



The Simplest way of assessing memory and attention function in daily clinical practice

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ABSTRACT

Attention and memory are important parts of cognition that must be routinely examined in daily practice of psychiatry and neurology. Traditionally, their assessment has been done via anamnesis where the clinician simply asks the patient whether they are suffering from any cognitive difficulties in their daily lives. The present study investigated whether there is a significant association between the patient's simple anamnestic information about cognitive impairments and the scores in related subtests of Montreal Cognitive Assessment Test (MoCA). We found that there is a statistically significant correlation between the simple anamnestic information and the scores on the related subtests of the MoCA. These results suggest that patients can be quickly and accurately evaluated in terms of their attention and memory functions by using a basic "yes/no" question.

Keywords

Attention, Memory, MoCA, Cognition, Anamnesis, Psychiatric examination

Introduction

Attention and memory are important components of cognitive functions. Attention is defined as the ability to focus and process the information in the environment [1]. In this process, it is important to ignore and filter out unrelated information and to be able to perform a task despite the presence of a distraction. Working memory is defined as holding the important information for a short period of time to solve a cognitive or behavioral task [2] both cognitive functions are prerequisites for many cognitive tasks.

Cognitive problems are seen in many different neuropsychiatric disorders. According to a comprehensive study, people with depression, anxiety, bipolar disorder, obsessive compulsive disorder, schizophrenia, borderline personality

disorder, impulse control disorder, somatoform disorders, sleep disorder and alcohol and substance abuse may also report attention impairments that also result in working memory deficits [2,3]. Moreover; dementias (Alzheimer, Parkinson disease etc) are associated with attention and memory impairments [4,5]. Due to the fact that attention and memory impairments are frequently observed in many disorders, screening these functions in large populations have crucial importance in terms of the prediction and prognosis of the related disorder [6-8].

Patients with depression also show impairments in attention, memory, executive functions and psychomotor speed. Executive functions include abilities and functions such as problem solving and planning, mental flexibility, verbal

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fluency, decision making and working memory. For instance, Harvey *et al.* [9] found that patients with depression perform poorly on the n-back task which measures working memory performance.

One of the highly used screening tools for cognitive impairment is Montreal Cognitive Assessment Test (MoCA). MoCA is a rapid screening tool with memory, visuospatial abilities, executive functions, attention-concentration-working memory, language and temporal and spatial orientation subtests [10]. Attention-concentration and working memory functions are evaluated with a sustained attention task, a serial subtraction test and digits forward and backward task. Short term memory function is evaluated with two learning trials of five words and delayed recall after about 5 minutes.

The present study investigated whether or not there is a significant association between the patient's simple anamnestic information about cognitive impairments and the scores in related subtests of MoCA. The objective was to determine the accuracy of anamnestic information in terms of attention and memory impairments in comparison to the scores on the related subtests of MoCA.

Methods

The data was collected over a three month period. All psychiatric consultation and testing were done by the same psychiatrist. All of the participants were psychiatrist's patients seeking help at his private practice in Istanbul, Turkey for a variety of complaints. Because this was a retrospective study, informed consent was not collected from the patients. However, the study was approved by the ethics board of the University of Uskudar, Istanbul, Turkey.

Procedure

First, the psychiatrist welcomed the patient into his office and started the clinical interview. During the clinical interview, the psychiatrist obtained patients' demographic information and assessed them according to the DSM-5 clinical interview. The information regarding patients' attention and memory impairments associated with current psychiatric complaints in recent months was obtained by simply asking the following questions during the clinical interview: "Within the past few months, have you had trouble remembering things?", and "within the past few months, have you had trouble

with following a conversation that is directed at you?", respectively. Then, the psychiatrist recorded patients' answers simply as "yes, I have" or as "no, I haven't" for both memory and attention questions.

Second, the psychiatrist administered the memory and attention-concentration -working memory subtests of the Montreal Cognitive Assessment [10] as adapted to Turkish by Selekler *et al.* [11].

After the clinical interview and the administration of the MoCA, the psychiatrist thanked the patients for their participation and carried on with the rest of his session.

Results

According to the DSM-5 criteria, the diagnosis of the participating patients and their percentage to the overall sample were as follows: generalized anxiety disorder (30%), major depressive disorder (20%; with single depressive episode $n=10$, two depressive episodes, $n=7$, and three depressive episodes, $n=3$), panic disorder (15%), bipolar disorder (8%, type-1, $n=6$, type-2, $n=2$), schizophrenia (8%), and others including borderline personality disorder ($n=5$), dementias ($n=2$), organic brain syndrome ($n=2$), obsessive-compulsive disorder ($n=1$), somatization disorder ($n=8$), and intellectual disability ($n=1$, totaling at 19% of the overall sample). Please refer to **Table 1** below for patient demographics.

