sport activities and so on.

The sample included 60 women (45.1%) and 73 men (54.9%), with mean age of 75.27 years (SD: 6.71). Overall, the sample was educated, with percentage of 50.4 (graduated in primary school or more). Twelve percent of the sample (n=16) were married, 22.6% (n=30) divorced, 59.4 % (n=79) widowed and 6% (n=8) never married. Coexistent occupation distribution included the following: 15.8% (n=21) skilled work, 9.3% (n=13) semiskilled work, 39.1% (n=52) self employed and 35.3% (n= 47) not working for example-housewife.

Measurement of depressive symptoms: The Beck Depression Inventory (BDI): The BDI is a widely used self-report measure of depressive symptoms^[20-22]. The BDI consists of 21-item rated on a 4 point Likert Scale. Adequate reliability and validity have been documented for the BDI in general, as well as for older adults^[23]. Depression was defined as a score of ≥ 13 on the inventory.

Measurement of physical functioning: The Functional Independence Measure (FIM): The FIM instrument, which is widely used by physical therapists, occupational therapists, or nurses etc., is a valid and reliable measure of functional ability. It consists of a cognitive subscale (5 items), a motor subscale (13 items) and an overall score (all 18 items). Items scores range from 1 (total dependence) to 7 (total independence), resulting in a cognitive FIM score range of 5 to 35 and a motor FIM score range of 13 to 91^[24-27].

The higher FIM score is 126. For our study, the FIM scores were used to describe of functional status of the participants.

The Rivermead Mobility Index (RMI) is a unidimensional scale with a hierarchy of easy-to-hard test questions. In our study, specific mobility was measured by using the RMI, which refers to a specific kind of mobility termed fundamental mobility. This construct represents basic mobility activities, such as bathing or standing. The scale is dichotomous, with scores ranging from 0 (not able) to 15 (completely able). Items scores are yes or no (Legend: Yes=1, No = 0)^[28-32].

Statistical methods: Descriptive statistics, including mean±SD for the BDI, FIM and RMI were calculated for both the total sample and two sexes separately. The difference between the means of variables in two groups was compared using Mann Whitney-U Test (Nonparametric test) and Independent samples t test (Parametric test). The Chi-Square test was used to compare categorical variables (Nonparametric test). The difference between the means of variables in more than two groups was compared using One-Way ANOVA (Parametric test). The Pearson Correlation Coefficient (Parametric test) was used to compare continuous variables. Significance was set at 5% level ($p < 0.05$). The statistical analyses were performed with the statistical package program SPSS, version 11.5.

RESULTS

Our study population had a mean age of 75.27 ± 6.71 years (ranging from 65 to 90 year). The men were of 74.98 ± 6.71 years and the women 75.63 ± 6.74 years. Sex distribution was 45% women, 54.9% men.

The BDI score was used as a categorical variable measure of clinical depression, defined as a score=13. Table 2 summarizes the main data of BDI score, the FIM score and the RMI score. In the total pool, depressive symptoms were detected in 103 (77.4%), 81.6% of the women and 73.9% of the men had scores suggesting possible depression when a cut-off of ≥ 3 was used. Women in the total pool had significantly more depressive symptoms than men ($t = 2.026$, $p = 0.045$) (Table 1 and 2).

Table 3 shows the distributions of potentially confounding covariates by the BDI score. In addition age, duration of stay in rest home, duration of work were not significantly correlated with the BDI score ($p < 0.05$).

Marital status, educational level, occupation and regular exercise were analyzed to look whether a correlation with the BDI score, among these variables, only regular exercise showed a significant correlation with the BDI score ($p = 0.007$) (Table 3).

