

STRATEGY FOR EARLY DEMENTIA SCREENING: INTERACTION BETWEEN MEDICAL STUDENTS AND THEIR FAMILY MEMBERS

ESTRATÉGIA PARA RASTREAMENTO PRECOCE DE DEMÊNCIA: INTERAÇÃO ENTRE ESTUDANTES DE MEDICINA E SEUS FAMILIARES

Maria Cecília Santos Cavalcanti Melo¹, Alzeny Maria Ribeiro Ferrari², Melissa Costa Aguiar Rodrigues², Guilherme Bezerra de Brito², Bruno Lucena de Lima², Carlos Teixeira Brandt³

¹ MD, PhD in Surgery. Professor at Faculdade de Medicina de Olinda (FMO). ² Clinical psychologist. Professor at FMO. ³ Student at FMO. ⁴ MD, PhD in health Sciences. Director of Teaching, Research and Extension at FMO.

ABSTRACT

Objective: To evaluate the approach of medical students to dementia screening among family members. **Methods:** This analytical and observational study included a convenience sample of 41 family members. The Mini-Mental State Examination (MMSE) was used. Quantitative variables were expressed as means, standard deviations, and medians, whereas qualitative variables were expressed as relative and absolute frequencies. Fisher's exact test compared education levels and MMSE scores. Statistical significance was set at $p \leq 0.05$. The human research ethics committee approved the project. **Results:** Mean age was 67.7 ± 7.2 years. Education was categorized as: less than 8 years (9.7%), 8 to 11 years (22%), and more than 11 years (68.3%). Among participants with less than 8 years of education, MMSE scores were normal in three cases (75%) and decreased in one case (25%). Among those with 8 to 11 years of education, four had normal scores (44.4%) and five had decreased scores (55.6%). Among those with more than 11 years of education, 20 (71.4%) had normal scores and eight (28.6%) had decreased scores. No association was observed between education level and MMSE performance ($p = 0.307$). **Conclusions:** The involvement of medical students in family dementia screening requires further encouragement and may enhance social and family interactions in their living environment.

Keywords: Dementia. Family relations. Medical students. Mini-Mental Status Examination.

RESUMO

Objetivo: Avaliar a abordagem de alunos de medicina entre seus familiares para detecção precoce de demência. **Métodos:** Estudo analítico e observacional. A amostra foi de conveniência e envolveu 41 familiares. Foi utilizado o Miniexame do Estado Mental (MEEM). Os parâmetros das variáveis quantitativas foram expressos por suas médias, desvios-padrão e medianas. Os parâmetros das variáveis qualitativas foram expressos por suas frequências. Teste exato de Fisher foi utilizado entre as frequências dos níveis de escolaridade e o escore do MEEM. Para rejeição da hipótese de nulidade, foi considerado $p \leq 0,05$. O projeto foi aprovado pelo Comitê de Ética de Pesquisa em Seres Humanos. **Resultados:** A média das idades foi de $67,7 \pm 7,2$ anos. O tempo de escolaridade foi categorizado em 4 (9,7%) com < 8 anos, 9 (22 %) com > 8 e < 11 anos e 28 (68,3 %) com > 11 anos. Entre os participantes com nível de escolaridade < 8 anos, o escore de MEEM foi normal em três 3 casos (75 %) e diminuído em 1 caso (25%); entre os com nível de escolaridade entre > 8 e < 11 anos, 4 foram normais (44,4 %) e diminuído em 5 (55,6%); entre os com o nível de escolaridade > 11 anos, 20 (71,4 %) foram normais e 8 (28,6%) foram diminuídos. Para o tamanho amostral, não foi observada associação entre níveis elevados de educação (> 11 anos) e níveis inferiores de escolaridade ($p = 0,3072$). **Conclusões:** A estratégia da abordagem de alunos de medicina no rastreamento de demência entre familiares necessita ser mais estimulada, podendo levar a maior interação social e familiar no ambiente em que vivem.

Palavras-chave: Demência; Relações familiares; Estudantes de medicina; Miniexame do Estado Mental

INTRODUCTION

The recognition of memory impairments, with or without other cognitive dysfunctions, is a challenge that will persist for generations due to the increasing global life expectancy¹⁻⁵.

Early dementia detection remains a severe health problem that is underreported even in developed countries^{2,3}. Although the rationale for screening asymptomatic individuals has generated important discussions, effective actions to address this issue remain lacking^{4,6}.

