RESEARCH ARTICLE

Cognitive decline among patients attending geriatric clinic in a tertiary care center

Abhishek N[1*], Chandrashekar H[2], Shivappa Madhusudhan[3], Ramamurthy Anjana[4]

BACKGROUND: Cognitive impairment among geriatric patients has a more complex etiology. It causes a significant burden to the patients and family by increasing the dependency level. Hence, the current study was done to screen the patients attending geriatric clinic in a tertiary care center, Victoria Hospital, Bangalore.

METHODS:A cross sectional study of 100 patients above 60 years of age attending geriatric clinic in a tertiary care center, Bangalore was done from November 2017 till May 2019 by collecting data in a structured proforma. Cognitive function was screened using Hindi Mental Status Examination, Everyday Ability Scale for India and Huchinski Ischemic Score. All the data obtained were entered in to SPSS 24th statistical analysis method and results obtained were compared, discussed with previous studies, then final conclusions were drawn.

RESULTS: Among the 100 patients screened, there were more females (57%) than males (43%), most of the people were from urban areas (59%) than rural (41%). Majority of the patients (47%) were under the age group of 65-75 years. 82% of the patients were Hindus, 14% were Muslims, 3% of the patients were from Christian religion.55% of the patients did less than 7 years of schooling and 41% of them were unemployed.

Mean age of the sample was 67.67 (SD 4.55).

Among the medical co morbidities, 68% of the patients were having Hypertension and 39% of them were having Diabetes mellitus.

Cognitive impairment was noticed in 17% (Mean=4.82, SD=4.55) of the geriatric patients.

CONCLUSION: The current study found out that 17% of the people attending geriatric clinic has cognitive impairment. Hence, regular screening for cognitive dysfunction needs to be done at geriatric clinic in a tertiary care center.

Keywords: *Geriatric patients, Cognitive impairment, Vascular risk factors*

INTRODUCTION

Proportion of elderly population is increasing gradually. Percentage of geriatric population out of total population in India was 6.0% in 1991 to 8.3% in 2013 whereas in Karnataka it was 7% in 1991, 7.7% in 2001 to 8.8% in 2013 [1]. The health care needs of the elderly population are considered to be different due to a higher prevalence of chronic non communicable diseases and other neuro psychiatric disorders as compared to adult population [2]. These geriatric conditions can cause serious disturbance in both quality of life as well as economic loss in the life of the patient, family and nation as a whole. At least one in five people >65 years have mental disease by 2030. Few studies have found out the difference between the non-communicable diseases and cognitive impairment [3-5]. Mild cognitive impairment is the transitional age between the normal aging process and dementia [6]. Identifying cognitive impairment early reduces the burden to the patient as well as the care givers. With increase in life expectancy, the burden of the cognitive impairment is also bound to increase across the countries [7].

In the light of the above considerations this study was intended to screen the cognitive impairment in elderly patients in a geriatric clinic at a tertiary care center. So the aim of this study is to screen for the cognitive impairment and socio demographic predictors among these patients.

AIMS AND OBJECTIVES

1) To screen for cognitive impairment among patients attending geriatric clinic.

2) To assess the socio demographic factors responsible for cognitive impairment among these patients.

3) To find the correlation between HMSE, EASI and HIS

MATERIALS AND METHODS

Study design

The present cross sectional study was conducted on geriatric patients who were 60 years and above, attending geriatric clinic at Victoria Hospital, Bangalore. This study was conducted for a period of eighteen months from November 2017 till may 2019.

Inclusion criteria

Patients who are 60 years and above.

Those who are willing to give informed written consent

Exclusion criteria

Those who are disabled to participate due to major medical co-morbidities.

Those who refuse to give consent.

Each study subject was put to a series of tests using a pretested, pre-structured study questionnaire after completion of physical assessment by physician and all the information regarding socio-demographic profile, present physical health status and problems and mental abilities (cognitive status) were collected. Few measurements (e.g.: Blood pressure measurement) were taken to know the current health status of the study subjects. The study protocol was approved by the Institutional Ethical Committee and full informed written consent was obtained from all patients (Tables 1-3).