Table 1: Mean±SD of baseline characteristics of the sample (n = 133) by gender

Characteristic	Women (n= 60)		Men (n= 73)		Overall (n= 133)		p-value**
Age (years)	75.63±6.74		74.98±6.71		75.27±6.71		NS
Duration of stay in rest home, months	34.61±36.30		32.69±37.03		33.56±36.58		NS
Duration of work, years	30.00±05.47		30.53±13.13		30.45±12.26		NS
BDI score	23.96±11.72		20.01±10.75		21.79±01.33		0.045
	n	%	n	%	n	%	
Gender	60	45.1	73	54.9	133	100	p-value**
Marital status							
Never married	4	6.7	4	5.5	8	6.0	NS
Married	9	15.0	7	9.6	16	12.0	NS
Divorced	10	16.7	20	27.4	30	22.6	NS
Widowed	37	61.7	42	57.5	79	59.4	NS
Educational level							
Not read and write	25	41.7	15	20.5	40	30.1	NS
Read and write	9	15.0	17	23.3	26	19.5	NS
Primary school	9	15.0	25	34.2	34	25.6	NS
Secondary school	4	6.7	6	8.2	10	7.5	NS
High school	10	16.7	3	4.1	13	9.8	NS
More	3	5.0	7	9.6	10	7.5	NS
Occupation							
Skilled work	9	15.0	12	16.5	21	15.8	NS
Semi-skilled work	1	1.6	12	16.5	13	9.8	NS
Self employed	3	5.0	49	67.1	52	39.1	NS
Not working	47	78.3	-	-	47	35.3	NS
Regular exercise							
Never	31	51.6	24	32.9	55	41.4	NS
One day per week	6	1	6	8.2	12	9.0	NS
Three days per week	4	6.6	11	15.1	15	11.3	NS
Everyday	19	31.6	32	43.8	51	38.3	NS

NS: Non-significant, *: Independent Samples t Test was used to look differences between both sexes, **: Chi-Square Test was used

Table 2: Summary of variables scores of the studied institutionalized elderly by gender

Variable	Women (n= 60)		Men (n= 73)		Overall (n= 133)	
	n	%	n	%	n	%
BDI score						
13	11	18.3	19	26.0	30	22.6
13-16	7	11.7	11	15.1	18	13.5
17-24	10	16.7	19	26.0	29	21.8
24	32	33.3	24	32.9	56	42.1
FIM score						
0-53 (total depended)	-	-	-	-	-	-
54-89	9	15.0	2	2.7	11	8.3
90-125	42	70.0	51	69.9	93	69.9
126 (total independent)	9	15.0	20	27.4	29	21.8
RMI score						
0-4 (not able)	-	-	-	-	-	-
5-9	20	33.3	4	5.5	24	18.0
10-14	26	43.3	38	52.1	64	48.1
15 (completely able)	14	23.3	31	42.5	45	33.8

Table 4 shows a significant negative correlation between the BDI score and both the FIM score and the RMI score in the total pool of the study ($p < 0.05$). Women in our study pool showed a significant negative correlation between BDI score and outcome variables, including the FIM and the RMI score ($p < 0.05$).

Table 3: Relation between the BDI score and other potentially confounding variables by gender in 133 institutionalized elderly

Characteristic	BDI Scores Mean±SD			
	Women (n=60)		Men (n= 73)	
Age (years)*	75.63±06.74		74.98±06.71	
Duration of stay in rest home (months)*	34.61±36.30		32.69±37.03	
Duration of work (years)*	30.00±05.47		30.53±13.13	
BDI (score)*	23.96±11.72		20.01±10.75	
	n	%	n	%
Gender	60	45.1	73	54.9
Marital status**				
Never married	4	6.7	4	5.5
Married	9	15.0	7	9.6
Divorced	10	16.7	20	27.4
Widowed	37	61.7	42	57.5
Educational level **				
Not read and write	25	41.7	15	20.5
Read and write	9	15.0	17	23.3
Primary school	9	15.0	25	34.2
Secondary school	4	6.7	6	8.2
High school	10	16.7	3	4.1
More	3	5.0	7	9.6
Occupation**				
Skilled work	9	15.0	12	16.5
Semi-skilled work	1	1.6	12	16.5
Self employed	3	5.0	49	67.1
Not working	47	78.3	---	---
Regular exercise***				
Never	31	51.6	24	32.9
One day per week	6	1.0	6	8.2
Three days per week	4	6.6	11	15.1
Everyday	19	31.6	32	43.8

