

# Subjective memory complaints in the elderly: a sign of cognitive impairment?

Alessandro Ferrari Jacinto,<sup>1</sup> Sonia Maria Dozzi Brucki,<sup>1</sup> Claudia Sellitto Porto,<sup>1</sup> Milton de Arruda Martins,<sup>1</sup> Ricardo Nitrini<sup>1</sup>

<sup>1</sup>Faculdade de Medicina da Universidade de São Paulo, Department of Neurology, São Paulo/SP, Brazil. <sup>2</sup>Faculdade de Medicina da Universidade de São Paulo, Internal Medicine, São Paulo/SP, Brazil.

**OBJECTIVES:** Cognitive impairment in the elderly is frequently overlooked by general practitioners. The use of subjective memory complaints as a sign of cognitive impairment by the general practice is controversial.

**METHODS:** Elderly individuals (N=248) were asked whether they had memory complaints and underwent a cognitive impairment screening. Subjects classified as exhibiting "probable cognitive impairment" underwent a complete cognitive evaluation, and the final diagnoses were established by expert consensus.

**RESULTS:** A total of 147 patients presented with subjective memory complaints, and 43 were further classified as demented or "cognitively impaired not demented". Subjective memory complaints presented a sensitivity of 100% and a negative predictive value of 100%.

**CONCLUSION:** Subjective memory complaints are an indicator for cognitive impairment screening.

**KEYWORDS:** General Practice; Primary Health Care; Cognitive Disorders; Age-Related Memory Disorder.

Jacinto AF, Brucki SM, Porto CS, Martins MA, Nitrini R. Subjective memory complaints in the elderly: a sign of cognitive impairment? Clinics. 2014;69(3):194-197.

Received for publication on July 17, 2013; First review completed on July 28, 2013; Accepted for publication on August 16, 2013

E-mail: alessandrojacinto@uol.com.br

Tel.: 55 11 5575-2692

## INTRODUCTION

Cognitive impairment (CI) in the elderly is frequently overlooked by general practitioners (GPs) (1-3). Most of the elderly worldwide are routinely followed by GPs with insufficient knowledge about CI-related diseases (4,5). Previous studies (4,5) have shown that GPs do not screen for CI in their elderly patients for a few reasons: lack of specific training during medical school, a medical appointment duration that is too short to assess CI properly, and a lack of interest on the part of the GP in detecting CI because treatment is ineffective. Because there are not enough specialists in dementia to attend patients with these diseases, the role of GPs in this field becomes even more important (6). A complete cognitive assessment takes time and should be performed by specialized professionals; thus, as far as screening is concerned, instruments used for the detection of CI that can be easily and quickly applied by GPs in their working environments are desirable (7).

Subjective memory complaints (SMCs) are often observed in the elderly and play a role in the diagnosis process of clinical CI states such as mild cognitive impairment (MCI) and dementia. SMCs could be a useful tool for CI screening by GPs, and they have been extensively investigated, although no clear correlation was observed (8-10). In Brazil, the use of SMCs as a screening tool for CI in the elderly has not been well studied (11-13).

The aim of this study was to investigate the correlation between SMCs and CI to determine whether SMCs can be used as a tool for CI screening by GPs.

## METHODS

In the Brazilian "Unified Health System" (UHS), there are three types of primary care settings: "Basic Health Care Unit (BHCU)" with general internists (GIs), pediatricians, and gynecologists; "Pure BHCU" or "Family Health Care Program" (FHCP), in which only GPs are available; and "Mixed BHCU" (BHCU plus FHCP), in which the staff is composed of doctors with expertise in all four medical areas cited above. In this study, both GIs and GPs will be classified as GPs because they practice under the same primary care principles of the UHS. Data were drawn from two previous studies assessing the ability of GIs to accurately diagnose CI and their use of simple cognitive instruments in the elderly; the methods utilized in these studies have been reported elsewhere (3,7). Briefly, 248

**Copyright** © 2014 CLINICS – This is an Open Access article distributed under the terms of the Creative Commons Attribution Non-Commercial License (<http://creativecommons.org/licenses/by-nc/3.0/>) which permits unrestricted non-commercial use, distribution, and reproduction in any medium, provided the original work is properly cited.

No potential conflict of interest was reported.