Assessment of cognitive functions

The following scales were used to screen cognitive impairment;

Department of Psychiatry, Bangalore Medical College and Research Institute, Karnataka, India

Correspondence: Abhishek N, Department of Psychiatry, Bangalore Medical College and Research Institute, Karnataka, India, Tel: +919535627489; E-mail abhishekuppar27@gmail.com

Hindi mental status examination: HMSE was developed by Mary Ganguli and Graham Ratcliff et al. is a widely used cognitive screening scale to assess dementia in elderly. A score of less than or equal to 24 is regarded as mild cognitive impairment. In a study on 100 illiterate elderly subjects, the Hindi MMSE was 94% sensitive and 98% specific.

Everyday ability scale for India: EASI is developed by Fillenbaumg and Chandra et al. consists of an 11 item questionnaire that addressed personal care, mobility, social interaction and cognitive functioning. On this 11 item scale, a point is scored for each item in which a disability is reported, thus a higher score reflects greater impairment [8].

Huchinski ischemic score: The Huchinski Ischemic Scale was developed by Huchinski. It is a tool widely used to identify a likely vascular component once a dementia diagnosis has been established. It is not itself a validated diagnostic tool. A score greater than 7 suggests vascular involvement [9] (Figures 1-3).

STATISTICS

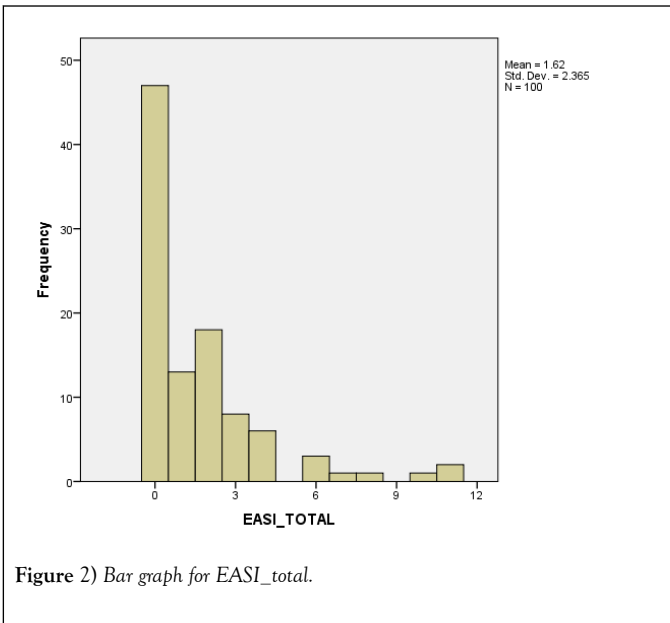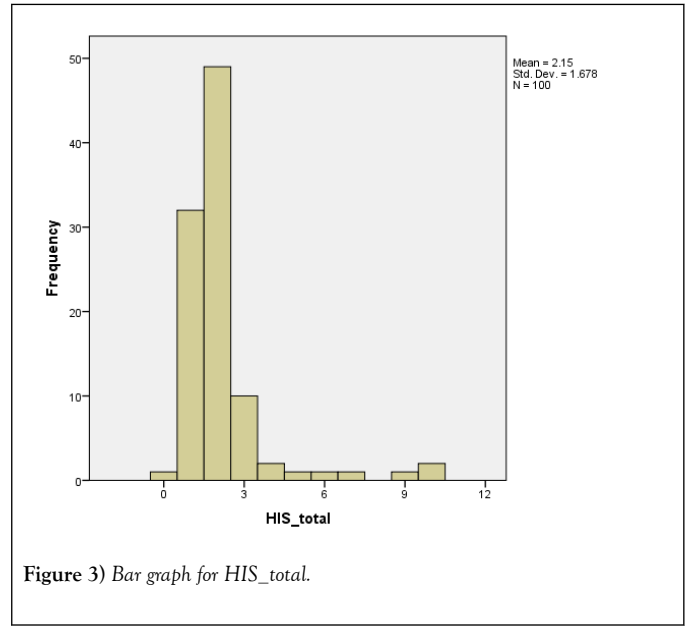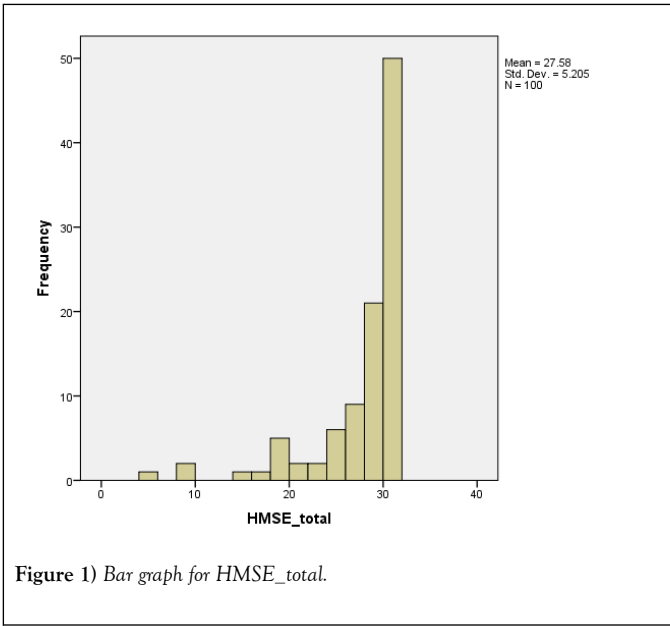The data obtained were analyzed with the statistical package for social sciences software (SPSS) V24.

