Subjective memory complain in healthy elderly: influence of depressive symptoms, perceived stress and self-esteem

QUEIXA SUBJETIVA DE COMPROMETIMENTO DA MEMÓRIA EM IDOSOS SAUDÁVEIS: INFLUÊNCIA DE SINTOMAS DEPRESSIVOS, PERCEPÇÃO DE ESTRESSE E AUTOESTIMA

QUEJA SUBJETIVA DE MEMÓRIA EM ANCIANOS SANOS: INFLUENCIA DE SINTOMAS DEPRESIVOS, PERCEPCIÓN DE ESTRÉS Y AUTOESTIMA

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ABSTRACT

The current study analyzed the relationship between perceived stress, depressive symptoms and self-esteem in elderly with and without subjective memory complain. Two-hundred four elderly were included (104 without and 100 with subjective memory complain) assesse using the *Memory Assessment Complain Questionnaire* (MAC-Q). The study protocol was composed by the Perceived Stress Scale (PSS), the Geriatric Depression Scale (GDS) and the Self-Esteem Scale of Rosenberg (SES). The elderly with subjective memory complain showed higher PSS and GDS scores ($p < 0.001$) and lower SES scores ($p = 0.045$). Negative correlation was observed between MAC-Q and PSS ($p < 0.001$) and GDS ($p = 0.01$). Multiple regression analysis showed predictor effect of perceived stress in the subjective memory complain. These findings suggest that the perceived stress and depressive symptoms are associated with subjective memory complain in elderly.

DESCRIPTORS

Aged
Aging
Stress, psychological
Memory

RESUMO

O presente estudo analisou a relação entre percepção de estresse, sintomas depressivos e autoestima em idosos com e sem queixa subjetiva de comprometimento de memória. Foram incluídos 204 idosos (104 sem e 100 com queixa de memória) avaliados a partir do instrumento *Memory Assessment Complain Questionnaire* (MAC-Q). O protocolo de estudo incluiu a Escala de Estresse Percebido (EEP), a Escala de Depressão Geriátrica (GDS) e a Escala de Autoestima de Rosenberg (EAE). Os idosos com queixa de comprometimento apresentaram escores significativamente maiores na EEP e GDS e menores na EAE ($p < 0.001$). Foi observada correlação negativa entre o escore do MAC-Q e EPP ($p < 0.001$) e EAE ($p = 0.01$). A análise de regressão multivariada identificou somente o estresse como fator preditor da queixa subjetiva de memória. Esses dados sugerem que a percepção de estresse e os sintomas depressivos estão associados com a queixa de memória em idosos.

DESCRITORES

Idoso
Envelhecimento
Estresse psicológico
Memória

RESUMEN

La presente investigación analizó la correlación entre estrés percibido, síntomas depresivos y autoestima en ancianos con y sin queja subjetiva de memoria. Fueron incluidos 204 ancianos (104 sin y 100 con queja subjetiva de memoria) evaluados utilizando el instrumento *Memory Assessment Complain Questionnaire* (MAC-Q). El procedimiento del estudio incluyó la Escala de Estrés (EEP), Escala de Depresión Geriátrica (GDS) y la Escala de Autoestima de Rosenberg (EAE). Los ancianos con queja subjetiva de memoria presentaron puntuaciones significativamente mayores en la EEP y GDS y menores en la EAE ($p < 0,001$). Fue observada correlación negativa entre la puntuación de MAC-Q e EEP ($p< 0,001$) y EAE ($p = 0,01$). Modelo de regresión múltiple identificó solo el estrés como factor predictivo de queja subjetiva de memoria. Estos resultados sugieren que la percepción del estrés y los síntomas depresivos están correlacionados con la queja de memoria en ancianos.

DESCRIPTORES

Anciano
Envejecimiento
Estrés psicológico
Memoria

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INTRODUCTION

The traditional, negative conception of the aging process is characterized by the progressive decline and deficit of abilities of the human body. This understanding has been deconstructed lately. Emerging evidence point out that the well-being and the positive perception of the process stand out as relevant protective factors against the aging effects and the way the human system functions[1].

