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Sub-clinical Cognitive Impairment and Listing for Kidney Transplantation

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Supplementary Material

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Supplemental Table 1. Mean age of blacks in the three categories divided by MoCA scores.

All patients (n=74)	Severe cognitive impairment MoCA ≤ 18 (n=7)	Mild-moderate cognitive impairment MoCA 19-25 (n=44)	No cognitive impairment MoCA ≥ 26 (n=23)	P-value
50.6±13.3	60±13.6	50.7±12.1	47.7±14.5	0.09

Supplemental Table 2. Cox proportional hazards model for time to active listing using MoCA as a categorical variable.

A) Cox proportional hazards model for time to active listing with patients categorized in two groups, with and without cognitive impairment.

Covariates	β Coefficient	Hazard Ratio/ Exp (β Coefficient)	Confidence Interval	P value
No cognitive impairment	0.34	1.41	(0.98, 2.02)	0.06
Age ¹	-0.02	0.98	(0.97,0.99)	0.03*
Gender (female)	-0.45	0.63	(0.44,0.91)	0.01*
Race/ethnicity (black)	-0.81	0.44	(0.26, 0.75)	0.003**
Race/ethnicity (other)	0.07	1.06	(0.51,2.26)	0.86
Coronary artery disease	-0.5	0.6	(0.28, 1.32)	0.20
Diabetes	-0.44	0.64	(0.44, 0.95)	0.03*
Smoking	-0.63	0.53	(0.36, 0.78)	0.001**

B) Cox proportional hazards model for time to active listing with patients categorized into three groups, severe cognitive impairment, mild-moderate cognitive impairment and no cognitive impairment.

Covariates	β Coefficient	Hazard Ratio/ Exp (β Coefficient)	Confidence Interval	P value
Mild-moderate Cognitive impairment	0.40	1.49	(0.45, 4.88)	0.51
No cognitive impairment	0.72	2.05	(0.63, 6.72)	0.24
Age ¹	-0.02	0.99	(0.97, 0.1)	0.03*
Gender (female)	-0.46	0.63	(0.44, 0.91)	0.01*
Race/ethnicity (black)	-0.81	0.45	(0.26, 0.76)	0.003**
Race/ethnicity (other)	0.07	1.07	(0.51, 2.26)	0.86
Coronary artery disease	-0.51	0.6	(0.28, 1.31)	0.20

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Diabetes	-0.45	0.64	(0.43, 0.94)	0.02*
Smoking	-0.60	0.55	(0.37, 0.81)	0.002**

*, *P* values <0.05; **, *P* value <0.01; and ***, *P* value <0.001.

¹ For a 1-year increase in age.

Reference for comparison used were cognitive impairment for A and severe cognitive impairment for B, male gender, white race/ethnicity, no known coronary artery disease, no diabetes and no history of smoking. Note that a 'hazard' of being listed is a favorable outcome.

A likelihood ratio test to compare the model A with two groups and model B with three groups did not show any significant difference (*P* value = 0.49), indicating that there is no advantage in separating the patients with cognitive impairment further into moderate-severe cognitive impairment and mild cognitive impairment.

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Supplemental Table 3. Comparison of characteristics of patients with severe and mild-moderate cognitive impairment who were deemed ineligible within a month versus later.

Patient Characteristics	Severe Cognitive Impairment			Mild-moderate Cognitive Impairment		
	All ineligible patients (n=17)	Ineligible within ≤ 1 month (n=9)	Ineligible after 1 month (n=8)	All ineligible patients (n=99)	Ineligible within 1 month) (n=39)	Ineligible in after 1 month (n=60)
Age (years)	64 (11)	68 (9)	60 (11)	58 (12)	60 (12)	57 (12)
Gender						
Female	6 (35)	3 (50)	3 (5)	38 (38)	18 (47)	20 (53)
Race/ethnicity						
Whites	8 (47)	3 (38)	5 (62)	62 (63)	23 (37)	39 (63)
Blacks	6 (35)	4 (67)	2 (33)	31 (31)	14 (45)	17 (55)
Other	3 (18)	2 (67)	1 (33)	6 (6)	2 (33)	4 (67)
Coronary artery disease	3 (18)	2 (67)	1 (33)	21 (21)	10 (48)	11 (52)
Diabetes	5 (28)	2 (4)	3 (6)	54 (55)	21 (39)	33 (61)
Smoking	15 (88)	8 (53)	7 (47)	64 (65)	29 (45)	35 (55)
BMI	29 (5)	30 (5)	28 (4)	31 (6)	31 (6)	31 (6)
Time on Dialysis (years)	2.7 (2.6)	1.6 (1.7)	4.4 (3)	2.6 (3.7)	1.6 (1.6)	3.24 (4.5)

We used the non-parametric Mann-Whitney U test since the assumptions of the parametric t-test were violated for this analysis.

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Supplemental Table 4. Reasons for ineligibility for listing (before being listed active or inactive) (n=168).