Several factors contribute to the poor recognition of signs and symptoms of dementia, including lack of disease understanding by patients and family, cultural stigma, and insufficient preventive action by health professionals⁷.

Involving individuals with greater intimacy may reduce stigmas surrounding people with risk factors for dementia; however, Brazilian studies remain scarce⁸⁻¹⁰.

This study evaluated the approach of medical students as a strategy for early dementia detection among family members.

METHODS

This clinical, descriptive, and observational study was conducted at the Faculdade de Medicina de Olinda (FMO). The study included a convenience

sample of 41 family members from 400 medical students at FMO. Family members with an established dementia diagnosis were excluded.

The following data were collected according to the Alzheimer's Disease Risk Index of the Australian National University¹¹: clinical (diabetes mellitus, systemic arterial hypertension, depression, head trauma with loss of consciousness, and dyslipidemia), lifestyle factors (physical and cognitive activities, social engagement, fish intake, alcohol or tobacco consumption, and pesticide exposure), and education level (no schooling, up to eight years, and more than 8.1 years of education). The validated Mini-Mental State Examination (MMSE)^{1,8,12} assessed the intellectual conditions of the participating parents or guardians (Figure 1). The cutoff scores for the MMSE were adjusted for education level, according to the Brazilian Academy of Neurology¹³: 20 (illiterate), 25 (< 8 years), 26 (8 to 11 years), and 29 (> 11 years).

Quantitative variables were presented as mean and standard deviation. When the degree of dispersion was high, we used the median. Qualitative variables were expressed using absolute and relative frequencies. Non-parametric tests were used for variables that were not normally distributed, whereas the chi-square test assessed differences between frequencies. Significance was set at $p < 0.05$.

The human research ethics committee of the FMO approved the study (number 2.722.845).

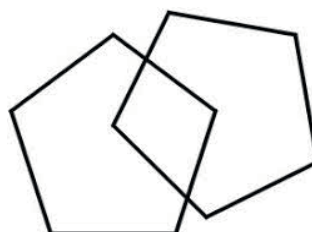
QUESTIONNAIRE

Alzheimer's Disease Risk Index with Mini-Mental State Examination (MMSE) - (Alzheimer's Disease Risk Index – Australian National University)

- **Age and sex:** () Male () Female Age (years):
- **Education (number of years):** () > 11 years () 8 to 11 years () < 8 years () no education
- **BMI:** Height: Weigh:
- **High cholesterol:** () Yes () No
- **Diabetes (history of diabetes and medication):-** Diabetes: () Yes () No
- Medication: () Yes () No Which: dose:
- **Head trauma (history of traumatic brain injury with loss of consciousness):**
- Head trauma: () Yes () No Loss of consciousness: () Yes () No
- **Physical Activity:** () Light (walking 2x/week) () Moderate (3x/week) () Vigorous (5x/week)
- **Cognitive activities (study, reading, crossword puzzles, etc.):** () Light () Moderate () Vigorous
- **Social engagement (volunteer or social activities):**
() Low () Low to Moderate () Moderate to High () High
- **Fish intake:**
() Low (1x/week) () Low to Moderate (2x/week) () Moderate to High (3x/week) () High (>4x/week)
- **Alcohol consumption:** () None () Light (1x/week) () Moderate (3x/week) () High (>4x/week)
- **Smoke:** () Current smoker () Former smoker () Never smoked
- **Pesticide exposure:** () Yes () No
- **Sexuality:** For you, truly, Affection is: () Dispensable () Indispensable
- Desire for sexual intercourse: () Present () Absent - Sex is: () Dispensable () Indispensable
- **Memory complaints:**
 1. Forgetting names, places: () Never () Sometimes () Always
 2. Not remembering where things are placed: () Never () Sometimes () Always
 3. When telling a story, if interrupted, cannot resume from where left off: () never () sometimes () always

MiniMental- MMSE**score**

- | | |
|---|----------|
| 1. What is the year? Season? Date? | 5 |
| 2. Where are we: State? Country? City? Neighborhood? Floor? | 5 |
| 3. Name 3 objects: 1 second to say each: Give 1 point for each correct answer.
Then repeat them until he/she learns all 3. Count trials and record: | 3 |
| 4. Subtract 7 from 100: 93; minus 7: 86; minus 7: 79; minus 7: 72; minus 7: 65 Score the number of errors:
Alternatively spell "world" backward | 5 |
| 5. Name a pencil and watch | 3 |
| 6. Ask for the 3 objects repeated above. Give 1 point for each correct answer | 2 |
| 7. Repeat the following "No ifs, ands, or buts" | 1 |
| 8. Follow a 3-stage command:
"Take a paper in your hand, fold it in half, and put it on the floor." | 3 |
| 9. Read and obey the following: CLOSE YOUR EYES | 1 |
| 10. Write a sentence | 1 |
| 11. Copy the design shown | 1 |



