Cognitive Impairment in Acute Coronary Syndrome: The Invisible Barrier to Secondary Prevention

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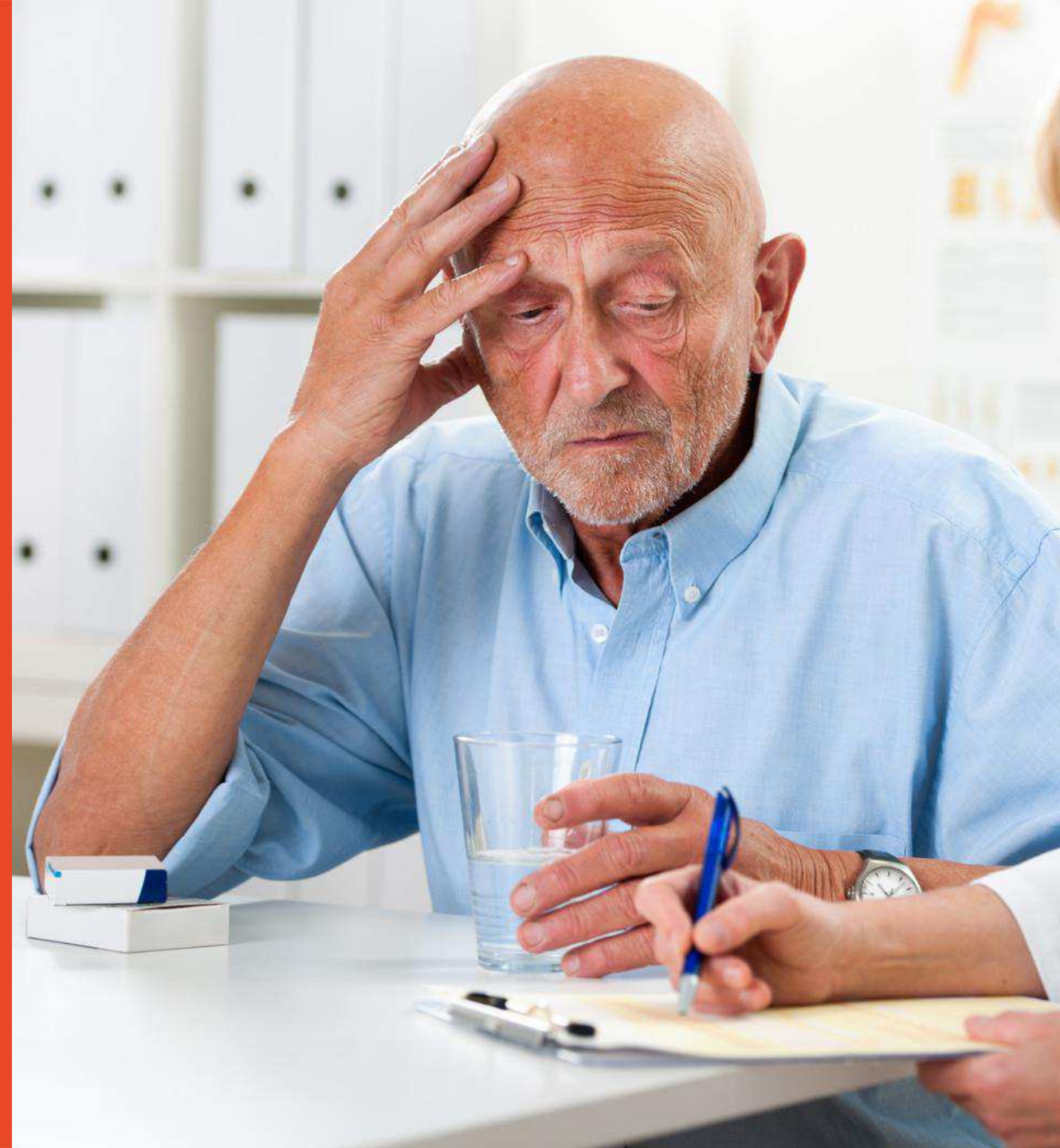BN Hons Nursing Student, The University of Sydney)

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Acute coronary syndrome (ACS) & secondary prevention

– ACS is the leading cause of death in older adults[1]

– Recurrent ACS is common[2]

– Secondary prevention is vital post ACS[3]

1. Gillis, Arslanian-Engoren, & Struble JEN 2014, 2. Briffa, Chow, Clark & Redfern Clinical Therapeutics 2013, 3. Chew et al. Heart, Lung & Circulation 2016

Cognitive impairment in ACS

- Cognitive impairment is a potential barrier to secondary prevention in ACS[1]

- In recent ACS, cognitive impairment occurs in11% - 55.6%[2]

- Cognitive impairment in ACS is associated with poorer medication adherence[3]

- CR attendance resulted in improved attention/executive cognitive function in heart failure patients[4]

1. Eggermont et al. Heart 2014 2. Sanchis et al. AHJ 2014, Gharacholou et al. AHJ 2011, 3. Alosco et al. Acta Cardiol 2014, 4. Marzec et al. Patient preference & Adherence 2015

Research questions

- What is the incidence of cognitive impairment in ACS patients attending cardiac rehabilitation (CR)?