The aging process is approached under multiple perspectives. This heterogeneity has drawn the attention of several researchers, who have attempted to identify eventual factors that may compromise it. The absence of complaints about memory deficits, together with the maintenance of the cognitive performance, has been considered as one of the successful aging indicators[1]. However, although a significant number of elderly individuals does not present an objective deficit of memory that can be documented by neuropsychological tests, they very often complain about their mnemonic development in activities of daily living. These individuals comprise a relevant investigative group, as the subjective memory malfunction complaint is capable of anticipating possible dementia processes[2]. Elderly individuals who enjoy a normal cognitive performance, and yet subjectively complain about memory deficit, may develop Alzheimer's disease two years following a clinical follow-up[3]. These data reveal the importance of this group toward identifying individuals who may be vulnerable to dementia.

Elderly individuals who enjoy a normal cognitive performance, and yet subjectively complain about memory deficit, may develop Alzheimer's disease two years following a clinical follow-up.

The explanations regarding subjective memory complaints in the absence of identified mnemonic deficit evidenced by neuropsychological tests remain considerably inconclusive. Some authors affirm that subjective memory complaints is more associated with a depressive setting, or even to personality traits, rather than to a real deficit of memory[4-6]. Others, on their turn, counterclaim that in spite of the correlation a complaint may have with emotional factors, it should not be merely treated as an emotional manifestation, but as a subclinical deficit whose slight alterations on conventional neuropsychological tests are not sensitive enough for its identification[7].

Whether or not a mere complaint evolves to a cognitive deficit, the possibility of identifying the factors related to the perception of elderly individuals with impaired memory should be taken into account, as a complaint represents a dissatisfaction towards their abilities. This status in itself is capable of damaging the well-being and the quality of life of these individuals.

One of the not least studied factors about subjective memory complaints in elderly individuals is stress. Although the association between memory deficit and higher stress levels - more specifically increased stress hormones - is extensively covered in literature[8-9], its manifestation in elderly individuals who present this complaint is very scarce. A specific literature research presented only one study aimed to analyze the relationship between cortisol (major stress hormone) and subjective memory complaints in individuals. The study also identified that elderly individuals who presented memory deficits complaints had atypical cortisol secretion standards throughout the day[10]. Hence, the investigation of stress should encompass both the components of its behavioral nature and its own perception. The isolated analysis of neuroendocrine variations does not necessarily reflect on the individual's perception of being stressed.

The use of a psychodynamic action, such as therapeutic communication (guide, inform, support, comfort or meet the patient's basic needs), is one of the tools nurses have available in the care protocol. This tool can be employed against chronic stress, a prevalent feature in aged populations[11]. In this way, the identification of groups of individuals vulnerable to stress can ground future investigations on the influence of management actions toward the development and maintenance of the cognitive abilities of elderly individuals.

In the light of these considerations, this present study aimed to analyze the correlation between stress perception and emotional factors - depressive symptoms and self-esteem - in elderly individuals with and without memory deficit complaints. Our hypothesis is that elderly individuals with memory complaints present greater stress perception, more depressive symptoms and lower self-esteem.

METHOD

Place and period

This study was performed at the Medical Outpatient Clinic of the University of São Paulo University Hospital (USP-UH), where elderly individuals received periodical follow-up for the treatment and control of arterial hypertension, between January and November 2011.

Participants

Inclusion criteria were as follows: age between 60 and 82 years; men and women; preserved cognitive functions and functional capacities; lack of diagnosis of any neurologic, neurodegenerative or psychiatric disease; literate patients; living in the São Paulo Metro Area; registered clients of the USP-UH Medical Outpatient Clinic; and no record in psychiatric clinic or unit other than the medical outpatient clinic. Exclusion criteria were: admittance reports in the six month-period prior to the study; illiterate or presenting any sensory impairments (as these factors would render the application of the instruments impossible).

Participants were randomly selected from the electronic databank of the UH-USP Medical Outpatient Clinic, thus producing a databank with 1,902 individuals. In order to obtain a minimum sample of 200 patients, in compliance with the previously calculated sample size[18], the Excel® Program employed by the study randomly selected 408 patients, who were then invited by phone to take part in the research: 126 patients refused to participate; 46 patients did not meet the inclusion criteria; 9 patients did not show up. The remaining 229 patients were assessed: 5 were excluded, as their scores were lower than the minimum score determined the Mini Mental State Examination (MMSE) addressing the education variable[12]; 20 patients were excluded for presenting scores higher than the minimum score set by the Geriatric Depression Scale[13]. Thus, the final sample consisted of 204 elderly individuals.