RESULTS

Forty one family members of students from the FMO were interviewed; 26 (63.4%) were women. The mean age was 67.7 ± 7.2 years, with a median of 66 years (age range from 59 to 84 years). Data were not normally distributed.

Education time was categorized into three levels: 4 participants (9.7%) had < 8 years, 9 (22%) had 8 to 11 years, and 28 (68.3%) had > 11 years of education. The mean height was 1.64 ± 0.07 m, with a median of 1.63 m and values ranging from 1.52 to 1.80 m. These data were normally distributed.

The mean weight was 75 ± 13.8 kg, with a median of 77 kg and values ranging from 47 to 100 kg. These data passed the normality test.

A total of 21 participants (48.8%) had elevated cholesterol levels, 14 (34.1%) had diabetes, and 18 (43.9%) used medication for controlling systemic arterial hypertension and diabetes.

Three participants (7.3%) had a history of head trauma, with two (66.6%) experiencing associated loss of consciousness. Also, 18 (43.9%) performed light, 15 (36.6%) moderate, and 8 (19.5%) vigorous physical activities. Regarding cognitive activity, 13 (31.7%) performed light, 11 (26.8%) moderate, and 17 (41.5%) vigorous cognitive activities.

Social engagement levels were low in 15 participants (36.6%), low to moderate in 10 (24.4%), moderate to high in 11 (26.8%), and high in 5 (12.2%) participants.

Fish intake was low in 29 participants (70.7%), low to moderate in 6 (14.6%), moderate to high in 4 (9.8%), and high in 2 (4.9%). Twenty-six participants (63.4%) did not consume alcoholic beverages, 12 (29.3%) had light consumption, and 3 (7.3%) had moderate consumption. Smoking history was categorized as follows: 23 (53.0%) never smoked, 3 (7.3%) currently smoked, and 15 (36.6%) had previous smoking habits. Nine participants (30.0%) were exposed to pesticides. Affection was indispensable for 9 participants (95.1%), while sexual activity was important for 18 (44.0%). Twenty-two participants (56.0%) reported sexual desire.

Regarding forgetfulness about names and places, 34 participants (83.0%) responded “sometimes”, 5 (12.2%) “never”, and 2 (4.9%) “always”. For forgetting where they left objects, 28 participants (68.3%) responded “sometimes”, 9 (22%) “never”, and 4 (9.8%) “always”. When asked about returning

to the starting point of an interrupted story, 17 participants (41.5%) responded “sometimes”, 22 (53.7%) “never”, and 2 (4.9%) “always”.

Among participants with < 8 years of education, 3 (75.0%) had normal MMSE scores and 1 (25.0%) had altered scores. Among those with 8 to 11 years of education, 4 (44.4%) had normal scores and 5 (55.6%) had altered scores. Among those with > 11 years of education, 20 (71.4%) had normal scores and 8 (28.6%) had altered scores.

DISCUSSION

The development of actions oriented by undergraduate students and following protocols for guiding behavior and habit changes should be part of academic training from the beginning of their activities and/or before referral for specialist evaluation, which may occur even before the first signs and symptoms of dementia¹³. In the study, undergraduate students observed the interest in continuing the screening strategy in approximately 10% of the colleagues. This could be interpreted as a cultural barrier in the relationship between medical students and their family members, lack of available time for this investigation due to personal issues, or fear of disease discovery.

Some family members refused to participate because they feared the possibility of obtaining results that indicated a risk of dementia. This may represent difficulties in family interrelationships, difficulties in coping with undesirable events, or little cultural appreciation for preventive medicine.

The Alzheimer’s disease risk index associated with MMSE indicated approximately 50% of respondents with hypercholesterolemia, 70% with low fish intake, and 36.6% with low social engagement, which are associated with a higher risk for dementia.

The limitations of this investigation included the lack of association between higher education levels and low MMSE scores, possibly due to the reduced sample size.

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