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SHORT COMMUNICATION

Limits on the use of the MMSE for assessment of capacity to consent for treatment

I. Álvarez Marrodán[a], B.S. Baón Pérez[b], M. Navío Acosta[c], E.J. Verdura Vizcaino[d], M.B. Cantón Álvarez[e], T. Ventura Faci[f,*]

[a] Psychiatric Service, La Rioja Health Service, 1 Viana Avenue, 26001 Logroño, La Rioja, Spain
[b] Regional Mental Health Office, Ministry of Health, 7 Carlos Trías Bertrán Square, 28020 Madrid, Spain
[c] Regional Mental Health Office, Ministry of Health, Mental Health Network Biomedical Research Centre (CIBERSAM), 7 Carlos Trías Bertrán Square, 28020 Madrid, Spain
[d] Child and Adolescent Psychiatric Service, University Hospital Gregorio Marañón, 43 Ibiza Street, 28009 Madrid, Spain
[e] Medical Director, General Hospital of Segovia, Luid Erik Claveria Street, 40002 Segovia, Castilla y Leon, Spain
[f] Psychiatric Service, University Hospital Clínico and Psychiatric and Medicine Department, University of Zaragoza, 15 San Juan Bosco Avenue, 50009 Zaragoza, Spain

Abstract This study explores to what extent patients scoring in the normal Mini-Mental Status Examination (MMSE) cognitive range have mental incapacity to consent to treatment; and analyzes the relationship between MMSE score and MacArthur Competence Assessment Tool for Treatment (MacCAT-T) scores. Eighty medical inpatients, 40 psychiatric inpatients and 40 healthy controls were assessed. The criterion of expert psychiatrists was the 'gold standard' for capacity. Seven (63.6%) psychiatric patients and two (14.3%) medical patients without capacity performed in a normal MMSE cognitive range ($p < 0.001$). Statistically significant correlations between MMSE scores and mean MacCAT-T scores were observed in both patient groups (particularly in 'understanding' and 'reasoning'). The MMSE should not be used on its own for assessment of capacity.
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* Corresponding author.
  E-mail address: tirsoven@unizar.es (T. Ventura Faci).

Introduction

One of the most important changes that have taken place in medical practice over the last few decades has been the variation in the clinical relationship, which requires doctors to respect patients' autonomy when making decisions about their health, as well as to protect patients with impaired mental capacity. Mental capacity includes the ability to understand information relevant to a decision about health and to appreciate the reasonably foreseeable consequences that could arise from expressing that decision.[1]

Recent reports show that impairment appears both in patients with medical and psychiatric conditions, highlighting that not all psychiatric patients are incapable and not all patients with medical illnesses are capable. Over half of patients with mild or moderate dementia could be incapable, as well as all those with severe dementia. There is a strong association between schizophrenia and impaired capacity, since 50% of schizophrenia inpatients in some studies have impaired capacity, as opposed to 20–25% of patients admitted for depression.[2] At least 40% of medical inpatients do not have mental capacity (related to age, cognitive impairment and delirium) although doctors tend not to recognize this.[3]

Cognitive impairment assessed by the Mini-Mental State Examination (MMSE) has been shown to be associated with mental incapacity and older age groups.[3] In our study to validate the Spanish version of the MacCAT-T (MacArthur Competence Assessment Tool for Treatment), 27.5% of psychiatric patients and 17.5% of medical patients were assessed as incapable.[4] Furthermore, we found that no capable patients, both medical and psychiatric, obtained lower scores in the MMSE than those who had capacity, the differences being statistically significant in both groups ($p < 0.001$).[4] The MacCAT-T interview is the most frequently used tool to assess mental capacity in international studies, including studies of prevalence of incapacity, and is one with high empirical support,[5] including a high degree of inter-rater reliability.[6] To our knowledge, this study explores for the first time in the international literature:

1. To what extent medical and psychiatric inpatients performing in a normal cognitive range according to the MMSE do not have capacity to consent to treatment.

2. The relationship between the scores obtained in the MMSE and the specific sections in the MacCAT-T.

Method

Scope of the study and sample

A prospective, observational, study was conducted in two different hospitals covering a health area. The sample consisted of 80 consecutive patients admitted to the general medicine unit, and 20 patients to the psychiatry unit in the Miguel Servet University Hospital in Zaragoza; and 20 consecutive patients admitted to the psychiatric unit at the 12th October Hospital in Madrid. Forty healthy controls were selected from caregivers of patients, and their medical histories were reviewed to assure they did not have medical or psychiatric conditions (20 individuals in Madrid and 20 in Zaragoza). An attempt was done to select half the controls with ages similar to the ones in medical patients, and half similar to the ages in psychiatric patients.

