



Chitwan Valley Family Study - Study on Cognition and Aging in Nepal (CVFS-SCAN)

**International Labor Migration, Armed Conflict and
Dementia Risk in Nepal: A Population Study
R01-AG074079 (Fogarty International Center and National Institute of Aging)**

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Outline

- I. Motivation/research gaps
- II. Brief introduction of CVFS-SCAN
- III. Harmonized Cognitive Assessment Protocol (HCAP) translation and adoption process for the Nepali population
- IV. Contribution to cross-national harmonization of cognitive aging data within an international cognitive aging network
- V. Q & A





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Motivation

- Population aging
- Projected ADRD prevalence
- Study Setting



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Motivation

- **Population Aging**
 - Population aging has become a global demographic trend, with a particularly pronounced impact in low- and middle-income countries compared to high-income countries in recent years.
 - This shift is marked by a notable increase in the proportion of older adult in LIMC settings.





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Motivation

- **Projected ADRD prevalence**
 - Increase in dementia cases globally; 57 million cases in 2019, and estimated to reach approximately 153 million cases in 2050
 - Expected percentage change in dementia cases from 2019- 2050 is more than double for the lowest-income countries (330%) compared to the highest-income countries (140%).





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Motivation

- **Setting**
 - Increase in older adults
 - Expected rise in ADRD
 - Little available information
 - Research infrastructure and capacity





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CVFS- SCAN

A population based longitudinal study of international labor migration, armed conflict and Alzheimer's Disease and Related Dementias (ADRD) in Western Chitwan Valley of Nepal.

Goals:

- I. Build capacity to conduct the systematic population research in Alzheimer disease and related dementias (ADRD)
- II. Develop and launch a new, longitudinal study of ADRD and other aging-related changes in health in older adults in Nepal.

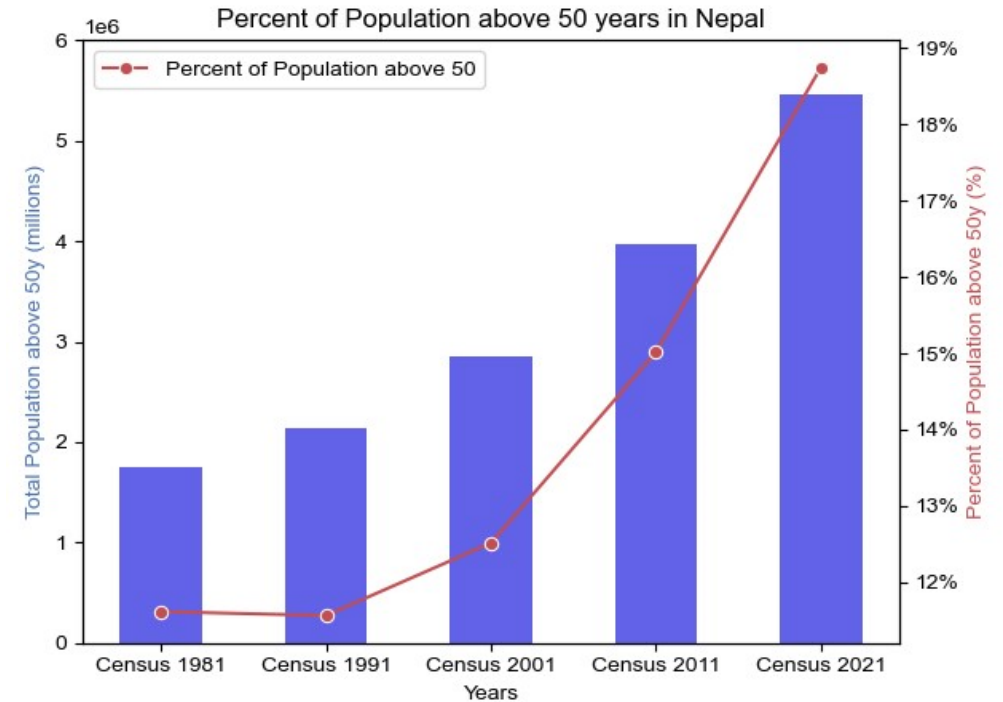




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Study Setting: Western Chitwan Valley of Nepal

