

Clinical Spectrum and Outcome in Early and Late Onset Dementia: Insights from the AIIMS-Delhi study Cohort of Early/late oNset Dementia (ASCEND)

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Patients with early onset cognitive impairment perform poorer and decline faster, with differential involvement of cognitive, functional and risk association domains

Introduction

- Comparative longitudinal studies examining the clinical characteristics and cognitive/functional outcome of early-onset dementia/mild cognitive impairment (EOCI, onset before 65 years)¹ and late – onset dementia/mild cognitive impairment (LOCI) are sparse.
- Understanding these differential trajectories is essential to designing age-specific interventions².
- This study evaluates the clinical spectrum and outcomes of EOCI and LOCI groups (ASCEND cohort) within the south- Asian Context.

Methods

PARTICIPANT RECRUITMENT
Participants with cognitive complaints were recruited between Aug 2021 to Dec 2025 from the OPD and IPD neurology, tertiary care center in India.

SCREENING & ELIGIBILITY
Screened for inclusion and exclusion criteria

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Excluded
(Not meeting inclusion criteria)

INFORMED CONSENT
Written informed consent obtained from participants/ legally authorized representatives

BASELINE ASSESSMENT

- Demographic and clinical details.
- Standard clinical diagnostic criteria used to define: Dementia and MCI due to AD
- Non-AD neurodegenerative syndrome
- Cognitive function measured using ACE III
- Severity rated using CDR scale

GROUP CLASSIFICATION
Participants categorized based on age at onset

EOCI GROUP
(onset <65 years)

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LOCI GROUP
(Onset ≥ 65 years)

FOLLOW UP ASSESSMENT
Participants followed up at regular intervals, reassessment using

- ACE-III (Cognitive function)
- CDR scale (Severity/ functional status)

COMPARATIVE ANALYSIS
Comparative analyses conducted between EOCI and LOCI groups to assess:

- Differences in spectrum
- Changes in cognitive and functional measures on follow up

Results

Table 1: Baseline cohort (sociodemographic) characteristics					Table 3: Cognitive and functional change at one year follow up						
Variable	Total Cohort (n = 452)	EOCI (n = 302)	LOCI (n = 150)	p value	Cognitive tests	EOCI			LOCI		
Age (years), Mean ± SD	63.0 ± 10.1	57.7 ± 7.5	73.4 ± 5.4	<0.001		Baseline	Follow-up	p value	Baseline	Follow-up	p value
Females, n (%)	167 (37.0)	117 (38.7)	50 (33.3)	0.3	ACE-III	n=74	n=74	<0.0005	n=28	n=28	0.8
Age of Onset (years), Median (Q1, Q3)	60 (53, 67)	56(50,60)	70.3 (67, 75)	<0.001		55 (23, 75)	41 (12, 72)		64 (28, 78)	62 (26, 81)	
Duration of Illness (years), Median (Q1, Q3)	3 (2,5)	3 (2,5)	2.7 (1.5, 3)	<0.001	CDR SOB	n=114	n=114	<0.001	n=43	n=43	0.3
Education (years), Median (Q1, Q3)	10 (5,15)	10 (5,15)	10 (4,15)	0.7		8 (3, 12)	10 (3.5, 16)		6.5(2.5, 12)	7 (1.5, 16)	

Table 2: Baseline cognitive and functional characteristics				
Variable	Total Cohort	EOCI	LOCI	p value
Basic ADLs	n = 430	n = 246	n = 184	0.5
	Affected	216 (50.7)	123 (51.0)	
Instrumental ADLs	n = 433	n = 251	n = 182	0.6
	Affected	340 (79.2)	197 (80.1)	
Digit Span Forward	n=380	n=212	n=163	0.047
Median (IQR)	4 (3,5)	4 (3,5)	4 (3,5)	
Digit Span Backward	n=376	n=210	n=161	0.003
Median (IQR)	2 (0,3)	1 (0,3)	2 (0, 3)	
ACE III Total	n=364	n=212	n=149	0.13
Median (IQR)	48 (23, 72)	43 (20,73)	52 (29, 71)	
ACE III Attention	n=354	n=205	n=145	0.3
Median (IQR)	10 (5, 15)	9 (5, 15)	11 (6, 15)	
ACE III Language	n = 352	n = 209	n = 143	0.04
Median (IQR)	18 (9, 23)	17 (7,23)	19 (13, 23)	
ACE III Memory	n = 353	n = 209	n = 144	0.2
Median (IQR)	8 (3, 16)	8 (2, 15)	8 (4, 16)	
ACE III Fluency	n = 353	n = 209	n = 144	0.06
Median (IQR)	5 (2,7)	5 (2, 7)	5 (2, 8)	
ACE III Visuospatial	n = 352	n = 209	n = 143	0.02
Median (IQR)	7 (3, 12)	6 (2, 12)	8 (4, 12)	
NPI – Severity	n = 390	n = 232	n = 158	0.92
Median (IQR)	5 (2,8)	5 (2, 8)	5 (2,9)	
NPI – Distress	n = 390	n = 232	n = 158	0.9
Median (IQR)	5 (2, 9)	5 (2, 8)	5 (2, 10)	
IADL-E CDI	n = 425	n = 245	n = 180	0.6
Median (IQR)	50 (17, 85)	50 (17, 86)	50 (15, 82)	
Barthel Index	n = 435	n = 250	n = 185	0.2
Median (IQR)	90 (60, 100)	90 (60, 100)	90 (60, 100)	
CDR Global	n = 401	n = 235	n = 166	0.2
Median (IQR)	1 (0.5, 2)	1 (0.5, 2)	1 (0.5, 2)	
CDR – Sum of Boxes	n = 414	n = 240	n = 174	0.67
Median (IQR)	8 (3,12)	8 (3, 12.5)	7.5 (3, 12)	
CDR –Supplemental SOB	n = 367	n = 221	n = 146	0.03
Median (IQR)	2 (0.5, 3)	2 (1, 3)	1.5 (0.5, 3)	
PHQ – 9	n = 413	n = 237	n = 176	0.9
Median (IQR)	2 (0, 6)	2 (0, 6)	2 (0, 6)	
PSQI	n = 399	n = 232	n = 167	0.1
Median (IQR)	4 (2, 8)	4 (2, 7)	5 (2, 9)	
IQCODE	n = 410	n = 237	n = 173	0.6
Median (IQR)	3.87 (3.38, 4.50)	3.88 (3.38, 4.46)	3.80 (3.38, 4.50)	

Conclusions

- Patients with EOCI exhibited poorer cognitive performance (particularly executive, language and visuospatial domains), also corroborated by difference in CDR-Supplemental SOB scores.
- EOCI was associated with more rapid cognitive and functional decline during follow-up.
- Risk factor profiles differed between the two groups [LOCI vs EOCI: Hypertension (56.5% vs 37.5%, p<0.001), diabetes (32.3% vs 24%, p=0.05), leukoariorosis on MRI brain (68.6% vs 52.4%, p=0.02), and hearing loss (20.4% vs 8.5%, p<0.001)]
- Age specific interventions are needed to optimize patient care.

References

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