Reason for ineligibility	Number of patients n=168	Percentage	MoCA <26 n=112	MoCA ≥ 26 n=56
Medical comorbidities	36	19.8	25	11
High risk for surgery	28	16.8	16	12
Inadequate financial resources or insurance	4	2.4	4	0
Documented medical non-adherence	13	7.8	7	6
Patients choice	14	8.4	9	5
Death during evaluation phase	2	1.2	2	0
Transplanted at another center	2	1.2	2	0
Ineligible on clinical review	3	1.8	2	1
Renal function improved	1	0.6	0	1
Did not meet criteria ¹	53	33.5	36	17
Unable to contact patient	3	1.8	2	1
Unknown	9	4.8	7	2

¹These criteria reflect the institutional policy for listing patients for kidney transplant. These criteria pertain to age, kidney function, surgical/medical risks, socio-psychological stability, medical adherence and financial resources.

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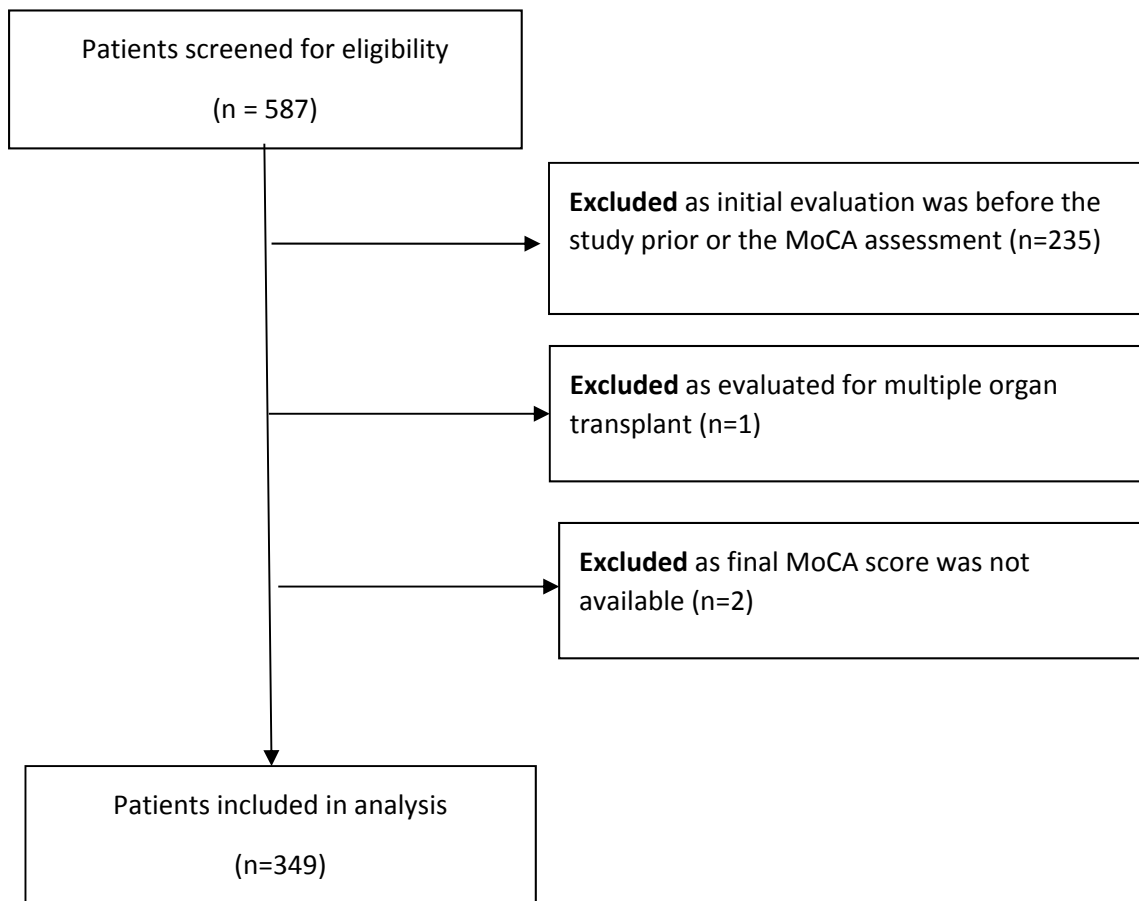
Supplemental Table 5. Reasons for delisting, i.e. declared ineligible after being listed previously. (n=14)

Reason for delisting	Number of patients n=14	Percentage	MoCA <26 n=5	MoCA ≥26 n=9
Condition deteriorated/ too sick for transplant	3	21.4	2	1
Condition improved/ transplant not needed	1	7.1	0	1
Did not meet criteria ¹	1	7.1	0	1
Patient death	3	21.4	0	3
Transferred to another center	2	14.3	1	1
Transplanted at another center	4	28.6	2	2

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Supplemental Figure 1. Flow diagram of participants included in the analysis.



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