- Rapidly aging population.
- Life expectancy at birth has increased from 54 years in 1991 to 71 years in 2021.
- Increase in proportion of older adult in total population





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Study Setting

- Rapid rise in ADRD:
 - The estimated number of people with dementia in Nepal is 78,000 in 2015, and this number is expected to reach 134,000 by 2030 and 285,000 by 2050.
- Exposure to important risk factors of ADRD:
 - Decade long armed conflict
 - Natural disasters – Earthquake, 2015, 2023
 - Perpetuating of poverty
 - High rate of international labour out migration for low paying jobs under harsh work environment

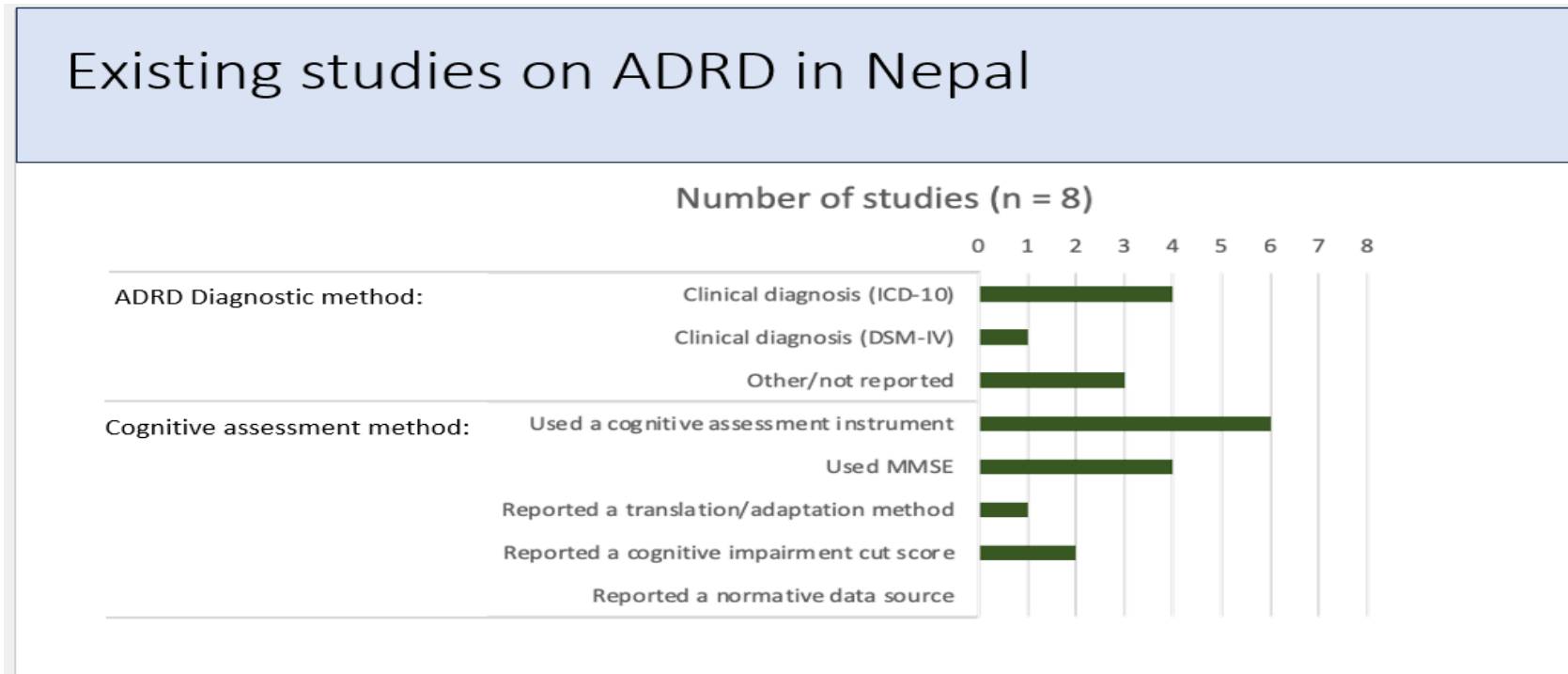




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Study Setting

- Little or no reliable information on determinants, diagnosis, treatment, and impact of ADRD.