Non parametric test (Spearman's Rank Correlation Coefficient) was applied to find the correlation between the HMSE vs. EASI and HMSE *vs.* Huchinski Ishemic Score (Figures 4-7).

Table 1
Descriptive statistics.

Variables	Mean	Std. Deviation	N
Age	67.68	4.497	100
HMSE_total	27.58	5.205	100
EASI_total	1.62	2.365	100
HIS_total	2.15	1.678	100

Table 2
Correlations.

			Age	Duration_Complaints	HMSE_total	EASI_TOTAL	HIS_total
Spearman's correlation	**Age**	Correlation Coefficient	1.000	-.104	-.184	.178	.268**
		Sig. (2-tailed)	.	.309	.067	.077	.007
		N	100	98	100	100	100
	HMSE_total	Correlation Coefficient	-.184	.125	1.000	-.382**	-.294**
		Sig. (2-tailed)	.067	.220	.	.000	.003
		N	100	98	100	100	100
	EASI_total	Correlation Coefficient	.178	-.124	-.382**	1.000	.281**
		Sig. (2-tailed)	.077	.224	.000	.	.005
		N	100	98	100	100	100
	HIS_total	Correlation Coefficient	.268**	-.011	-.294**	.281**	1.000
		Sig. (2-tailed)	.007	.918	.003	.005	.
		N	100	98	100	100	100

**. Correlation is significant at the 0.01 level (2-tailed)

Table 3
Tests of normality.

	Kolmogorov-Smirnova			Shapiro-Wilk		
Variables	Statistic	df	Sig.	Statistic	df	Sig.
HMSE_total	.256	100	.000	.686	100	.000
EASI_total	.247	100	.000	.705	100	.000
HIS_total	.356	100	.000	.602	100	.000

Lilliefors Significance Correction

Figure 1) *Bar graph for HMSE_total.*

Figure 3) *Bar graph for HIS_total.*

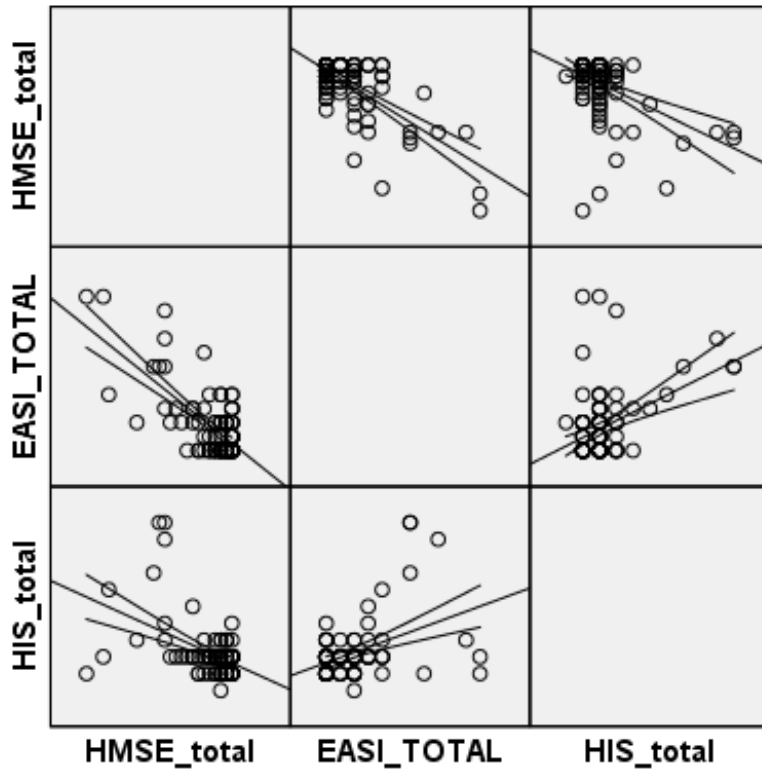**Figure 2)** *Bar graph for EASI_total.*