- Which cognitive domains are impaired?

- What is the relationship between cardiac rehabilitation and cognitive function?

- What are the predictors of poor cognitive performance?

Methods

Participants recruited from two Sydney metropolitan hospitals

Inclusion

– ACS diagnosis

– Attending CR

– Sufficient English to provide consent and complete assessments

Exclusion

– No surgical intervention for recent ACS
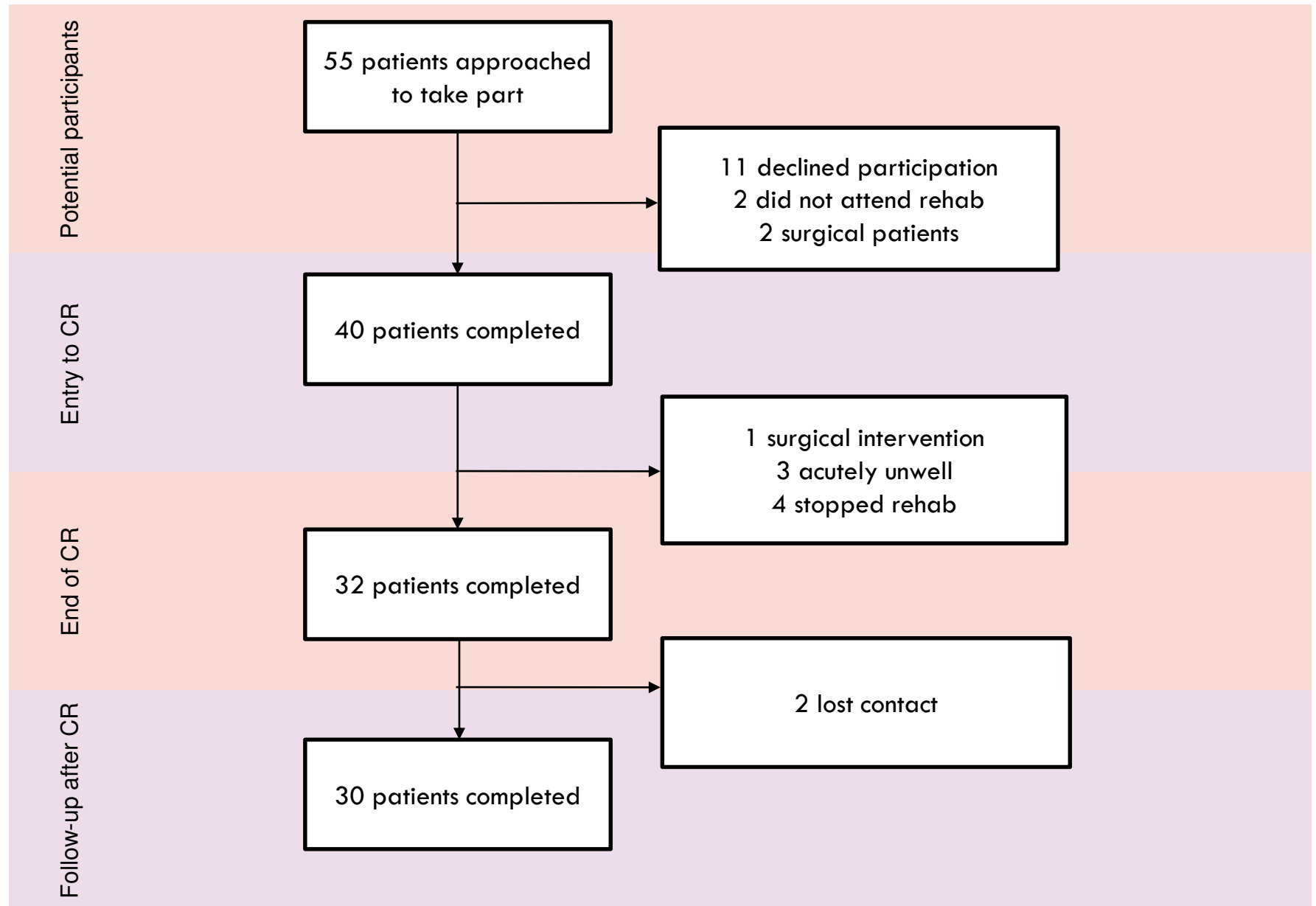
– No dementia diagnosis