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Study Setting

- No existing population-based data on the cognitive health of older adults in Nepal
- Little or no Nepal specific validated research tools and infrastructure for neuropsychological assess of ADRD
- Little or no research capacity for neuropsychological assessments of ADRD
- As a result, the prevalence of mild cognitive impairment and dementia in community-dwelling older adults in Nepal remains largely unknown.





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Specific Objectives

1. Build research capacity to conduct studies of ADRD and other aging-related changes in health. Specific capacity-building activities focus on:
 - The design and administration of culturally appropriate cognitive assessments to identify ADRD in the general population
 - Building expertise in statistical methods for the analysis of longitudinal data from complex surveys





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Specific Objectives

2. Design and conduct a population-based study of ADRD and other age-associated conditions of 4,000 adults aged ≥ 50 years and complete a baseline interview and one follow-up interview two years later.





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Specific Objectives

3. Estimate the prevalence and incidence of ADRD and its primary clinical feature: cognitive impairment; test associations between primary risk factors and ADRD/cognitive impairment and other relevant outcomes



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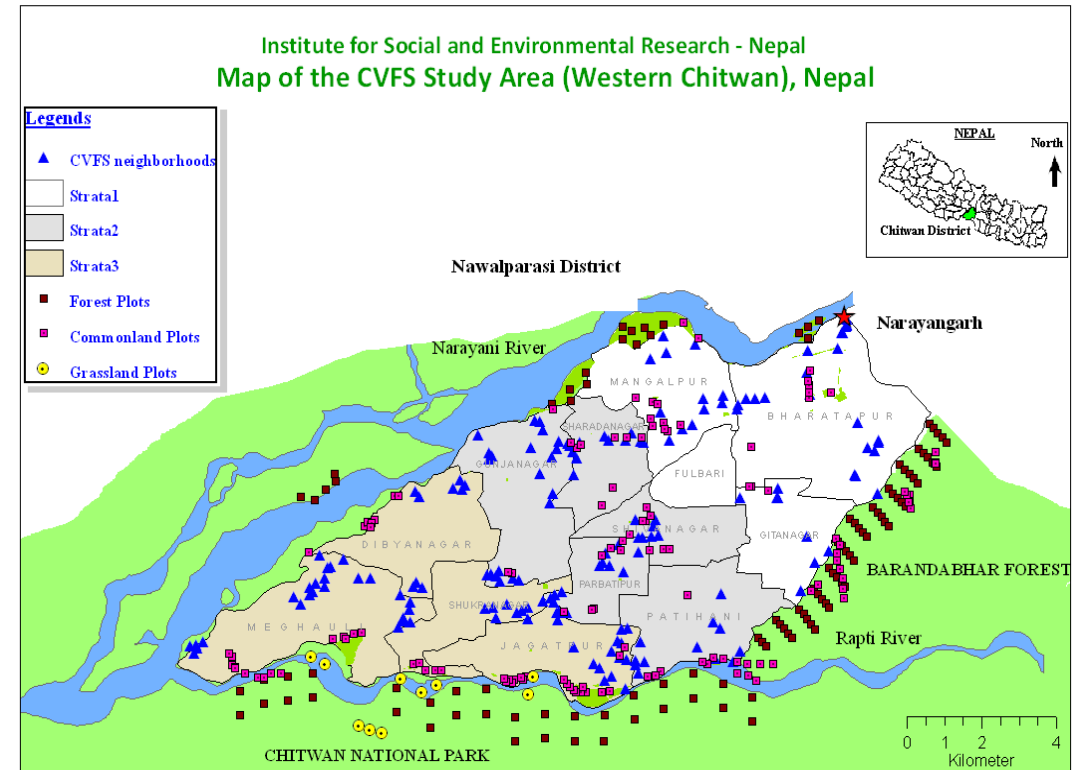
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Research Methods

- CVFS – SCAN leverage on the CVFS Study design: a multilevel, 28-year panel study of community, households, couples, and individuals.
 - Study population: surviving cohort members of the Chitwan Valley Family Study (CVFS) aged \geq 50 years old
- Expected sample size: \sim 4,000





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Research Methods:

