

# Neuropsychological assessment in culturally and linguistically diverse populations with cognitive impairment: 10 years of experience at the Sacco Hospital.

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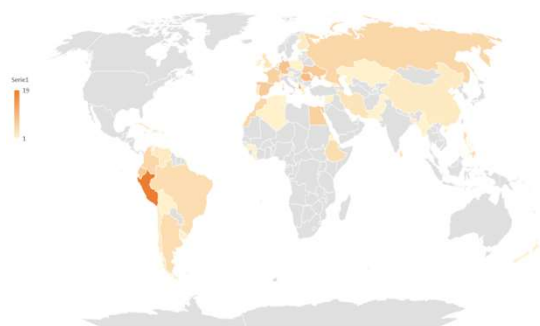
**Introduction:** A recent Italian survey (Canevelli, 2022) highlighted that an increasing number of migrants are being referred to Italian Centers for Cognitive Disorders and Dementia (CCDD), notwithstanding an unprepared system.

**Objective:** A retrospective analysis was conducted to:

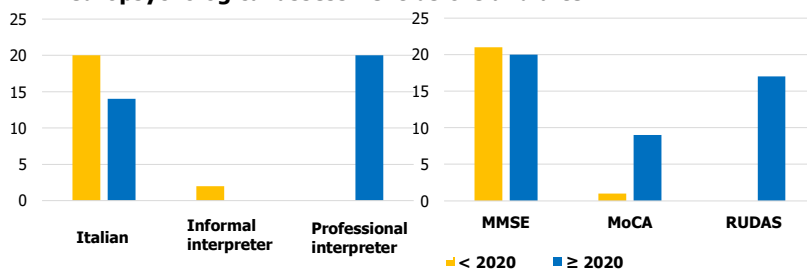
1. investigate the numerosity and demographic characteristics of culturally and linguistically diverse (CALD) patients evaluated at Sacco Hospital in the last 10 years;
2. observe the neuropsychological assessment modality adopted, with a focus on comparison before and after the start of the ImmiDem project (2020).

**Results:** Between January 2013 and November 2023, 144 CALD patients were evaluated at Sacco Hospital CCDD (age  $64.8 \pm 13.7$  years; female 67.4%; education  $11.5 \pm 5.3$  years), most of whom from upper-middle income nations. The most frequent primary languages were Spanish (47 patients), Albanian and Arabic. A comprehensive neuropsychological evaluation was carried out in 56 patients (38.9%).

Countries of origin of CALD subjects



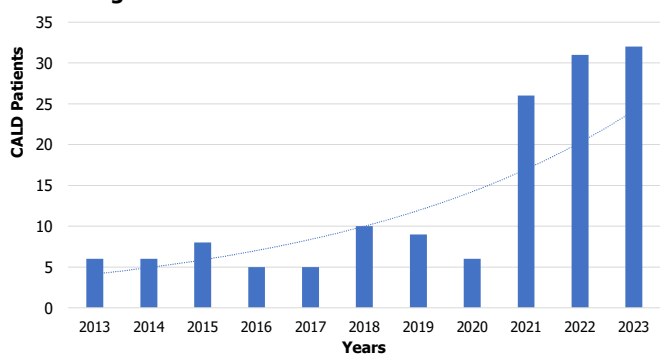
Neuropsychological assessment before and after ImmiDEM



Cross-cultural Neuropsychological Test Battery (Nielsen, 2018)

Test	Description	Score
<b>Global cognitive function</b>		
Rowland Universal Dementia Assessment Scale (RUDAS)	Brief cognitive screening test containing six items groups that assess body orientation, praxis, drawing, judgment, memory and language	0-30
Memory Recall of Pictures Test (RPT)	Learn and remember 10 colored pictures on three learning trials; the first trial consists of incidental recall of the pictures. Free recall and recognition of target pictures after a 10-minute interference interval.	0-10
Enhanced Cued Recall (ECR)	Sixteen colored pictures must be recalled shortly after presentation, and a semantic cue is given for those pictures that are not freely recalled; the score is the total score of free and cued recall.	0-16
Recall of Semi-Complex Figure	Copy of a semi-complex figure and, without forewarning, recall after a 3-minute interference interval.	0-22
<b>Language</b>		
Picture Naming	Naming of the 10 colored pictures in the first learning trial on the RPT.	0-10
Category Verbal Fluency	Consists of two components: animals and supermarket items; 1 minute for each.	Words
<b>Executive functions</b>		
Color Trails Test (CTT)	Has two components: CTT 1 requires participants to connect numbered circles in ascending order; CTT 2 requires participants to switch between pink and yellow colors while connecting circles in an ascending sequence (i.e. pink 1, yellow 2, pink 3, yellow 4 and so on).	Time
Five Digit Test (FDT)	FDT 1 requires participants to name a series of 50 digits; FDT 2 to count a series of 50 asterisks; FDT 3 to count a series of 50 digits in which the numeric value of the digits is incongruent with the number of digits.	Time in
Serial Threes	Participants are required to count down from twenty by threes. 0-6 Visuospatial functions Copying of Simple Figures Copy of two simple figures; a Greek cross and a fourpointed star.	0-6
<b>Visuospatial functions</b>		
Copying of Simple Figures	Copy of two simple figures; a Greek cross and a fourpointed star	0-6
Copying of Semi-Complex Figure	Copy of a semi-complex figure; the figure used in Recall of semi-complex figure.	0-22
Clock Drawing Test (CDT)	Insert clock face numbers and draw the hands to indicate the time 10 after 11 in a pre-drawn circle.	0-5
Clock Reading Test (CRT)	Read the time on a series of 12 different clocks without numbers.	0-12

Changes in attendance over time



**Discussion:** An increasing number of CALD patients has been taken in charge in the last 4 years in our CCDD. During the same period, the paradigm underlying our neuropsychological assessment changed with:

- 1) initiation of collaborations with cultural mediators even with patients showing a sufficient Italian fluency;
- 2) use of cross-cultural tests such as Rowland Universal Dementia Assessment Scale and Cross-Cultural Neuropsychological Test Battery, or tests adapted to the patient's culture.

**References**

1. Canevelli M, Cova I, Remoli et al. A nationwide survey of Italian Centers for Cognitive Disorders and Dementia on the provision of care for international migrants. Eur J Neurol. 2022 Jul;29(7):1892-1902. doi: 10.1111/ene.15297.  
 2. Nielsen TR, Segers K, Vanderaspolden V, Beinhoff U, Mintho L, Pissioti A, Bekkhus-Wetterberg P, Bjørkløf GH, Tsolaki M, Gkioka M, Waldemar G. Validation of a European Cross-Cultural Neuropsychological Test Battery (CNTB) for evaluation of dementia. Int J Geriatr Psychiatry. 2019 Jan;34(1):144-152. doi: 10.1002/gps.5002. Epub 2018 Oct 17. PMID: 30246268.

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