In all tests, significance level accepted as 0.05. Statistical analyses were evaluated with IBM SPSS 19.0 version.

There were no statistically significant differences in terms of gender, age and education level between the group reporting memory impairments and the other group not reporting any memory impairments. In the memory subtest of MoCA, the group reporting memory impairment had significantly lower scores compared to the group not reporting any memory impairments ($p=0.027$, **Table 2**).

In addition, there was no statistically significant difference in terms of gender, age and education level between the group reporting attention impairments and the other group not reporting any attention impairments. In attention-concentration-working memory subtest of MoCA, the group reporting attention impairment had significantly lower scores compared to the group not reporting any attention impairments ($p=0.011$, **Table 3**).

Discussion

To our current knowledge, this was the first study to directly investigate whether there is a significant relationship between the patient's simple anamnestic information about cognitive impairments and the scores in related subtests of MoCA. Furthermore, with this study, we also aimed to add to the literature and help the clinicians save time in their clinical interviews by investigating whether the simple "yes/no" questions regarding patients' attention and memory impairments would correlate with their scores on the attention and memory subtests of the MoCA.

We found that there indeed is a significant association between the patient's simple anamnestic information regarding attention and memory impairments and the scores in related subtests of the MoCA. The consistency between patient's answers to simple yes/no questions about attention and memory problems and the scores on the related subtests of MoCA has three main implications.

First, clinicians can save precious time by not having to administer MoCA to investigate whether patients are suffering from cognitive impairments in attention and memory. The clinician may simply just ask the patient how their attention and memory has been recently and then proceed from there without having to administer, score, and analyze MoCA.

Second, because the exclusion of MoCA would provide clinicians with extra time, large groups of patients can easily and quickly be scanned through simple anamnestic questions regarding their cognitive impairments in attention and memory. This would be especially useful for clinicians working at settings where high patient volume is a serious issue such as state hospitals and local clinics.

Third, clinicians can go to their intake interview notes and use psychiatric patients' answers to the simple anamnestic yes/no questions about attention and memory to conduct research retrospectively without having to administer the MoCA. In instances where MoCA was not administered or not available, doctors and researchers alike can simply use the information provided by the patient during the clinical interview for both medical and research purposes.

This study, however, is not without limitations. First, it involved a relatively small sample of patients recruited from only one setting (author's psychiatry private practice). Further research in

Table 1: Sixty-six patients participated in this study.

Demographic Characteristic of Study Sample	
Gender	41 male (%62) / 25 female (%38)
Age	35,44 ± 13,1
Education	Elementary school N = 6 (%9) Middle school N = 2 (%3) High school N = 20 (%30) University N = 38 (%58)

Table 2: Memory.

	Normal			Impaired			p
Memory subtest of MoCA	3.24 ± 1.35	[3]	(n=29)	2.57 ± 1.21	[3]	(n=37)	0.027*
Gender	m= 18	f= 11		m= 23	f=14		0.99
Age	32.72 ± 8.79		(n=29)	36.97 ± 15.02		(n=37)	0.18
Education	3.59 ± 0.68		(n=29)	3.17 ± 1.07		(n=35)	0.076

Note: *p<.05. Education categories: 1=elementary school, 2=middle school, 3=high school, 4=university and above.

Table 3: Attention.

	Normal			Impaired			p
Attention subtest of MoCA	5.38 ± 0.90	[6]	(n=29)	4.46 ± 1.73	[5]	(n=37)	0.011*
Gender	m= 18	f= 11		m= 23	f=14		0.99
Age	36.45 ± 11.31		(n=29)	34.05 ± 13.85		(n=37)	0.45
Education	3.52 ± 0.83		(n=29)	3.23 ± 1.00		(n=35)	0.22

Note: *p<.05. Education categories: 1=elementary school, 2=middle school, 3=high school, 4=university and above.

this area could involve a larger data set collected from multiple health care settings. Second, most of the participants in this study had high socio-economic status, and the majority of them were male. It is probably safe to assume that future studies with larger, socio-economically more diverse sample with a closer male to female ratio could potentially provide better results. Third, our study used data obtained from patients with a variety of psychiatric disorders such as depression, anxiety, bipolar, and schizophrenia, which may impact attention and memory at different degrees and levels. Further research could benefit from focusing on one disorder, or even on one subtype of a disorder.

Conclusion

Nevertheless, our main finding that the general population can be evaluated in terms of attention and memory by using a basic yes/no question about recent attention and memory functions with or without the use of MoCA has important practical value and has exciting possibilities for future research in this area.

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