*: Non-significant correlation with BDI score at the 0.05 level (2-tailed)

**: One way (ANOVA) Test was used to look differences between BDI score and other variables and correlation is not significant

***: One way (ANOVA) Test was used to look differences between BDI score and other variables and correlation is significant

Table 4: Correlation between BDI score and FIM, RMI scores in our study pool

Variable	BDI Score*					
	Women (n= 60)		Men (n= 73)		Overall (n= 133)	
	R	p	R	p	R	P
FIM score	-0.464	0.000	-0.324	0.005	-0.427	0.000
RMI score	-0.414	0.001	-0.194	NS	-0.355	0.000

NS: Non-significant, R: Relation coefficient,

p: Correlation is significant at the 0.05 level,

*: The Pearson Correlation Coefficient Test was used

The similar results were detected between the BDI score and the FIM scores for older men subjects ($p<0.05$). But there was not a significant correlation with the RMI score ($p>0.05$).

DISCUSSION

The older women in the older study pool suffered from more depressive symptoms than older men. The gender differences were entirely explained by psychosocial variables, such as the educational level, marital status, work duration and the family statue etc.

In some studies concerning gender differences in the diagnosis of depression by Kockler^[11], Bertakis^[33] and Stewart^[34] women suffered from depression much more than men. Consequently, previous studies were partially in concern with our results.

Depression in the elderly presents partially different symptoms in men and women. Kockler and Heun^[11] suggests that the gender differences in the symptoms of major depression in the elderly reflect gender differences in the perception and the expression of depressive syndromes. Because there is an obvious relation between depression and chronic disorders and because depression is an important disease that affects the quality of life, every geriatric patient must be questioned for depressive symptoms on admission^[34-37].

Stallones *et al.*^[18] assumed that noninstitutionalized United State residents 65 years of age and older reporting poor to fair health were almost four times more likely to report a higher number of depressive symptoms. In a similar study by Mulsant *et al.*^[19] was found that poorer self-rated health was associated with higher numbers of depressive symptoms.

As understood above studies symptoms of depression has a negative effect on health status and quality of life in elderly people. The findings of our study are consistent with the previous studies. However, our investigation focused on how BDI score affect the physical functioning in institutionalized elderly. We observed that depression symptoms based on BDI is correlated with functional independence measured by FIM and mobility ability examined by using RMI ($p<0.05$). These correlations were negative and significant statistically. We detected the gender differences in our study pool. Moreover we found that there were significantly negative correlations between BDI score and other outcome variables, including FIM score and RMI score in older women. Among these same variables in older men, only FIM score varied significantly with BDI score ($p<0.05$)

Barrett *et al.*^[37] found that lack of regular exercise was associated with higher BDI scores. In the same time, we also found that there was a significant correlation between BDI score and regular exercise habit (three times a week) (Table 3). That means regular exercise habit may decrease depressive symptoms according to the findings of Barrett *et al.*^[37] and present study. Hollenberg *et al.*^[38] showed that the depressive symptoms were associated with impaired physical fitness and treadmill exercise performance in older women. And they also assumed that the symptoms of depression decreased cardio respiratory fitness.

Jiang *et al.*^[39] studied 1828 elderly aged 55 and older were initially free of any physical disability was followed up for 8 years. They examined the influence of depressive symptoms on the prevalence of physical disability in a cohort study Beijing elderly and analyzed the role of some confounding variables in this relationship. Then they observed that the items of daily living activities which connected physical activity had higher impairment among depressed individuals. Also they concluded that it is very important for elderly persons to prevent and reduce depression for improving the quality of their life and physical function.