Procedure and instruments

A data collection protocol composed of the following assessment instruments was elaborated for:

• **Depression symptoms**: this brief version of the Geriatric Depression Scale (GDS)[13] is comprised of 15 items related to the presence of depressive mood, anhedonia, attention difficulties, sleep disorders, eating disorders, slowed thinking, agitation, feelings of uselessness, and suicidal ideas. The questions present only two possible alternatives (yes = 1 score; no = 0). Scores range from 0 through 15. Scores ≥ 6 suggest depressive disorders.

• **Stress perception**: The Perceived Stress Scale (PSS)[14] is comprised of 14 questions intended to check out how much unpredictable, uncontrollable and overloaded respondents perceive their lives are. Each item presents alternatives ranging from zero through four (0 = never; 1 = almost never; 2 = sometimes; 3 = almost always; 4 = always). The scores of the questions with positive connotations (4, 5, 6, 7, 9, 10 and 13) are reversely summed up (0 = 4; 1 = 3; 2 = 2; 3 = 1; and 4 = 0); remaining items present negative connotation and are directly summed up. The total value of the scale is comprehended by the sum of scores related to all 14 questions; scores may range from zero through 56.

• **Self-esteem**: The Rosenberg's Self-Esteem Scale (RSES)[15] is comprised of ten closed-end questions; answer choices are as follows: totally agree; agree; disagree; totally disagree. Each item score ranges from 1 to 4. The higher the score, the higher the self-esteem *level*.

• **Subjective memory complaints (SMC)**: The Memory Complaint Questionnaire (MAC-Q)[16-17] is composed of 6 questions related to the function of the memory in activities of daily living. The total score ranges from 7 to 35; the higher the score, the more intense is the memory-related complaint. Scores ≥ 25 indicate age-related memory deficit.

All subjects were submitted to the data collection protocol only once and divided in two groups, according to the memory complaint: without SMC (score < 25) and with SMC (score ≥ 25).

The study was approved by the Research Ethics Committee of the University of São Paulo School of Nursing (CEP-EEUSP 994/2010) and the Research Ethics Committee of the University of São Paulo University Hospital (CEP-HU/USP 1130/11). All participants signed the Free and Informed Consent Form.

Statistical analysis

All data were analyzed in accordance with their normal distribution. In order to test the difference hypothesis between the groups (with SMC *versus* without SMC), the study applied the t-Student and the MannWhitney tests aiming to compare social-demographic variables (age, education and income), overall cognitive performance (MMSE scores), and the GDS, PSS and RSES scores. For the analysis of the association between emotional factors (depression, stress and self-esteem) and the memory deficit subjective complaint, the study employed the Pearson's correlation coefficient and the multivariate regression analysis. The multivariate regression model was run in the *stepwise* mode (p > 0.1 for removal). Scores based on the addressed emotional factors were considered independent variables and MAC-Q scores were considered as dependent variables. The analyses were carried out by means of the SPSS statistical software version 14, and the adopted significance level was 5%.

RESULTS

Social-demographic characterization and overall cognitive performance

Considering the 204 participants, 104 presented MAC-Q scores < 25, and were therefore classified as without SMC; the remaining 100 participants presented scores ≥ 25 and were consequently classified as with SMC. Both groups were predominantly comprised of female participants: 80 (83.2%) elderly individuals in the group without SMC and 76 (76.0%) in the group with SMC (p = 0.877). Both groups also displayed similar sociodemographic characteristics concerning mean age, education and income (p ≥ 0.144) (Table 1).

No significant difference was observed in the MMSE performance between the groups without SMC (mean= 27.7 ± 1.4) and with SMC (average = 27.8 ± 1.6; p = 0.846).