Data collection

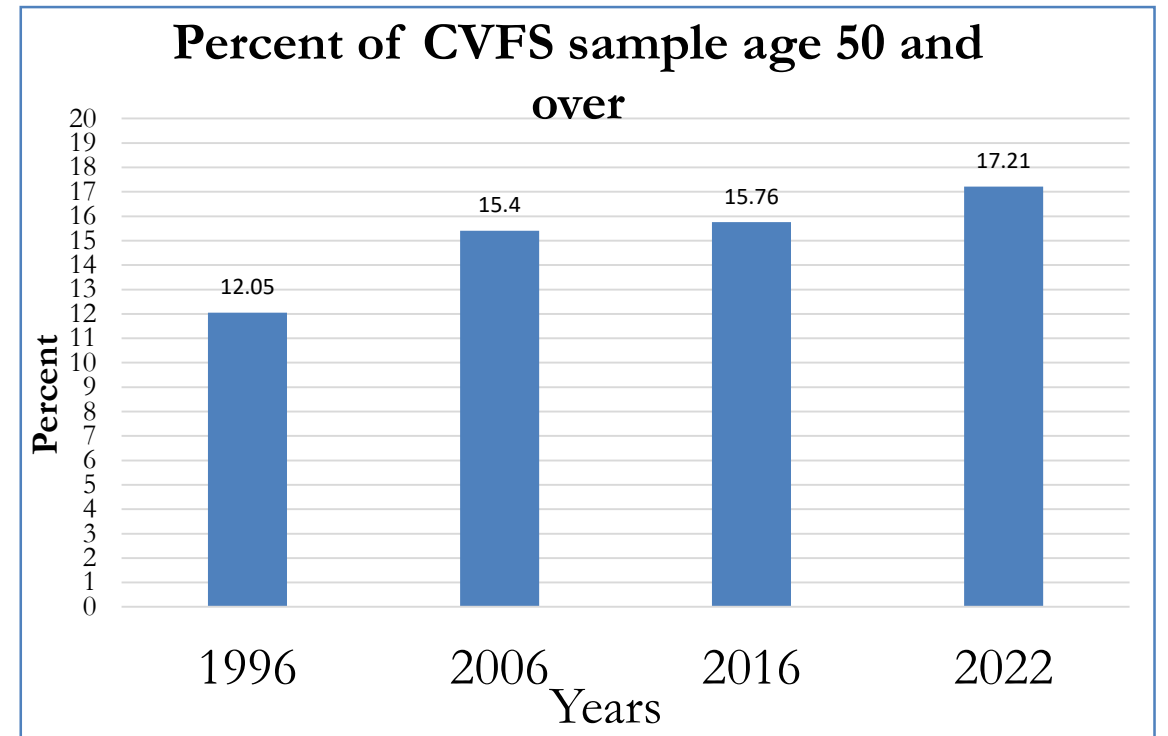
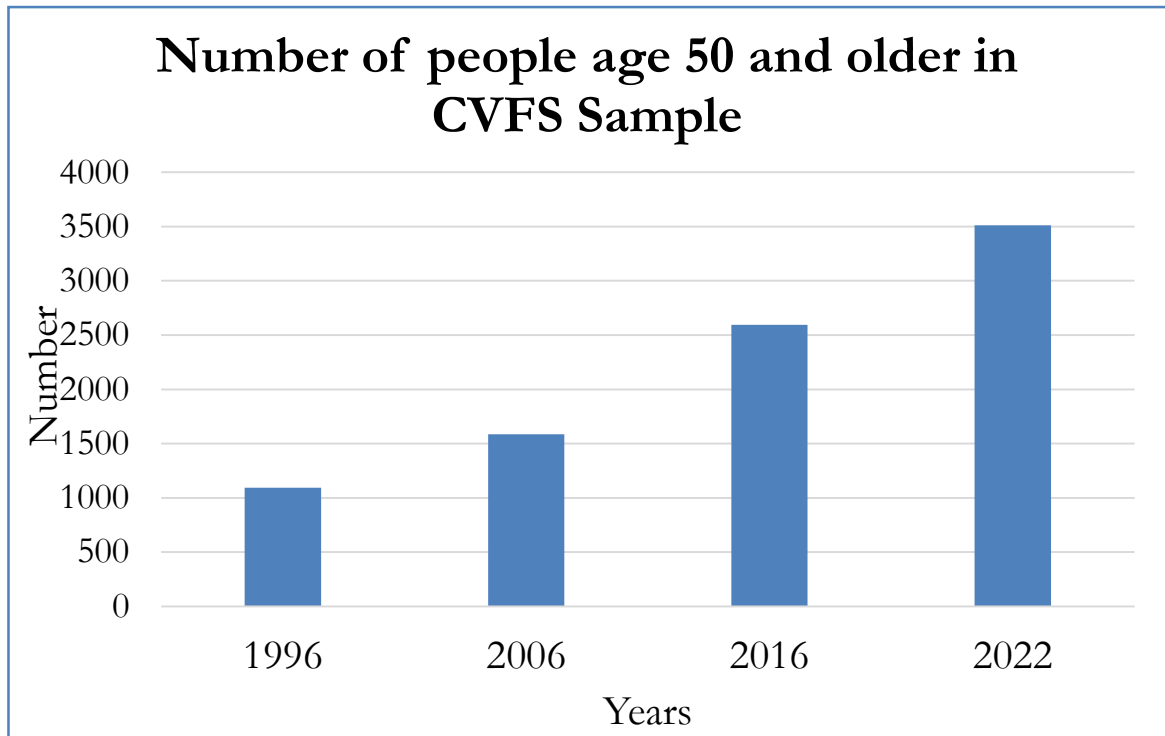
- Respondent interview:
 - Sociodemographic and experience modules
 - HCAP cognitive battery –for all participants
- Venous blood sample collection for DNA extraction- for all participants
- Informant interviews
- Follow-up interview approximately 2 years later





