

Physical activity domains and Cognition in Elderly: Evidence from a Rural Cohort (SMRUTHI-India)



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Higher levels of vigorous activity and travel-related physical activity are likely protective factors for cognitive health, while a lower CAIDE score is associated with better cognitive performance

INTRODUCTION

- SMRUTHI-INDIA is a Cohort study examining risk and protective factors in preventing dementia .
- Physical activity is increasingly recognized as an important modifiable lifestyle factor influencing cognitive health. However, the cognitive associations of different activity domains remain less clear.
- From April 2024 - 10th December 2025 we conducted assessments across four rural zones of India (Rajasthan 998 , Himachal Pradesh 500, Karnataka 992 and Tripura 510) focusing on identifying and following individuals at risk of dementia.
- This study aims to examine the association between physical activity (GPAQ), lifestyle factors, and cognitive performance (ACE-III) in the rural SMRUTHI INDIA cohort.

METHODS

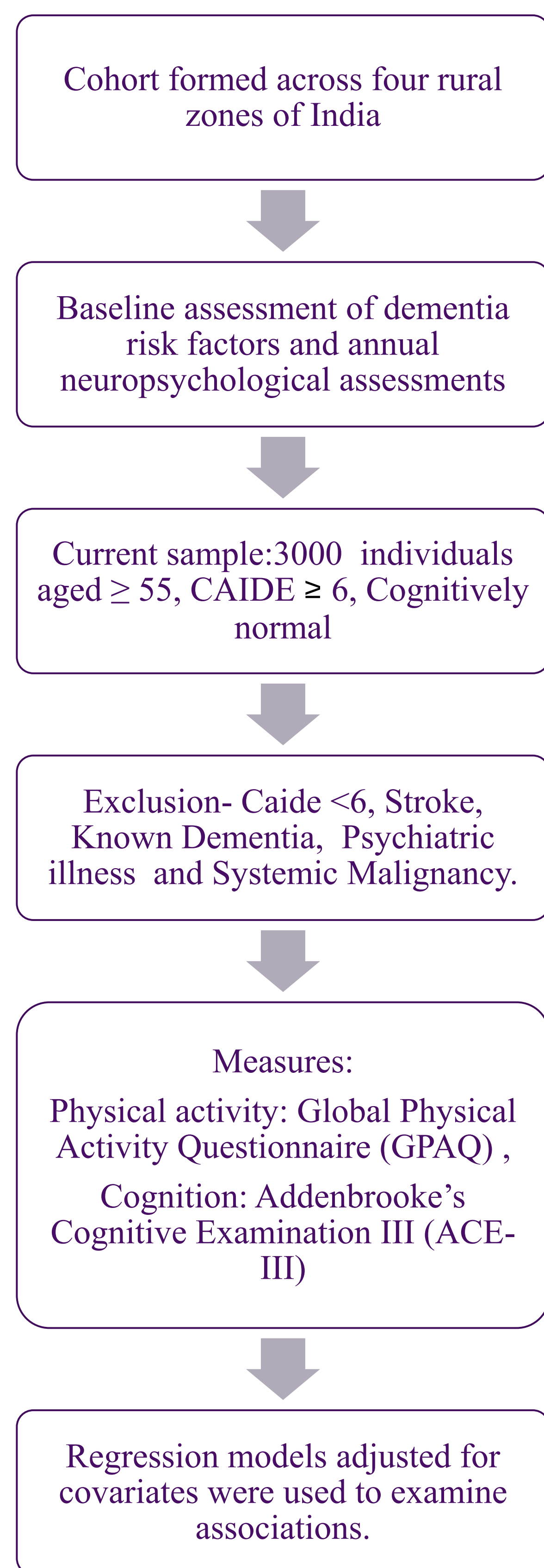


Figure 1. Flow chart showing study sample size

RESULTS

Table 1: Baseline characteristics of study population

Baseline Characteristics	
Age (in years)	66.1 ± 7.7
Mean ± SD	
Gender, n(%)	
Women	1886 (62.9)
Education, n(%)	
Illiterate (no formal education)	2140 (71.3)
Low literate (<8 years of education)	423 (14.1)
Literate (>8 years of education)	437 (14.6)
Occupation Classification, n(%)	
Unskilled	1955 (78.8)
Skilled	525 (21.2)
GPAQ Total Activity (mins/week)	
Median (IQR)	390 (175, 840)
GPAQ Total Activity METS, n(%)	
< 600	1266 (42.3)
≥ 600	1734 (57.8)
Median (IQR)	920 (850, 970)
GPAQ Time Spent in Sedentary Activity (mins/day)	
Median (IQR)	920 (850, 970)
ACE-III Total Score Illiterate and Low literate	
Median (IQR)	86 (80, 91)
ACE-III Total Score Literate	
Median (IQR)	88 (84, 90)

Table 2: Showing standardized regression coefficients for associations between GPAQ physical activity components and ACE-III cognitive domains, adjusted for CAIDE score.

GPAQ components	ACE III components	β Coefficient	p-value	Association
Vigorous work activity (min/week)	ACE-III total score	0.0060114	<0.001	Positive
Travel-related physical activity (min/week)	ACE-III total score	0.0072441	<0.001	Positive
Vigorous/Travel-activity (min/week)	Memory	0.0027188	<0.001	Positive
Vigorous/Travel-activity (min/week)	Visuospatial ability	0.0023688	<0.001	Positive
Vigorous/Travel-activity (min/week)	Language	0.0007377	0.020	Positive
Vigorous/Travel-activity (min/week)	Fluency	0.0006633	0.039	Positive
Vigorous/Travel-activity (min/week)	Free delayed recall	0.0010499	<0.001	Positive
Moderate work-activity (min/week)	Memory	-0.0004863	0.020	Negative
Moderate work-activity (min/week)	Delayed recall	-0.0003323	<0.001	Negative
Sedentary activity (min/day)	Memory, Language, Visuospatial	0.0050507	0.023	Modest positive*
Higher CAIDE dementia risk score	ACE-III total score & Memory	-0.125	<0.001	Negative

CONCLUSIONS

- Greater engagement in vigorous and travel-related physical activity may protect cognitive health, whereas lower CAIDE scores are associated with improved cognitive performance.

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