In another study by Penninx *et al.*^[40] examined the effect of depression on the incidence of physical disability and the role of confounding and explanatory variables in this relationship. They measured annually disability in mobility and disability in daily living activities in depressed subjects and compared with nondepressed subjects. The findings based on the study by Penninx *et al.*^[40] showed that depression in older person increased the risk for incident disability. And they reported that the excess risk is partly explained by depressed person's decreased physical activity and social interaction. Consequently both studies, i.e. by Jiang and Penninx^[39,40] were in concert with our results. All studies above show that depressive symptoms have negative effects on physical functioning and health status in older people. In the same time, Yagci *et al.*^[41] also reported that to make regular exercise like walking had positive effects on physical functioning in the institutionalized men. Therefore, the significant correlation between BDI score and regular exercise could be explained by the positive effects of the physical exercise on depressive symptoms.

Invariant analyses indicated that a high BDI score was associated with a low FIM or RMI score in our study pool living at rest home. That's why, older person in fair or low physical functioning concerning functional independence and mobility ability should especially be screened for increasing depressive symptoms. Most importantly BDI score were found to be important correlates of the diagnosis of depression by some authors who used the BDI to screen the older person^[33,34,37,42].

The older women were found to have more depressive symptoms as self-reported on the BDI. Also a high BDI score lead to decreasing functional independence and mobility ability in older persons especially the older women. Although the ratio of depressive symptoms is higher in older women than in men, the known risk factors do not totally explain the difference between genders in this study pool of Turkish institutionalized elderly. This difference could be due to the cultural definitions of gender roles that have affected them throughout their lives.

Consequently it should be taken into account that decreased physical functional status in elderly may be due to depression. Elderly Turks are mostly low-educated with low socioeconomic level. But, family support is better than in the more developed countries. That's why; elderly Turks more prefer to live with relatives together. To live in a rest home may lead to more depressive symptom in Turkish population.

Depression is one of the most important psychiatric disorders of older people. The institutionalized elderly people who had highly BDI score are thought to be more likely to show decreased physical functioning, including functional independence and mobility ability. Therefore older persons in fair or poor physical performance should be screened for increasing depressive symptoms. Health providers such as medical doctors, physical therapist, nurses etc., who works in various setting, such as primary care, rest home, rehabilitation center so on, should take into account that decreased physical functioning with unknown origin may be result from depression. More evidence is needed concerning the relationship between depressive symptoms and physical performance in elderly people.

REFERENCES

1. Whooley, M.A. and W.S. Browner, 1998. Association Between Depressive Symptoms and Mortality in Older Women. *Arch. Intl. Med.*, 158: 2129-2135.
2. Gurland, B.J., D.E. Wilder, C. Berkman, 1988. Depression and disability in the elderly: Reciprocal relation and changes with age. *Intl. J. Geriatric Psychiatry*, 3: 163-179.
3. Wilson, I.B. and P.D. Clearly, 1995. Linking clinical variables with health-related quality of life. A conceptual model of patient outcomes. *JAMA.*, 273: 59-65.
4. Blazer, D., 1989. Depression in the elderly. *New Engl. J. Med.*, 320: 164-168.
5. Schwenk, T.S., 2002. Diagnosis of late life depression: the view from primary care. *Biol. Psychiatry*, 52: 157-163.
6. Shammari, S.A. and A. Subaie, 1999. Prevalence and correlates of depression among saudi elderly. *Intl. J. Geriat. Psychiatry*, 14: 739-747.
7. Dunham, N.C. and M.M. Sager, 1994. Functional status, symptoms of depression and the outcomes of hospitalization in community-dwelling elderly patients. *Arch. Fam. Med.*, 3: 676-681.
8. Wells, K.B. and A. Stewart, 1989. The functioning and well-being of depressed patients. Results from the medical outcomes study. *J. Am. Med. Assoc.*, 262: 914-919.