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Number of older adult in CVFS sample over time:





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CHALLENGE GROUP GRANTS PROGRAM

Pilot study on Feasibility Study of Venous Blood Sample Collection, Shipping and Processing Protocol to Study Alzheimer Disease and Related Dementias (ADRD) in Chitwan Nepal

Objectives:

- Feasibility testing of the procedures and logistics of blood sample collection and shipping
- Development/adoption of a cognitive test battery for a new study of ADRD in Nepal



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Capacity Building (SO:1)

- Training on International Test Commission Guidelines for Translating and Adapting Tests and the Cross-Cultural Survey Guidelines
- Training on general cognitive interview technique (SRO- ISR University of Michigan)
- Study-specific cognitive interviewing training (SRO- ISR University of Michigan)
- Certification of HCAP – Training and Demonstration (in person training at ISER-N)
- Developing protocol for blood sample collection, extraction, and shipping protocol to be administered in the study
- Training on blood sample collection, extraction and shipment





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Measurements

- Respondent's interview
 - Sociodemographic background and experiences
 - Neuropsychological assessment of ADRD (HCAP cognitive battery)
- Biomarker – venous blood sample collection
- Key informant interview about the respondent
- Follow up interview after 2 Years





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Respondent's Interview

Sociodemographic background and experiences Module

**Items drawn from CVFS and other studies

- Education, language, media exposure and social networks
- General health, functional limitations and health service utilization
- Life history calendar (birth, residence, marriage, child bearing, migration, etc.)
- Childhood adversity, intimate partner violence and potentially traumatic events
- Mental health, loneliness
- Vital sign and anthropometric measurement
- Risk behavior (alcohol use and substance use, tobacco use)
- Other sections yet to be work





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Respondent's Interview

Neuropsychological assessment of ADRD

The HCAP international network offers an optimal foundation from which to develop a population-based cognitive assessment and dementia ascertainment protocol for older adults.

Out of the international network of HCAP partner studies, the Longitudinal Aging Study in India (LASI) took place in a population that is geographically closest, and most socially, educationally, and culturally similar to the Nepali older adult population.

LASI implemented the HCAP assessment with its Diagnostic Assessment of Dementia sub-study (LASI-DAD).



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Adaptation of the HCAP for the Nepal context

Given the relative sociocultural, educational, and linguistic similarities of the study populations and the strong methodological and empirical foundation of the LASI-DAD study, CVFS-SCAN uses the LASI-DAD HCAP instrument.

The Chitwan Valley Family Study research team has extensive experience in the translation and culturally appropriate validation of several health instruments for the Nepal context using established methodology from International Test Commission Guidelines for Translating and Adapting Tests and the Cross-Cultural Survey Guidelines.