Assessments: start and completion of CR and follow-up at 8 weeks post CR completion

Measures

Baseline variables	Repeated variables	Instruments	Analysis
Sociodemographic Vascular risk factors Medical History Medications Details of ACS	**Cognition**	**Rey Auditory Verbal Learning Test (RAVLT)** **Trail Making Test A (TMT-A)** **Trail Making Test B (TMT-B)** **Cogstate Identification** **Cogstate Detection**	**Z-score calculated from normative data for age and education** **Cognitive Impairment = Z-score <-1**
	Anxiety/Depression	Hospital Anxiety and Depression Scale (HADS)	Subscale scores
	Anthropometric	Height Weight Body Mass Index (BMI) Kg/m^2 Waist Circumference	Means

Recruitment

Potential participants

55 patients approached to take part

11 declined participation
2 did not attend rehab
2 surgical patients

Entry to CR

40 patients completed

1 surgical intervention
3 acutely unwell
4 stopped rehab

End of CR

32 patients completed

2 lost contact

Follow-up after CR

30 patients completed

Participant characteristics at CR entry

Characteristics	Participants (40)	
	Mean	SD
Age	66.2	8.2
Education (years attended)	16	3.7
Waist (cm)	97.2	12.9
6MWT (m)	470.4	82.9
Anxiety (HADS)	5.7	4.4
Depression (HADS)	3.4	3.3
	Number	%
Male	28	70
English spoken at home	36	90
Married/partner	27	67.5

Cognitive impairment in each domain at entry to CR
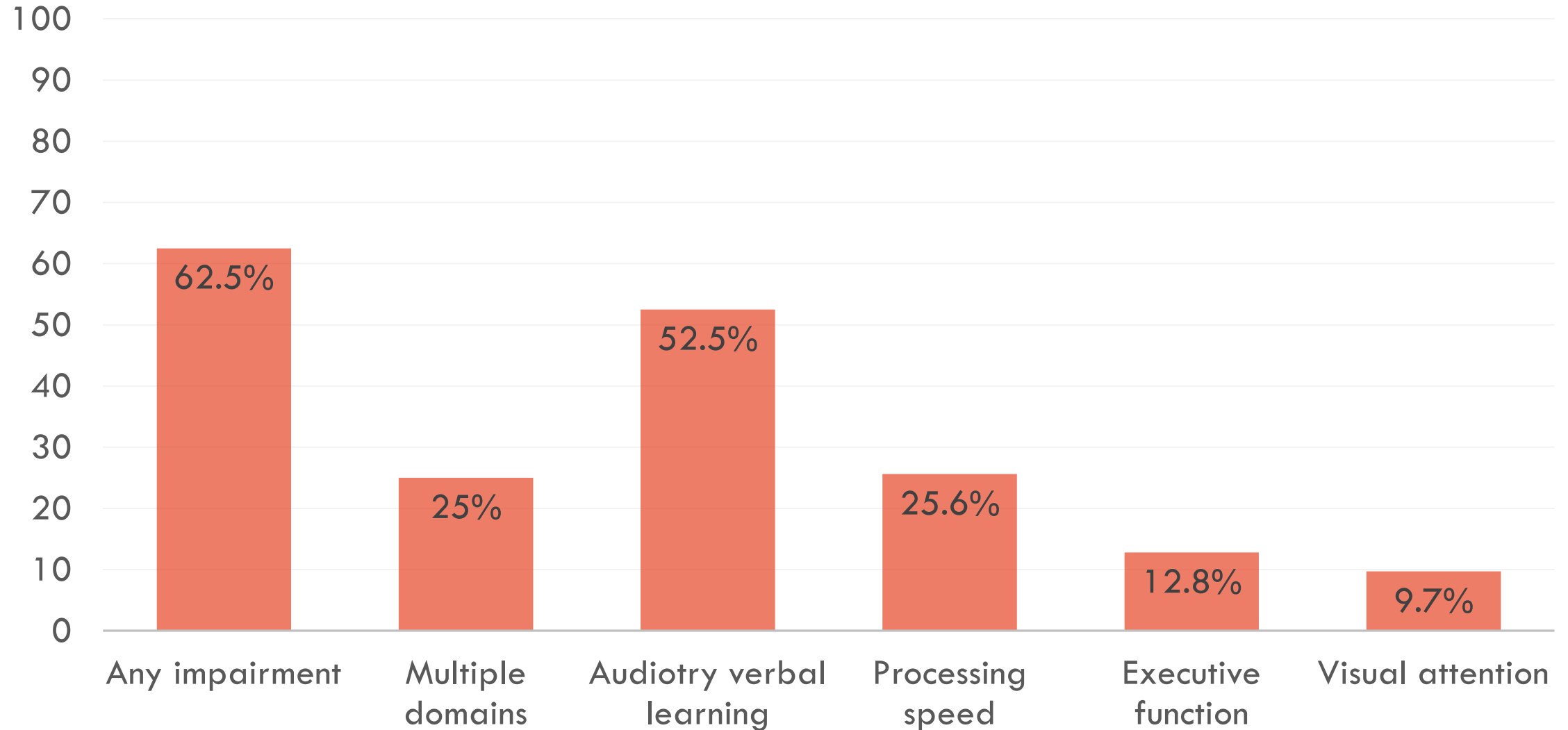
Impairment over CR time points