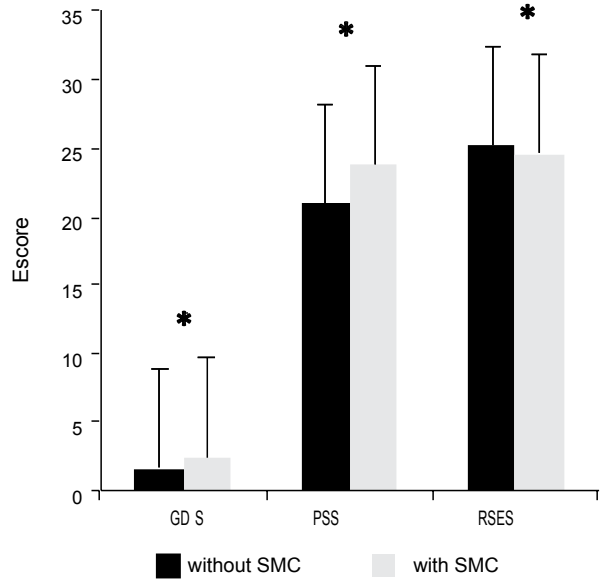
Table 1 – Social-demographic characterization of the groups - São Paulo, 2011

	Without SMC (n =104) mean (±SD*)	With SMC (n =100) mean (±SD*)	p – value**
Age (years)	68.3 ± 6.9	67.4 ± 5.7	0.366
Education (years)	9.4 ± 4.6	8.5 ± 4.4	0.144
Family income (R$)	1.911.2 ± 1.142.4	1.938.4 ± 1.242.6	0.871

* SD = standard deviation
** T-Student test

Depressive symptoms, stress perception and self-esteem

Elderly individuals with SMC showed significantly higher scores in the GDS (p < 0.001) and PSS (p < 0.001), and lower scores in the RSES (p = 0.045) comparing with participants without SMC (Figure 1).



* p < 0.05. Bars indicate standard error. T-Student test. The Mann-Whitney test was applied to the RSES.

Figure 1 – Averages among scores obtained in the depressive symptoms (GDS), stress perception (PSS) and self-esteem (RSES) instruments in complainers and non-complainers about memory deficit - São Paulo, 2011.

Association between Subjective Memory Complaint and emotional factors

A significant positive correlation was found between the MAC-Q and GDS scores (r = 0.238; p = 0.001) and PSS (r = 0.321; p < 0.001). The more intense the memory deficit complaint, the clearer the depression symptoms and stress perception. The multivariate regression analysis model, having the MAC-Q scores as dependent variable and the GDS and PSS scores as independent variables, showed a predictive effect of stress regarding the intensity of the memory deficit complaint (β = 0.321; p < 0.001). Elderly individuals with higher stress levels presented more intense memory deficit complaints (Figure 2).

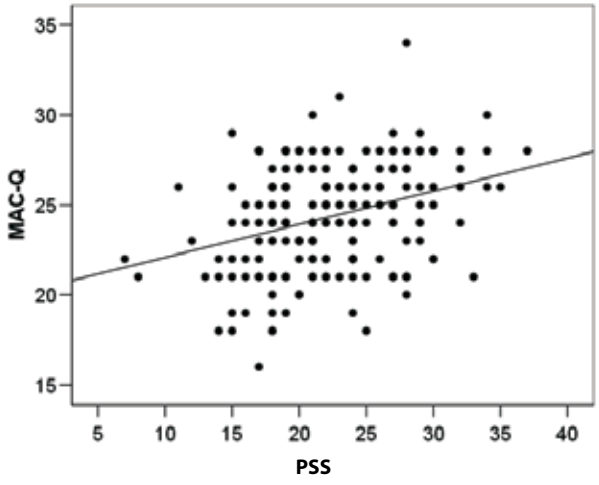


Figure 2 – Positive correlation between stress perception and subjective memory deficit complaint - São Paulo, 2011

DISCUSSION

The present study found a statistically significant correlation between SMC and emotional factors (depressive symptoms, stress perception and self-esteem) in a sample comprised of 204 healthy elderly individuals. This result corroborates other findings from previous works, in which factors such as anxiety and depression are associated with more intense memory deficit complaints[4-6,18].

A relevant finding of this research, however, was the existence of a significant association between stress perception and subjective memory deficit complaint. Elderly individuals with SMC showed higher scores in the perceived stress instrument compared to elderly individuals without SMC. Additionally, the study also verified that the higher the stress level, the higher the SMC. These findings are quite important, as several studies indicate higher concentrations of cortisol and lower memory performance in healthy elderly individuals and individuals with pathologic cognitive deficit[8,19-20].