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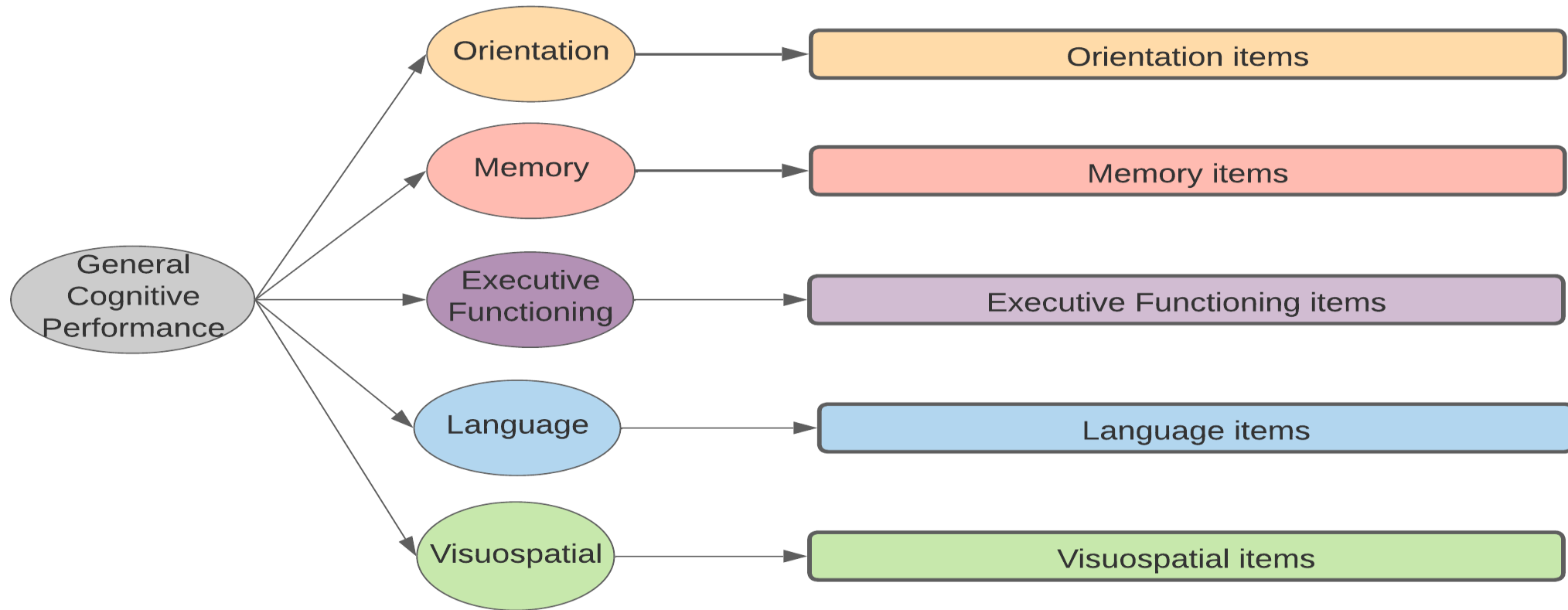
Selection, translation and validation of HCAP Battery

- Comprehensive but judicious selection of cognitive tests to approximate full HCAP battery as much as possible
- Good coverage of all 5 cognitive domains
- LASI-DAD battery as starting point
- Canvas literature for previous use of tests in Nepali language