**DOI:** 10.6061/clinics/2014(03)09



**Table 1** - Median, interquartile interval, and comparisons considering age and schooling in the different groups.

	Median (IQI)			p-value*	Multiple comparisons**
	Probable non-cases (N = 202)	MCI (N = 22)	Dementia (N = 21)		
Age	70 (67-74)	69.5 (67-73.3)	72 (67-75.5)	0.28	D = CIND = WCI
Schooling	4 (2-8)	4 (2-8.3)	2 (2-4)	0.02	D = CIND CIND = WCI D < WCI

\*Kruskal-Wallis Test; \*\*Dunn's post hoc; IQI, interquartile interval; D, dementia; CIND, cognitively impaired not demented; WCI, without cognitive impairment.

patients aged 65 or older who were assisted by GIs at the Faculty of Medicine Primary Care Clinic were evaluated.

In the assessment, SMCs, medical antecedents, and the use of medications were recorded, and the following tests and questionnaires were employed: the Mini Mental State Examination (MMSE) (14,15), the short version of the Informant Questionnaire on Cognitive Decline in the Elderly (Short-IQCODE) (16), the Brief Screening Cognitive Battery (17,18), the Functional Activities Questionnaire (FAQ) (19), the Forward and Backward Digit Span, and the 15-item Geriatric Depression Scale (GDS) (20). Short-IQCODE and/or MMSE scores were used to classify patients into probable cognitive impairment cases or other cases using cut-off scores previously suggested for the Brazilian population. Probable cases underwent neuropsychological evaluation using the Dementia Rating Scale, (21) laboratory tests (blood count, thyroid hormones, syphilis serology, liver function, kidney function, and vitamin B12 and folic acid levels), and a brain computed tomography (CT) scan (22).

The final diagnoses were established in a consensus meeting with two neurologists specializing in dementia (SMDB, RN) and the geriatrician who evaluated the patients (AFJ) using all available data. The probable cases and a sample of 53 patients considered as not cognitively impaired based on the MMSE and/or Short-IQCODE scores were evaluated on the basis of clinical data, performances on neuropsychological tests, and questionnaires for all subjects; probable cases were also evaluated based on laboratory and CT results. Patients were classified as cases with dementia, cognitively impaired not demented (CIND), or without cognitive impairment (WCI). Of the 248 elderly patients, 52 were classified as cognitively impaired (21 had a final diagnosis of dementia, 22 were CIND, and nine cases were considered not cognitively impaired). All 53 individuals who were classified as not cognitively impaired using the screening instruments had a final diagnosis of WCI in the consensus meeting. The specificity of the screening

method (MMSE and/or Short-IQCODE) was 100%, whereas the sensitivity was 82.7%.

The Research Ethics Committee of the Hospital das Clínicas of the Universidade de São Paulo Medical School, Brazil, approved this study.

**Statistical analysis**

The data were analyzed using SPSS 20.0. The diagnostic sensitivity, specificity, and concordance (*kappa*) of SMCs were obtained by considering the expert consensus as the gold standard of CI-related disease diagnosis. SMC positive and negative predictive values and the negative likelihood ratio were also calculated. The accepted level of significance was set at 0.05.

**RESULTS**

The demographic data for the patients in the dementia, CIND, and WCI groups are shown in Table 1.

As observed in Table 2, when applied as a screening instrument, SMCs classified 43 out of the 43 patients with cognitive impairment after consensus as cognitively impaired (sensitivity of 100%; positive predictive value of 29.3%) and 104 out of 205 patients without cognitive impairment as cognitively impaired (specificity of 49.3%; negative predictive value of 100%). The negative likelihood ratio was 0 ([1-sensitivity]/specificity), and the diagnostic concordance (*kappa*) was 0.252 (*p*<0.001).

**DISCUSSION**

The sensitivity and the negative predictive value found in this study showed that SMCs are a reliable tool for CI screening. In the current study, out of 100 elderly who showed SMCs, 29 were found to be truly cognitively impaired according to the specialists' consensus, whereas all 100 elderly who did not show SMCs were cognitively normal. When considering SMCs as a screening test, the

**Table 2** - Distribution of subjective memory complaints according to diagnosis after consensus.

SMCs	Diagnosis after consensus		Total	Kappa (p)
	Yes	No		
Yes	43	104	147	0.252 (p<0.001)
No	0	101	101	
Total	43	205	248	

SMC, subjective memory complaint.



negative likelihood of zero is an excellent result because it means that the screening test is clinically useful for separating those who are truly not cognitively impaired from those who are cognitively impaired. According to our results, GPs should be able to identify either patients with dementia who require treatment or those with mild cognitive impairment who require preventive and educational strategies.

