

The Development and Validation of the Clinical Dementia Rating Direct scale (CDR-D)

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KEY TAKE AWAY: The Clinical Dementia Rating Direct scale (CDR-D), without informant, is a feasible tool in staging cognitive impairment

INTRODUCTION

- Dementia is estimated to affect 57 million individuals worldwide.¹
- Clinical Dementia Rating scale (CDR), the gold-standard in staging dementia, requires an informant (e.g. spouse, caregiver) which can be challenging.²
- Aim: Develop and validate the Clinical Dementia Rating Direct scale (CDR-D), without informant.

METHODS

- CDR-D development: Replaced the information obtained from informants with questions asked directly to participants.
- N=55 participants with MoCA scores 17-25 and Lawton-Brody IADL 14-23 from the Gait and Brain Cohort Study were administered both versions in randomized order.
- Correlation, weighted kappa agreement and concordance rate between the CDR and CDR-D were calculated.

CONCLUSIONS

- Use in MCI detection: CDR-D-GS showed excellent accuracy in MCI.
- Pre-dementia staging tool: CDR-D might be sensitive to early cognitive changes.
- Advantages of the CDR-D: novelty, simplicity, less time consuming, and no informant required.

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REFERENCES

1. World Health Organization. (2025, March). *Key facts*. Dementia. <https://www.who.int/news-room/fact-sheets/detail/dementia>

2. Knight Alzheimer Disease Research Center. (2025). *CDR Dementia Staging Instrument*. WashU Medicine. <https://knightadrc.wustl.edu/professionals-clinicians/cdr-dementia-staging-instrument/>

RESULTS

Table 1. Participant, CDR and CDR-D characteristics

Characteristic	Mean ± SD or n (%) or minutes
Age (years)	77.40 ± 6.94
Sex/gender	
Female/Woman	28 (51)
Male/Man	27 (49)
MoCA	22.87 ± 2.06
Lawton-Brody IADL	21.98 ± 2.31
Clinical diagnosis	
Cognitively unimpaired (CU)	9 (16)
Subjective cognitive impairment (SCI)	6 (11)
Mild cognitive impairment (MCI)	38 (69)
Dementia	2 (3)
Informant relationship	
Spouse	34 (62)
Other	21 (38)
Time	
CDR	44.29
CDR-D	32.92

Table 2. CDR-D Global score classification with clinical diagnosis

n (%)	CDR-D Global score			
Clinical diagnosis	0	0.5	1	Total
CU	4 (44.44)	5 (55.56)	0 (0)	9 (100)
SCI	0 (0)	6 (100)	0 (0)	6 (100)
MCI	3 (7.89)	33 (86.84)	2 (5.26)	38 (100)
Dementia	0 (0)	2 (100)	0 (0)	2 (100)
Total	7 (12.73)	46 (83.64)	2 (3.64)	55 (100)

The CDR-D showed more impairment with GS 0.5 (SB 0.5-4) in 55.56% of participants CU and 100% with SCI, when the CDR classified majority of these participants as GS 0 (SB 0).

Table 3. Concordance rate, correlation and agreement between the CDR and CDR-D scores

	Global CDR and CDR-D	Sum of boxes CDR and CDR-D
Concordance rate (%)	70.91	18.18
Correlation (95% CI)	0.275 (0.013-0.502)	0.636 (0.448-0.770)
Agreement (95% CI)	0.261 (0.028-0.493)	0.582 (0.394-0.769)

The CDR-D-SB showed more impairment in 60% of participants.

Low correlation and agreement from the GS were driven by the high prevalence of the same score.

Table 4. Descriptive statistics of the CDR and CDR-D scores

Variable	N	Min	Max	Range	Mean	SD	Variance
Global CDR	55	0	1	1	0.382	0.235	0.055
Global CDR-D	55	0	1	1	0.455	0.199	0.040
Sum of boxes CDR	55	0	7	7	1.536	1.548	2.397
Sum of boxes CDR-D	55	0	5.5	5.5	2.118	1.351	1.824

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