The study was reviewed and approved by the Aragon Research Ethics Committee (CEICA).

To be included in the study, patients had to be 18 years of age or over, have a score of 16 or more in the MMSE and give written informed consent to take part in the research. Patients in the psychiatric group had to have a diagnosis of schizophrenia, bipolar disorder, schizoaffective disorder or delusional disorder according to the DSM-IV-TR criteria. For the healthy control group the requirements were that they did not have any medical condition requiring hospital admission, or any mental disorder, together with a MMSE score of 24 or higher. Patients with severe sensory, cognitive or physical deficits that could prevent them from responding to the interview or from providing the necessary information, and/or patients who refused to take part in the study were excluded.

Instruments

The Mini-Mental Status Examination (MMSE), official Spanish version validated by our group, was used to assess cognitive performance.[7] The cut-off point was 23/24 for patients 65 years or older, and 26/27 for patients under 65 years.

The MacArthur Competence Assessment Tool for Treatment (MacCAT-T), Spanish version validated by our group,

Table 1   Description of the MacCAT-T interview: criteria and sub-criteria.

Criteria	Sub-criteria	Partial score	Overall score
Understanding	Understanding of the disorder	0–2	0–6
	Understanding of the treatment	0–2	
	Understanding of the risks and benefits	0–2	
Appreciation	Appreciation of the disorder	0–2	0–4
	Appreciation of the general objective of the treatment	0–2	
Reasoning	Consequential	0–2	0–8
	Comparative	0–2	
	Generating consequences	0–2	
	Logical consistency	0–2	
Expression of a choice	Expression of a choice	0–2	0–2

Table 2 Socio-demographic characteristics.

	Controls		Psychiatric		Medical		Medical test	df	p value
	N	%	N	%	N	%			
Mean age in years (M ± SD)	60 ± 19.3		48.2 ± 11.8		71.1 ± 16.9		26.27	2	<0.005[b]
Women	21	52	20	50	40	55	0.28	2	>0.05[c]
Level of education									
Illiterate	0	0	0	0	5	6			
Basic ed.	1	2	1	2	17	22	31.94	10	<0.001[d]
Primary ed.	12	30	10	25	31	40			
Secondary ed.	22	55	17	43	20	25			
University ed.	5	13	10	25	4	5			
Lost	0	0	2	5	2	2			
MMSE[a] (M ± SD)	29.1 ± 1.1		28.3 ± 2.3		25.8 ± 4		17.58	2	<0.001[b]
MMSE capable (M ± SD)			29.1 ± 1.3[e]		27.2 ± 2.3[f]				
MMSE incapable (M ± SD)			26.4 ± 3.3e		19.2 ± 3.9[f]				

SD: standard deviation; N: number of patients; %: percentage.
[a] Range of possible scores from 0 to 30, with higher scores indicating good cognitive performance.
[b] Snedecor's F test.
[c] Pearson's χ^2 test.
[d] Likelihood ratio.
[e] Statistically significant differences (p < 0.001) in the comparison between scores in the MMSE of capable and incapable in psychiatric patients (Student's t test = 3.70, df = 38).
[f] Statistically significant differences (p < 0.001) in the comparison between scores in the MMSE of capable and incapable in medical patients (Student's t test = 10.23, df = 78).

was used to assess and rate four skills that indicate capacity to give consent to treatment.[8] Following the standard norms, this interview was given in consecutive steps, to assess the capacity-related skills (understanding, appreciation, reasoning and expression of a choice). These four skills are divided into 10 sub-criteria, as shown in Table 1. Each sub-criterion has a scoring range of 0 (criterion not met), 1 (criterion partially met) and 2 (criterion fully met). There is no overall score and there are no cut-off points, since each skill is assessed separately.

Gold standard for capacity

The clinical judgment of the expert psychiatrists in each participating hospital was considered to be the gold standard for capacity. Both psychiatrists had been previously trained for assessing patient's capacity, taking into account the different clinical aspects covered by the MacCAT-T. The inter-rater reliability of this assessment has been previously assured in pilot studies.

Study protocol

The assessment with the MacCAT-T and the MMSE assessment was completed by different researchers, acting blind. To assure suitable conditions, a trained researcher administered the MacCAT-T to psychiatric patients between the seventh and tenth days of hospital stay, and to medical patients on the day of hospital discharge. Following the standard process, the content of the interview was adapted to the specific illness and the treatment they had to consent to. In controls, the interview was adapted to a common illness (headache, flu) and its specific treatment. Finally,

to comply with the gold standard requirements, the expert psychiatrists, blind to the administration of the MacCAT-T, determined the patients' capacity.