Figure 4) *Statistics for HMSE_total, EASI_total and HIS_total.*
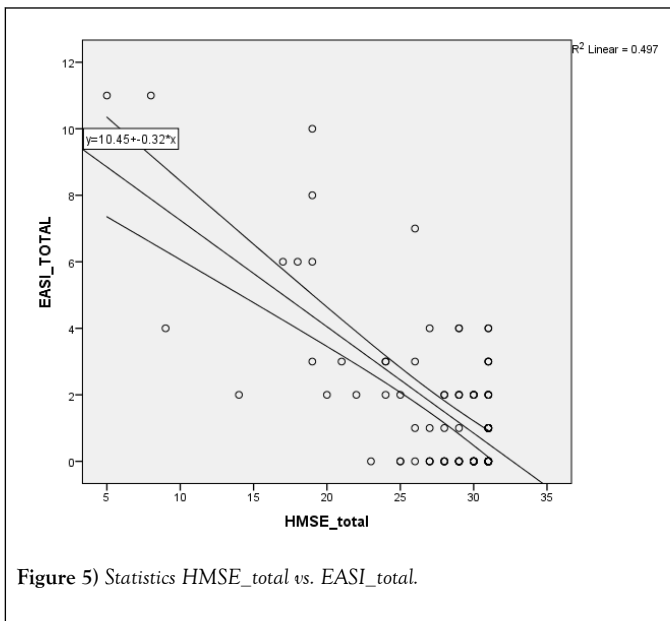
Figure 5) *Statistics HMSE_total vs. EASI_total.*

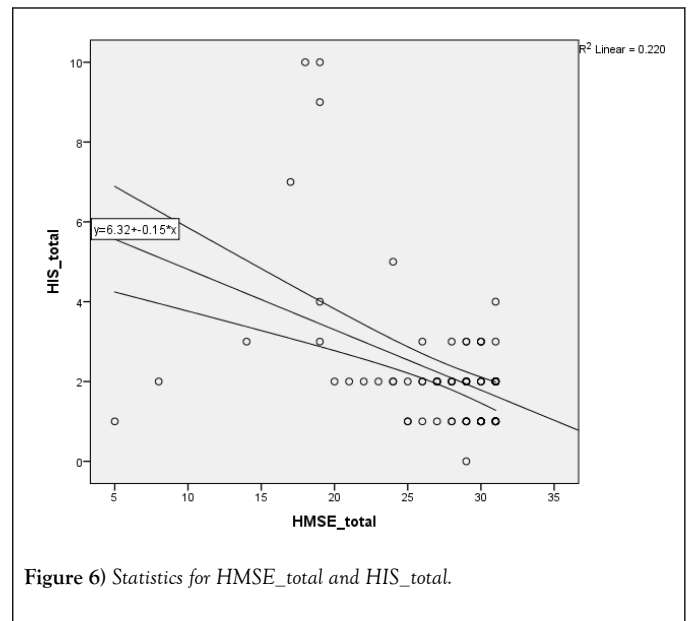**Figure 6)** *Statistics for HMSE_total and HIS_total.*