Healthy elderly individuals displaying increased cortisol concentrations throughout a six year-period presented memory performance reduction. On the other hand, elderly individuals who presented stable levels of cortisol showed stable performance throughout the time[9]. Furthermore, elderly individuals diagnosed with the Alzheimer's disease and who presented higher concentrations of cortisol rapidly evolved to advanced stages of the disease comparing with patients showing lower concentrations of the hormone[20]. Taking into account the evidence that the stress level is capable of decreasing memory performances, the finding of this present study points out that the stress reported by the participants with memory deficit complaint can contribute to worsen performance due to the effects resulted from the prolonged exposure to cortisol. Overstressed elderly individuals may present memory deficit in their daily life, and therefore are likely to complain more frequently, even when neuropsychological test results do not detect any degree of deficit.

Hence, stress might be identified as one of the factors associated with the gradual memory deficit process seen in elderly individuals. The study shows that the predictive effect of stress in the intensity of the memory deficit complaint stands for such interpretation. On the other hand, the positive correlation of data allows for another possible interpretation: the greater the memory deficit, the higher the stress. In other words, the memory functioning perception may be a stress-related factor guided by the fear of developing dementia. These individuals would then feel overstressed. This interpretation is endorsed by a study in which elderly individuals presenting light cognitive deficit and higher concentrations of cortisol also displayed higher perception of stress and more frequent memory deficit complaints[21]. These authors believe that the memory deficit perception in some elderly individuals may constitute a stressing factor capable of unleash high-

er volumes of cortisol and increase stress perception compared with other elderly individuals who do not present such perception in their daily activities[21]. Notwithstanding, although these findings may support the investigation of such association in longitudinal studies, no cause-effect correlation can be sustained, as these are considered to be cross-sectional studies.

Additionally, this study has also revealed that elderly individuals with subjective memory deficit complaints displayed more depression symptoms and lower self-esteem than elderly individuals without SMC. Literature interpretations on the correlation between SMC and emotional factors or personality traits remain considerably inconclusive. Some authors argue that the memory deficit complaint is in fact associated with a downgrade of the memory due to a subclinical stage of depression; in this case, the complaint would be secondary to depression[4]. Other authors defend the fact that such complaint is much more associated with the affective status of individuals or their personality traits than with a real cognitive deficit[6]. More affectively depressed individuals who usually refer to negative feelings concerning their abilities are more likely to report memory functioning difficulties on their daily activities[22].

Although the present study has shown a clear correlation between depressive symptoms and SMC, the multivariate regression analysis did not show a predictive power of depressive symptoms and self-esteem levels in SMC, suggesting that these factors do not influence the intensity of the complaint. Some studies reveal that the Major Depressive Disorder is associated with the worst level of cognitive performance and more intense complaints concerning memory performances[5]. Nevertheless, the present findings showed that the observed correlations did not display any tendency toward depression, as elderly individuals who presented medical diagnosis for depression or scores that suggested depression in the GDS scale were not included in the analysis.

Although the stress, the depressive symptoms and the self-esteem were found to be either the cause or the effect of memory performance complaints, and regardless the evolvement of the damage toward a dementia status or otherwise, persistent complaints about the malfunction of the memory can compromise both the well-being of the aged person and the quality of his aging process. In the nursing field, this evidence opens way to the need of taking memory deficit complaints into account in clinical or care-based assessments, as elderly individuals with SMC may present higher stress levels and become more vulnerable to the development of stress-related diseases.

Although the present study has allowed for some interpretations, longitudinal studies including neuroendocrine stress markers, as well as cognitive assessments, may complement achieved evidence.

CONCLUSION

The findings of this present study showed a significant association between SMC, stress perception, depressive symptoms and self-esteem. Elderly individuals who presented SMC showed up higher stress levels, more depressive symptoms and lower self-esteem in comparison with elderly individuals without SMC. However, the stress variable was the only one to show a predictive effect in the presence of SMC, suggesting that daily stressing factors can contribute to increase the amount of memory deficit complaints.

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