HCAP Test Battery Model





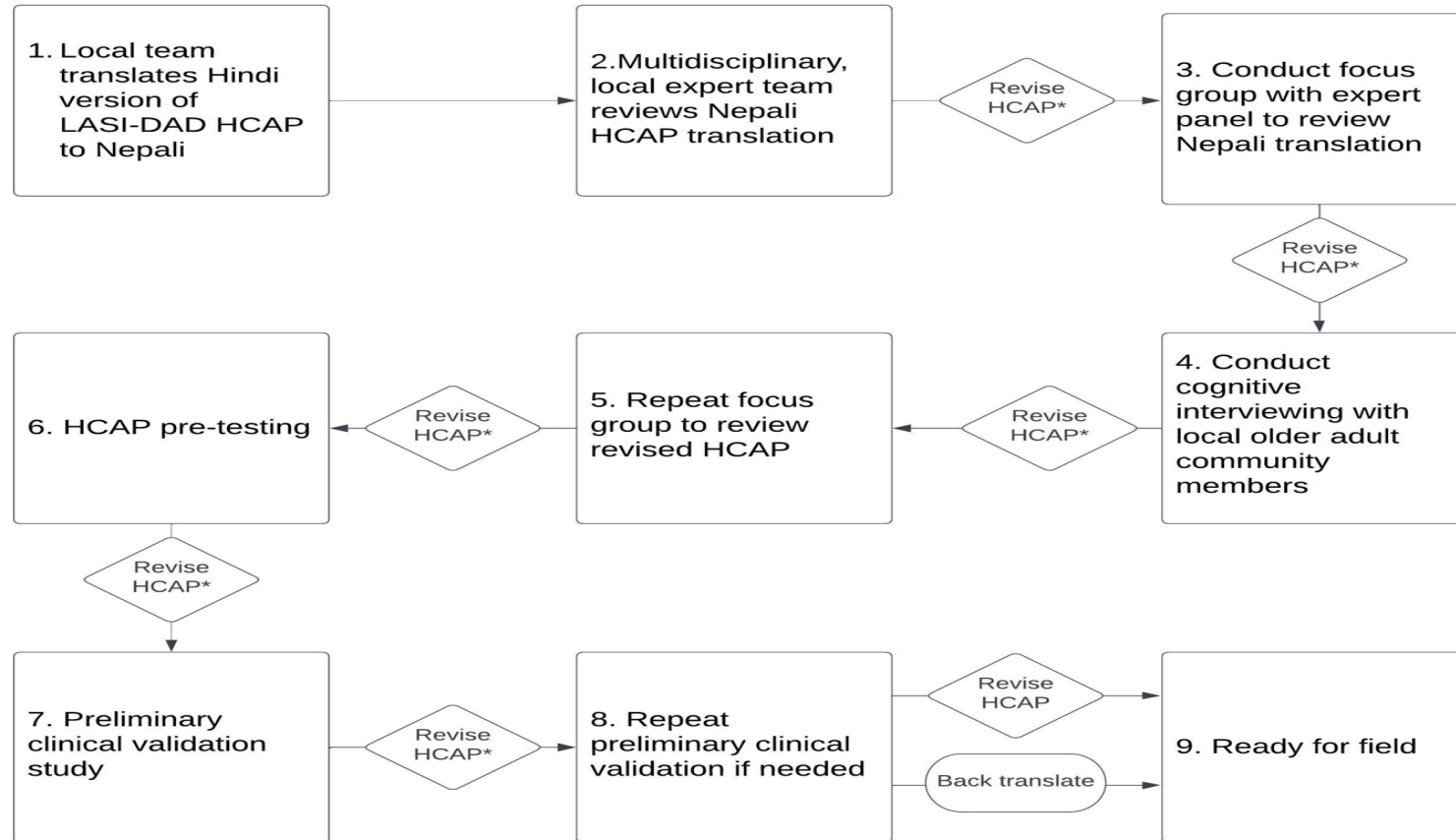
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1. MMSE
2. HRS TICS
3. Word List Recall
4. Digit Span Forward Backward
5. Symbol Cancellation
6. Delayed Word Recall
7. Word List Recognition
8. Logical Memory (immediate)
9. Constructional Praxis
10. Logical Memory (delayed)
11. Verbal Fluency – Animal Naming
12. Constructional Praxis Delayed Recall
13. Executive Function
14. Judgement & Problem Solving
15. Serial 7s
16. Community Screening Interview for Dementia (CSI-D)
17. Go-No Go Task





Adapting HCAP for the Nepal Context





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Venous blood sample collection, extraction, and shipping for quality checking - S02

- Pilot testing of procedure and logistics of venous blood sample collection, extraction, and shipping
- Shipped 25 blood sample extracts to ISR–Lab, University of Michigan



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Publication– SO:3

Neuropsychological assessment of older adults in Nepal for population- based dementia ascertainment: Needs, Challenges, and Opportunities – Briceno et al., *JAD*, In Press

Presentation– SO:3

Mendes de Leon, Carlos. 2023. Population-based dementia assessment in Nepal: The Chitwan Valley Family Study - Study of Cognitive Aging (CVFS-SCAN)". Presented at the 5th Annual meeting of the Harmonized Cognitive Assessment Protocol (HCAP) International Network, Bethesda, MD, USA, October 12-13, 2023.