Figure 7) *Statistics for EASI_total and HIS_total.*

RESULTS

A total of 100 Geriatric patients aged 60 years and above of both sexes are evaluated in this study. Socio demographic profiles and medical history of study patients are shown in Tables 4-6.
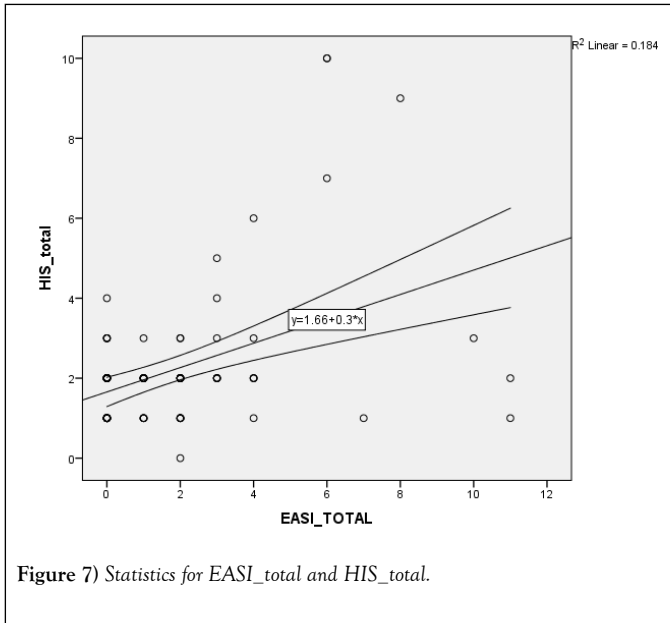
Table 4
Socio demographic features of the patients.

Distribution	Number of Patients (N)	Percentage (%)
Age Distribution (Years)		
60-64	16	16
65-69	47	47
70-74	29	29
75-79	7	7
80-85	1	1
Sex Distribution		
Male	43	43
Female	57	57
Religious Distribution		
Hindu	82	82
Muslim	14	14
Christian	3	3
Others	1	1
Place Distribution		
Rural	41	41
Urban	59	69
Educational Status		
Post graduate	4	4
University/college	3	3
Partial college	0	0
High school (12th)	1	1
Partial high school (10, 11)	18	18
Junior high school (7, 9)	19	19

Less than 7 years of school	55	55
Marital Status		
Married	85	85
Widowed	14	14
Divorced	0	0
Separated	1	1
Never married	0	0
Occupation		
Executive/Major Professional	2	2
Medium size business	3	3
Administrator	2	2
Clerical/owners of small Business	2	2
Skilled workers	10	10
Semiskilled workers	13	13
Unskilled workers	27	27
Housewife/unemployed	41	41
Informant		
Spouse	46	46
Children	42	42
Sibling	1	1
Other relative	6	6
Friend/Neighbor	5	5

Table 5
Distribution of subjects with cognitive impairment based on age vs. HMSE scores.

Age	Normal (>25)	Mild (24-20)	Moderate (15-19)	Severe (<15)	Total Patients
60-64	13	02	01	00	16
65-69	41	02	02	02	47
70-74	25	02	02	00	29
75-79	04	01	02	00	07
80-84	00	01	00	00	01
Gross Total	83	08	07	02	100

Table 6
Vascular risk factors.

Vascular Risk Factors	n	%
Hypertension	68	68
Diabetes Mellitus	47	47
Dyslipidemia	28	28
IHD	1	1
Stroke/CVA	2	2
Smoking	20	20

As evident in Table 4, there were more number of females (57%) than males (43%). More people were from urban areas (59%) than rural areas (41%)

Majority of the patients were under the age group of 65-69 years (47%), followed by age group of 70-74 (29%), followed by 60-64 (16%) and 7% of patients were from 75-89 and 1% from 80-84 age group.

82% of the patients were Hindus, 14% were Muslims, 3% were Christians and 1% from other minority.

Many of the patients were uneducated and had completed less than 7 years of schooling (55%)

Most of the patients (85%) were married and 14% of the patients were widowed who were living with the children.

41% of the patients were unemployed/housewife. As shown in Table 5, 68% of the patients were having hypertension and 47% of the people had diabetes.

As evident in Table 6, 17% of the people were having cognitive impairment, in that 8% of the patients had mild cognitive impairment, 7% had moderate and 2% had severe cognitive impairment.

Majority of the patients having cognitive impairment were females (n=10, 58.82%) and 7 of them were males (41.17%)

Cognitive impairment was more among people who had only hypertension (41.17%) followed by combined chronic diseases (hypertension and diabetic=35.29%), followed by only diabetes (11.76%).

On analyzing the correlation between HMSE scores of patients having cognitive impairment and EASI scores of the same patients by using non parametric test (MANN Whitney U Test), it was observed that lower the HMSE score, higher is the EASI score. (mean EASI score of cognitively impaired patient was 4.82 and SD =3.414 *vs.* mean EASI score of normal patients which was 0.96 and SD=1.383). These tests were statistically significant.