SMCs and expert diagnoses showed a weak concordance of 25% although statistically significant as the  $p$ -value was less than 0.001.

The present study data were obtained from the GI outpatient service of a university hospital rather than from a Basic Health Unit or Family Health Program, which can be interpreted as a limitation, although the lack of differences between GI's and GP's appointments has already been cited earlier in this manuscript (see Methods). Therefore, our results are likely to be useful because the setting is very similar to that of primary care assistance. Another limitation was related to the fact that our study is unicentric, although it is known that other health care centers function similarly to this university hospital. Finally, only a sample of the probable nondemented subjects was assessed by the experts, although not all of the nondemented subjects were cognitively impaired because the screening method was effective.

In Brazil, Caramelli et al. (11) did not observe a correlation between SMCs in healthy subjects and objective CI. The results of Almeida (12) were similar to those in the present study, although his data were obtained from patients who were followed by psychiatrists in a mental health unit for the elderly. Lima-Silva and Yassuda (13) did not find an association between SMCs and objective memory performance. Differences between these studies and our data were observed in elderly subjects at an outpatient service with similar characteristics to those found in a Basic Health Unit; thus, it is possible that using a simple dichotomy question about SMCs with elderly patients who seek a medical appointment for any reason could serve as a reliable predictor of CI. In recent studies, Mewton et al. (23) found an association between SMCs and psychological distress using data from the "2007 National Survey of Mental Health and Well-Being", which included 1,905 community-dwelling participants aged 65-85 years, and Gifford et al. (24) showed a relationship between SMCs, especially when it was corroborated by an informant, and conversion to dementia. These two studies highlight the need to check other clinical states related to memory complaints, such as depression and anxiety, and to obtain corroboration of the patients' SMCs from their informants when possible.

As previously reported [4,5], the short duration of medical appointments prevents proper assessment of CI and is one reason why GPs do not screen for CI in primary care; however, our data showed that screening during a brief appointment is possible. In fact, lack of specific training during medical school is one approach to screening that must be better investigated in future studies.

Asking a single question may be helpful for the identification of individuals who need further CI assessment. If the answer to that question is "no", public budget spending on meaningless further clinical investigations can be avoided.

It is mandatory that training in recognizing cognitive impairment be improved in medical school and during general practice and internal medicine residency programs because these professionals will be faced with treating elderly patients with prevalent diseases such as dementia in many sectors of health care.

## AUTHOR CONTRIBUTIONS

Jacinto AF obtained and analyzed data and wrote the paper. Brucki SM and Nitrini R revised the paper. Martins MA discussed the study while it was being conducted. Porto CS performed the neuropsychological tests.