9. Tylee, A. and C.L.E. Katona, 1996. Detecting and managing depression in older people. *Br. J. Gen. Pract.*, 46: 207-208.
10. Macdonald, A.J.P., 1986. Do general practitioners 'miss' depression in elderly patients? *Br. Med. J.*, 292: 365-367.
11. Kockler, M. and R. Heun, 2002. Gender differences of depressive symptoms in depressed and nondepressed elderly persons. *Intl. J. Geriatr. Psychiatry*, 17: 65-72.
12. Angst, J., A. Gamma, M. Gastpar, P. Lépine, J. Mendlewicz and A. Tylee, 2002. Gender differences in depression. Epidemiological findings from the European Depres I and II studies. *Eur. Arch. Psychiatry Clin. Neurosci.*, 252: 201-209.
13. Weissman, M.M. and G.L. Klerman, 1977. Sex differences and the epidemiology of depression. *Arch. Gen. Psychiatry*, 34: 98-111.
14. Vazquez-Barquero, J.L., J.F. Diez Manrique, J. Munoz *et al.*, 1992. Sex differences in mental illness: A community study of the influence of physical health and sociodemographic factors. *Soc. Psychiatry. Psychiatry Epidemiol.*, 27: 62-68.
15. Ernst, C.A., 1992. The Zurich study. XII. Sex differences in depression. Evidence from longitudinal epidemiological data. *Eur. Arch. Psychiatry Clin. Neurosci.*, 241: 222-230.
16. Zunzunegui, M.V., F. Beland, A. Llacer and V. Leon, 1998. Gender differences in depressive symptoms among Spanish elderly. *Soc Psychiatry Psychiatr. Epidemiol.*, 33: 195-205.
17. Ried, L.D. and L.G. Planas, 2002. Aging, health and depressive symptoms: Are women and men different? *J. Womens Health (Larchmt)*, 11: 813-824.
18. Stallones, L., M.B. Marx and T.F. Garrity, 1990. Prevalence and correlates of depressive symptoms among older US adults. *Am. J. Prev. Med.*, 6: 295-303.
19. Mulsant, B.H., M. Ganguli and E.C. Seaberg, 1997. The relationship between self-rated health and depressive symptoms in epidemiological sample of community-dwelling older adults. *J. Am. Geriatr. Soc.*, 45: 954-958.
20. Steer, R.A., A.T. Beck, J.H. Riskind and G. Brown, 1986. Differentiation of depressive disorders from generalized anxiety by the Beck Depression Inventory. *J. Clin. Psychol.*, 42: 475-478.
21. Marton, P., M. Churchard, S. Kutcher and M. Korenblum, 1991. Diagnostic utility of the beck depression inventory with adolescent psychiatric outpatients and inpatients. *Can. J. Psychiatry*, 36: 428-431.
22. Beck, J.G., M.A. Stanley and B.J. Zebb, 1995. Psychometric properties of the Penn State Worry Questionnaire in older adults. *J. Clin. Geropsychol.*, 1: 33-42.
23. Gallagher, D., G. Nies and L.W. Thompson, 1982. Reliability of the beck depression inventory with older adults. *J. Consult. Clin. Psychol.*, 50: 152-153.
24. Barnes, C., D. Conner, L. Legault, N. Reznickova and C. Felix-Harrison, 2004. Rehabilitation outcomes in cognitively impaired patients admitted to skilled nursing facilities from the community. *Arch. Phys. Med. Rehabil.*, 85: 1602-1606.
25. Putten, J.J.F.F., J.C. Hobart, J.A. Freeman and J.A. Thompson, 1999. Measuring changes in disability after inpatient rehabilitation: Comparison of the responsiveness of the barthel index and the functional independence measure. *J. Neurol. Neurosurg Psychiatry*, 66: 480-484.
26. Kidd, D., G. Stewart and J. Baldry, 1995. The functional independence measure: A comparative validity and reliability study. *Disabil. Rehabil.*, 17: 10-14.
27. Dodds, T.A., D.P. Martin and W.C. Stolov, 1993. A validation of the functional independence measurement and its performance among rehabilitation inpatients. *Arch. Phys. Med. Rehabil.*, 74: 531-536.
28. Akin, B. and O.N. Emiroglu, 2003. Mobility related disability and associated factors in the elderly living at home. *Turkish J. Geriatr.*, 6: 59-67.
29. Hsueh, I.P., C.H. Wang, C.F. Sheu and C.L. Hsieh, 2003. Comparison of psychometric properties of three mobility measures for patients with stroke. *Stroke*, 34: 1741-1745.
30. Gabriel, A., T. Aprile and S. Paolucci, 2002. Analysis of the rivermead mobility index. A Study Using Mobility Measure of First-Stroke Inpatients. *Arch. Phys. Rehabil.*, 83: 1442-1449.
31. Collen, F.M., D.T. Wade, G.F. Robb and C.M. Bradshaw, 1991. The rivermead mobility index: a further development of the rivermead motor assessment. *Intl. Disabil. Stud.*, 13: 50-54.
32. Green, I., J. Young, A. Forster, F. Collier and D. Wade, 2004. Combined analysis of two randomized trials of community physiotherapy for patients more than one year post stroke. *Clin. Rehabil.*, 18: 249-252.
33. Bertakis, K.D., L.J. Helms, E.J. Callahan, R. Azari, P. Leigh and J.A. Robbins, 2001. Patient gender differences in the diagnosis of depression in primary care. *J. Womens Health Gend. Based Med.*, 10: 689-698.