On analyzing the correlation between HMSE scores of patients having cognitive impairment and Huchinski Ischemic Scores of the same patients by using non parametric test (Mann Whitney U Test), it was observed that lower the HMSE score, higher is the HIS score. (Mean HIS score of cognitively impaired patient was 4.24 and SD=3.052 *vs.* mean HIS score of normal patients which was 1.72 and SD=0.704). These tests were statistically significant.

DISCUSSION

The present cross sectional study was conducted to screen the cognitive impairment in patients attending geriatric clinic in a tertiary care center, Victoria Hospital, Bangalore. Our study clearly showed that 17% of the geriatric patients had cognitive impairment. Besides cognitive impairment was found to be high in females when compared to males. The reason for higher scores among females might be due to difference in the literacy rates, status and usage of social cognitive skills. The present study also revealed that there is an inverse relationship between cognitive impairment and lower educational status. (among cognitively impaired, 64.70% of patients did less than 7 years of schooling). The present study also revealed that there is an inverse relationship between the HMSE Score vs. EASI Score and HMSE Score vs. HIS Score which was statistically significant.

It was also found that cognitive impairment was high in hypertensive patients alone than compared to the combination of diabetic and hypertensive patients.

Our study's prevalence data was lower than the previously reported [10], which found a prevalence of 36.2%. That discrepancy may be due to the number and characteristics of the sample. Prevalence studies in Europe, the United States, and Canada reveal relatively consistent findings. For instance, 22.2% of individuals in the United States of age 71 years or older have cognitive impairment without dementia, and Canadian samples aged 65 and over report prevalence rates for cognitive impairment without dementia of 16.8%.

The elderly, females and hypertensives were found to be the predictor of cognitive impairment in the current study [11].

The limitation of our study was since this was a cross sectional study hence, causal association between the socio demographic and cognitive impairment cannot be inferred.

FUTURE IMPLICATIONS

Cognitive impairment needs to be screened which will help in predicting the development of dementia in the future and hence reducing the burden of the patient as well as caregiver. Training of the health workers need to be done to carry out the screening activities at primary care itself.

CONCLUSION

The current study found that 17% of the people had cognitive impairment. The elderly, females, less than 7 years of schooling and hypertensives were found to be the factors associated with cognitive impairment.

Given the findings of our research, we suggest that screening for elderly patients for cognitive impairment is must with the help of mental health professionals to provide best psychiatry services.

FUNDING

No funding sources.

CONFLICT OF INTEREST

None declared.

ETHICAL APPROVAL

The study was approved by the Ethical Committee.

REFERENCES

1. Sample registration system statistical report 2011 New Delhi; government of India; 2013 registrar general and census commissioner, India. Population Composition pp. 11-28.

2. Wild B, Heider D, Maatouk I, et al. Significance of costs of complex biopsychosocial health care needs in elderly people. Results of a population based study. Psychosom Medicine. 2014:76:497-502.

3. Das SK, Pal S, Ghosal MK. Dementia: Indian Scenario. Neurol India 2012;60:618-24.

4. Khullar S, Kaur G, Dhillon H, et al. The prevalence and predictors of cognitive impairment in type 2 diabetic population of Punjab, India. 2017;5:47-53.

5. Lindsay AZ, Krish C, Justin YK, et al. Diabetes and cognitive impairment. Curr Diab Rep 2016; 16:87.

6. Kataria L, Pandya H, Shah S, et al. Prevalence and pattern of cognitive dysfunction in type 2 diabetes mellitus. Int J Med Appl Sci 2013; 2:246-52.

7. Gondim AS, Coelho Filho JM, Cavalcanti AA, et al. Prevalence of functional cognitive impairment and associated factors in Brazilian community-dwelling older adults. Dement Neuropsychol 2017; 11:32-9.

8. Verghese A, Beigh A, Senseman LA, et al. A social psychiatric study on a representative group of families in Vellore town. Indian J Med Res. 1973; 61:608–20.

9. Martha L, Bruce Gail J, Mc Avay, et al. Major depression in elderly home health care patients. Am J Psychiatry. 2002; 159:1367–74.

10. Pando Moreno M, Aranda Beltrán C, Alfaro N, et al. Prevalencia de la depresión en adultos mayores en una población urbana. Rev Esp Geriatr Gerontol 2001;36 (3): 140-144.

11. Plassman BL, Langa KM, Fisher GG, et al. Prevalence of cognitive impairment without dementia in the United States. Ann Intern Med 2008;148 (6):427-34.