Mendes de Leon, Carlos. 2023. Population Research on Aging and Dementia in LMIC: New Projects in Lebanon and Nepal". Invited presentation at the School of Public and Population Health, University of Texas Medical Branch, Galveston, TX, November 30, 2023.

Briceño et al. 2023. Population-Based Dementia Assessment in Nepal: The Chitwan Valley Family Study - Study of Cognition and Aging in Nepal (CVFS-SCAN). Oral presentation at the Fogarty International Center (FIC) Global Brain Network Meeting. Rockville, MD and virtual. October 19, 2023.

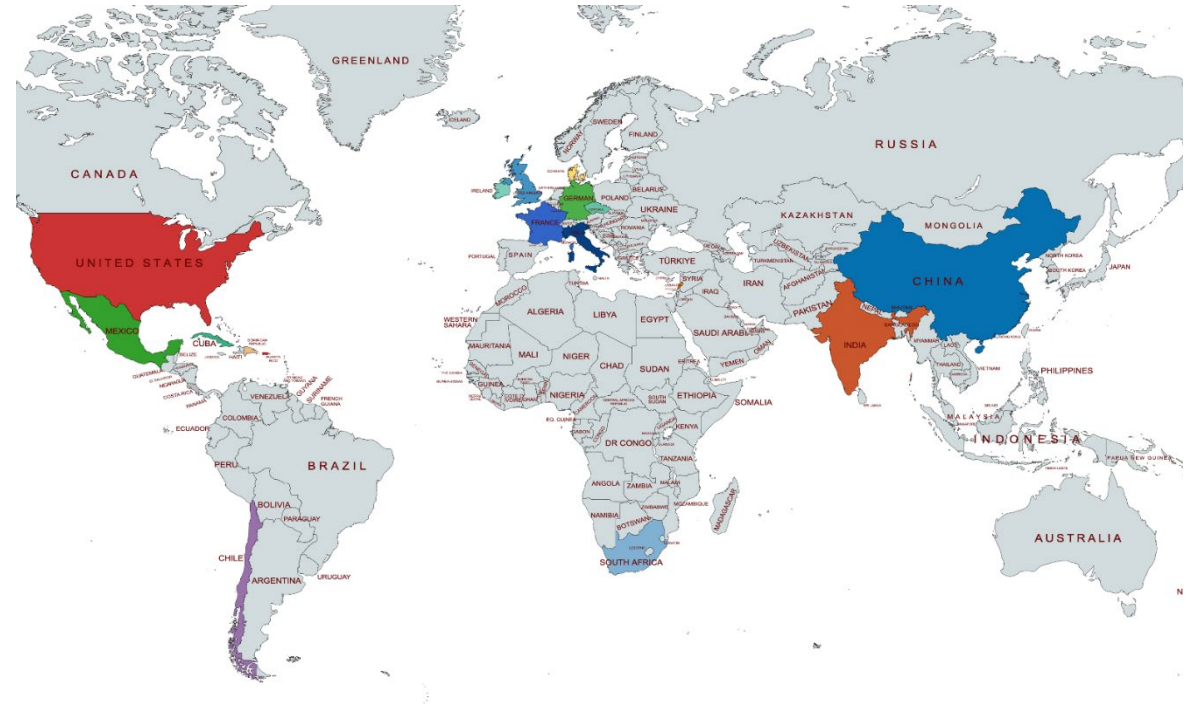




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CVFS-SCAN and the HCAP International Network

- CVFS-SCAN will join the growing collaboration of the Harmonized Cognitive Assessment Protocol (HCAP) International Partner Studies.
- The HCAP International Network





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Cross-national harmonization with other studies in the HCAP network

- Our collaboration with other studies within the HCAP will facilitate future cross-cultural cognitive data harmonization efforts.
- Data from CVFS-SCAN will be added to the growing list of the international network of HCAP studies.
- We will have the opportunity to co-calibrate our cognitive assessment with the other studies in the HCAP network.
- The statistical harmonization approach used for the HCAP allows for co-calibration of cognitive domains using both common and unique cognitive test data.





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Potential Collaboration:

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Thank you

For more information:

<https://cvfs.isr.umich.edu>

<https://isernepal.org.np>



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