## REFERENCES

1. Valcour VG, Masaki H, Curb JD, Blanchette PL. The detection of dementia in the primary care setting. *Arch Int Med.* 2000;160(19):2964-8, <http://dx.doi.org/10.1001/archinte.160.19.2964>.
2. Finkel SI. Cognitive screening in the primary care setting: the role of physicians at the first point entry. *Geriatrics.* 2003;58(6):43-4.
3. Jacinto AF, Brucki SMD, Porto CS, Martins MA, Nitrini R. Detection of cognitive impairment in the elderly by general internists in Brazil. *Clinics.* 2011;66(8):1379-84, <http://dx.doi.org/10.1590/S1807-59322011000800012>.
4. Barret JJ, Haley WE, Harrel LE, Powers RE. Knowledge about Alzheimer disease among primary care physicians. *Alzheimer Dis Assoc Disord.* 1997;11(2):99-106, <http://dx.doi.org/10.1097/00002093-199706000-00006>.
5. Renshaw J, Scurfield LC, Orrel M. General practitioner's views on the early diagnosis of dementia. *Br J Gen Pract.* 2000;51(462):37-8.
6. Portal Brasil (Internet). Brasilia: Unified Health System (Primary Care Units); 2013. Available from: <http://www.brasil.gov.br/sobre/health/service/primary-care-units>.
7. Jacinto AF, Brucki SMD, Porto CS, Martins MA, Nitrini R. Screening of cognitive impairment by general internists using two simple instruments. *Dement Neuropsychol.* 2012;6(1):42-7.
8. Jonker C, Geerlings MI, Schmand B. Are memory complaints predictive for dementia? A review of clinical and population-based studies. *Int J Geriatr Psychiatry.* 2000;15(11):983-91.
9. Reid LM, MacLulich AMJ. Subjective Memory Complaints and Cognitive Impairment in Older People. *Dement Geriatr Cogn Disord.* 2006;22(5-6):471-85, <http://dx.doi.org/10.1159/000096295>.
10. Hurt CS, Burns A, Brown RG, Barrowclough C. Why don't older adults with subjective memory complaints seek help? *Int J Geriatr Psychiatry.* 2012;27(4):394-400.
11. Caramelli P, Beato RG. Subjective memory complaints and cognitive performance in a sample of healthy elderly. *Dement Neuropsychol.* 2008;2(1):42-45.
12. Almeida OP. Memory complaints and the diagnosis of dementia. *Arq Neuropsiquiatr.* 1998;56(3A):412-8, <http://dx.doi.org/10.1590/S0004-282X199800300010>.
13. Lima-Silva TB, Yassuda MS. The relation between memory complaints and age in normal aging. *Dement Neuropsychol.* 2009;3(2):94-100.
14. Folstein MF, Folstein SE, McHugh PR. "Mini-mental state": a practical method for grading the cognitive state of patients for the clinician. *J Psychiatr Res.* 1975;12(3):189-98.
15. Brucki SMD, Nitrini R, Caramelli P, Bertolucci PHF, Okamoto IH. Suggestions for use of the Mini Mental State Exam in Brazil. *Arq Neuropsiquiatr.* 2003;61(3B):777-81, <http://dx.doi.org/10.1590/S0004-282X2003000500014>.
16. Jorm AF. A short form of the Informant Questionnaire on Cognitive Decline in the Elderly (IQCODE): development and cross-validation. *Psychol Med.* 1994;24(1):145-53, <http://dx.doi.org/10.1017/S003329170002691X>.
17. Nitrini R, Lefèvre BH, Mathias SC, Caramelli P, Carrilho PE, Sauer N, et al. Brief and easy-to-administer neuropsychological tests in the diagnosis of dementia. *Arq Neuropsiquiatr.* 1994;52(4):457-65, <http://dx.doi.org/10.1590/S0004-282X1994000400001>.
18. Nitrini R, Caramelli P, Herrera E Jr, Porto CS, Charchat-Fichman H, Carthery MT, et al. Performance of illiterate and literate nondemented elderly subjects in two tests of long-term memory. *J Int Neuropsychol Soc.* 2004;10(4):634-8, <http://dx.doi.org/10.1017/S1355617704104062>.
19. Pfeffer RI, Kurosaki TT, Harrah CH Jr, Chance JM, Filos S. Measurement of functional activities in older adults in the community. *J Gerontol.* 1982;37(3):323-9, <http://dx.doi.org/10.1093/geronj/37.3.323>.
20. Almeida OP, Almeida SA. Reliability of the Brazilian version of the abbreviated form of Geriatric Depression Scale (GDS) short form. *Arq Neuropsiquiatr.* 1999;57(2B):421-6, <http://dx.doi.org/10.1590/S0004-282X1999000300013>.
21. Porto CS, Charchat-Fichman H, Caramelli P, Bahia VS, Nitrini R. Brazilian version of the Mattis dementia rating scale: diagnosis of mild dementia in Alzheimer's disease. *Arq Neuropsiquiatr.* 2003;61(2B):339-45, <http://dx.doi.org/10.1590/S0004-282X2003000300004>.



22. Caramelli P, Teixeira AL, Buchpiguel CA, Lee HW, Livramento JA, Fernandez LL, et al. Diagnóstico de doença de Alzheimer no Brasil. Exames complementares. *Dement. Neuropsychol.* 2011;5(supl 1):11-20.
23. Mewton L, Sachdev P, Anderson T, Sunderland M, Andrews G. Demographic, Clinical, and Lifestyle Correlates of Subjective Memory Complaints in the Australian Population. *Am J Geriatr Psychiatry.* 2013;pii:S1064-7481(13)00212-1.
24. Gifford KA, Liu D, Lu Z, Tripodis Y, Cantwell NG, Palmisano J, et al. The source of cognitive complaints predicts diagnostic conversion differentially among nondemented older adults. *Alzheimers Dement.* 2013;pii:S1552-5260(13)00082-4.