34. Steward, R.B., R. Blashfield and W.E. Hale, M.T. Moore, F.E. May and R.G. Marks, 1991. Correlates of beek depression inventory scores in an ambulatory elderly population: Symptoms, diseases, laboratory values and medications. *J. Fam. Pract.*, 32: 497-502.
35. Cankurtaran, M., M. Halil and B.B. Yavuz *et al.*, 2004. Depression and concomitant diseases in a Turkish geriatric outpatient setting. *Arch. Gerontol. Geriat.*, (In Press).
36. Goldman, L.S. and N.H. Nielsen, 1999. Awareness, diagnosis and treatment of depression. *J. Gen. Intl. Med.*, 14: 569-580.
37. Connor, E.B., D.G.V. Mühlen and K.D. Silverstein, 1999. Bioavailable testosterone and depressed mood in older men: The rancho bernardo study. *J. Clin. Endoc. Metab.*, 84: 573-577.
38. Hollenberg, M., T. Haight and I.B. Tager, 2003. Depression decreases cardiorespiratory fitness in older women. *J. Clin. Epidemiol.*, 56: 1111-1117.
39. Jiang, J., Z. Tang, M. Futatsuka and K. Zhang, 2004. Exploring the influence of depressive symptoms on physical disability: A cohort study of elderly in Beijing, China. *Quality of Life Research*, 13: 1337-1346.
40. Pennix, B.W., S. Leveille, L. Ferrucci, V.J.T. Eijk and J.M. Guralnik, 1999. Exploring the effect of depression on physical disability: Longitudinal evidence from the established populations for epidemiologic studies of the elderly. *American J. Public Health*, 89: 1346-1352.
41. Yagci, N., S. Gursay, U. Cavlak, S. Er and A. Kocaker, 2003. The effects of 6-week walking program on physical performance in institutionalized elderly people. *Fizyoterapi Rehabilitation*, 14: 121-125.
42. Avasarala, J.R., A.H. Cross and K. Trinkaus, 2003. Comparative assessment of Yale single questions and Beck Depression Inventory Scale in screening for depression in multiple sclerosis. *Multiple Sclerosis*, 9: 307-310.