The statistical analysis included calculations of Pearson's Chi-square test (differences in frequency among categorical variables); Student's t-test and the Analysis of Variance (ANOVA) (differences in continuous variables); and Pearson's coefficient to analyze correlations between MMSE and MacCAT-T scores. The significance level was set at p < 0.05. The analyses were performed using the statistical package SPSS® v.15.0.

Results

Socio-demographic data on the samples are shown in Table 2. The mean age in the psychiatric group was lower than in both the medical patients and the controls, the differences being statistically significant (p < 0.005). Women were more frequent (53%) in the whole sample, and ethnicity was caucasian in all cases.

Within the group of psychiatric patients, 20 (50%) had a diagnosis of schizophrenia, 12 (30%) bipolar disorder, 6 (15%) schizoaffective disorder and 2 (5%) delusional disorder.

Among the psychiatric patients without capacity, 7 (63.6%), performed in a normal MMSE cognitive range, and the same was observed in 2 (14.3%) of the medical patients without capacity (p < 0.001). Among the patients with capacity, 26 (89.7%) of the psychiatric patients, and 58 (87.9%) of the medical patients performed in a normal MMSE cognitive range (p < 0.001).

Table 3 shows the correlations between MMSE and MacCAT-T scores in different sections. Significant correlations were observed in both psychiatric and medical patients

Table 3 Pearson correlation between the areas of the MacCAT-T interview and MMSE scores according to the groups in the study.

MMSE score	MACCAT-T areas			
	Understanding	Appreciation	Reasoning	Expression of a choice
Controls	0.452[*]	0.157	0.258	0.157
Psychiatric	0.696[*]	0.432[*]	0.516[*]	0.327[*]
Medical	0.720[*]	0.482[*]	0.673[*]	0.563[*]

[*] $p < 0.05$.

in all sections of the MacCAT-T, which were higher in the latter, and particularly in the areas of 'understanding' and 'reasoning'. On the contrary, among the controls only in the 'understanding' section the correlations were statistically significant.

Discussion

In relation to the objectives, our data show that most incapable medical patients score low in the MMSE, below the threshold cut-off point, but a considerable proportion (14.3%) have normal MMSE scores. Therefore, while this test could be useful to support the detection of mental incapacity in older groups with medical conditions, such as in the present study, the MMSE must not be used on its own for capacity assessment. The study also shows that two thirds (63.6%) of the psychiatric patients without mental capacity to consent to treatment had normal cognitive scores in the MMSE and, consequently, we also suggest that the MMSE should not be used for capacity assessment in psychiatric patients.

In relation to the second objective, we report here significant correlations between MMSE scores and all the areas in the MacCAT-T, in both the psychiatric and the medical groups, which were higher in the areas of understanding and reasoning. These data suggest that cognitive impairment affects patients' performance in the MacCAT-T, particularly in either of these areas. The lower correlations found in psychiatric patients when compared with those in medical patients might imply the effect of age, since the psychiatric patients were significantly younger. Among the controls, and compared to the patients, the correlations were lower in all the MacCAT-T areas and were statistically significant only in the understanding area. A potential explanation is that mild difficulties in cognition also exist among this group of controls (mean age 60 years), although they fullfilled the inclusion criteria.

Several previous studies have found correlations between the MMSE and the MacCAT-T.[9,10] However, in one study with medical patients the authors found correlations only with the understanding and the reasoning areas[9]; similarly, in another study with psychiatric patients the researchers found correlations only with the understanding area.[10] The between-studies differences might be related to differences in the sampling methods used.

An important strength of the study relates to the fact that the gold standard was the assessment by two experts in legal psychiatry and bioethics. Among the limitations is the difficulty to compare the medical and psychiatric groups because of the age differences. It might be argued that the inclusion in the study of only patients with MMSE scores over 16 is a limitation, but we wanted to be certain that the patients had a sufficient level of cognitive functioning to complete the protocol.

Conclusion

The MMSE should not be used on its own for the assessment of mental capacity, since a proportion of patients with normal scores, particularly among psychiatric patients, are considered to be incapable. MMSE scores are positively associated with MacCAT-T scores, particularly with the 'understanding' and 'reasoning' sections.

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Conflict of interest

The authors have no conflict of interest to declare.

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