Mean z-scores over CR time points

Assessment	CR Entry	CR Discharge	P value	CR Follow-up	P value
Verbal learning/memory					
RAVLT List 1	-.66 (1.14)	-.91 (1.02)	.21	-.37 (1.11)	.21
RAVLT List 2	-.67 (.89)	-.52 (.93)	.36	-.16 (.78)	.00
RAVLT List 3	-.69 (.89)	-.30 (.88)	.01	-.25 (.94)	.01
Processing speed					
TMT-A	.33 (1.34)	.39 (1.14)	.66	.59 (1.04)	.21
Cogstate Identification	-.14 (1.26)	.12 (1.23)	.22	-.01 (.87)	.81
Executive function					
TMT-B	.16 (.84)	.34 (.84)	.14	.51 (.72)	.00
Visual attention					
Cogstate Detection	.03 (1.22)	.11 (1.08)	.67	-.16 (.98)	.48

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Cognitive impairment vs no impairment at entry to CR

Characteristic	Impairment (n=25)		No Impairment (n=15)		P value
	Mean	SD	Mean	SD	
Age	66.6	8.7	66	8.1	.82
Education	15.9	4.2	16.1	2.9	.86
6MWT	477	85	459.8	81.1	.54
Anxiety	6	5.2	5.3	2.9	.57
Depression	4.2	3.7	2.1	2	.02
	Number	%	Number	%	
Male	18	72	10	66.7	.74
English spoken at home	21	84	15	100	.28
Married or Partner	16	64	11	73.3	.73
1 vascular risk factor	10	40	7	46.7	.68
> 1 vascular risk factor	13	52	8	53.3	.94

Cognitive impairment vs no impairment at discharge from CR

Characteristic	Impairment (n=21)		No Impairment (n=11)		P value
	Mean	SD	Mean	SD	
Age	66.7	8.2	67.5	8.6	.83
Education	15.7	4.3	15.7	2.7	.99
6MWT	530.4	100.3	489.3	89.4	.27
Anxiety	6.1	5.4	3.8	2.9	.12
Depression	3.6	3.9	1.45	1.5	.03
	Number	%	Number	%	
Male	14	66.7	9	81.8	.44
English spoken at home	17	81	11	100	.27
Married or partner	15	68.2	7	31.8	.70
1 vascular risk factor	8	61.5	5	38.5	.72
> 1 vascular risk factor	12	57.1	5	45.5	.53

Limitations

- Small sample

- Loss to follow-up

- English proficiency required
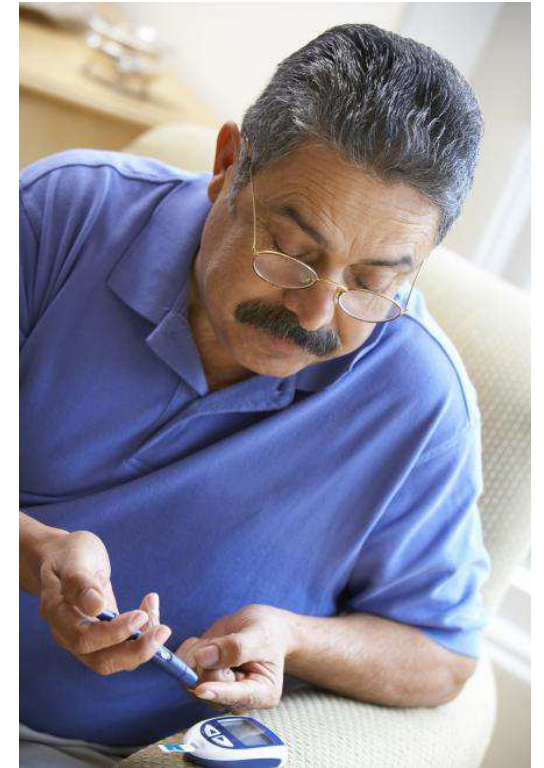
Conclusion

– Cognitive impairment in at least one domain was found in 25 of our 40 participants

– Performance was weakest in auditory verbal learning/memory

– Auditory verbal learning improved from CR entry to CR Discharge

– Depression may have an important impact on cognitive status

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