Plan Overview

A Data Management Plan created using HKUL DMPTool

DMP ID: NA

Title: Sleep, Circadian Rhythms and Cognitive Functioning in Older Adults

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Principal Investigator: Dr. Shirley Li

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Project abstract:

This project examines how sleep and circadian regulation are associated with cognitive performance and daytime symptoms in older adults (≥60 years), and how these outcomes change over time and respond to insomnia intervention.

We will recruit older adults with chronic insomnia and age- and sex-matched healthy sleepers. At baseline, we will assess circadian measures, cognitive performance, and clinical profiles, and test whether circadian misalignment is associated with specific cognitive deficits and greater daytime symptom severity. Participants will be re-assessed approximately 12 months later to characterize trajectories of sleep, actigraphy-derived rest–activity rhythms, daytime symptoms, and cognitive performance. Among participants with insomnia, we will conduct a randomized controlled trial to

evaluate CBT-I with adjunct melatonin, compared with CBT-I plus placebo and psychoeducation plus placebo. We will test whether adding melatonin improves insomnia symptoms and related circadian, mood, daytime functioning, quality-of-life, and cognitive outcomes.

Start date: 12-01-2025

End date: 06-01-2028

Last modified: 04-01-2026

Copyright information:

Sleep, Circadian Rhythms and Cognitive Functioning in Older Adults

Data Collection

What data will you collect or create?

This project will generate new primary data from community-dwelling older adults (≥60 years) participating in a case-control study, a randomized controlled trial, and a longitudinal follow-up. The data will include screening and diagnostic information used to determine eligibility and insomnia status, as well as demographic and health-related variables necessary for sample characterization and covariate adjustment.

The project will collect self-report measures assessing insomnia severity, sleep quality, circadian preference and sleep timing, mood symptoms, daytime sleepiness and fatigue, subjective cognitive functioning, sleep-related cognitions, and health-related quality of life.

Wrist actigraphy will be used to collect rest-activity rhythm parameters. Dim-light melatonin onset (DLMO) will collect participants' saliva to estimate the approximate circadian and calculate phase-angle and circadian misalignment. Pupillometry will be used to assess pupil light reflex as an exploratory physiological marker of light responsiveness. A subset of participants may complete polysomnography to obtain objective sleep architecture and continuity.

Cognitive performance data will be collected using standardized computerized neuropsychological and paper-based tasks to measure attention, alertness, working memory, episodic memory, and executive functioning.

How will the data be collected or created?

All data will be collected in accordance with approved human research ethics procedures and standard research practices in sleep and circadian research.

Paper-based forms will be completed during visits or interviews, then scanned and entered into Qualtrics by trained staff. Data entry will be cross-checked for scanned forms by a second person, and discrepancies will be resolved and documented. Cognitive tasks will be administered using standardized computer-based procedures and exported into structured files. Actigraphy data will be downloaded using manufacturer software and processed using predefined scoring rules.

All data will be collected following the ethical standards of the Declaration of Helsinki. Actigraphy and PSG data collection will follow the clinical guideline set forth by the American Academy of Sleep Medicine (AASM).

Documentation and Metadata

What documentation and metadata will accompany the data?

A codebook will document variable names, operational definitions, coding rules, permissible ranges, units, and instrument scoring conventions. Dataset-level metadata will be recorded to indicate the study component, assessment wave, file version, date of creation or modification, and the responsible team member. We will also keep a change log to document all modifications made during data cleaning, including recoding rules, correction of implausible values, and resolution of data entry discrepancies, with each change linked to the corresponding script or syntax where applicable. File naming conventions will be applied consistently to identify study component, timepoint, data type, version, and date, and raw datasets will be retained separately from processed and analysis-ready datasets to preserve provenance.

Ethics and Legal Compliance

How will you manage any ethical issues?

The current project has received ethical approval from the Human Research Ethics Committee (HREC). All participants will provide informed consent, including consent for data storage and future analysis consistent with the approved protocol. Identifiable information (e.g., names and contact details) will be stored separately from research data, linked only by a participant ID key file. Only authorized study personnel will access identifiable data, and all reporting will use de-identified or aggregated results.

Data containing personal identifiers will be kept for 10 years after research publication. Afterwards, personal identifiers will be removed for long-term retention.

How will you manage copyright and Intellectual Property Rights (IP/IPR) issues?

There is no copyright or IPR issues related to this project.

Storage and Backup

How will the data be stored and backed up during the research? i. e. until stored in the final location (e.g. on your password protected laptop)?

Qualtrics will serve as the primary data hub for questionnaire and form-based data. Scanned paper

records and exported task/actigraphy files will be stored in a secure folder on an encrypted, password-protected lab computer. A second encrypted backup will be kept on a protected external SSD and the university-approved cloud storage location, with regular scheduled backups.

How will you manage access and security?

Research staff will have access only to the data needed for their tasks, while only a small number of core team members will have full access to the master datasets and ID key. Editing rights will be restricted, and all changes to datasets will be logged (e.g., using a versioned file structure and change log). Data transfers (if needed) will use encrypted channels and approved devices only.

Selection and Preservation

Which data are of long-term value and should be retained, shared, and/or preserved?

De-identified datasets (questionnaires, cognitive outcomes, actigraphy-derived measures), data dictionaries, scoring/codebooks, and analysis scripts are of long-term value and will be retained for reproducibility. The ID key and identifiable contact information will be retained for 10 years. Any data sharing will use de-identified datasets and follow ethics approval and institutional policies.

What is the long-term preservation plan for the dataset?

Data will be archived in the PI personal computer and laboratory hard disk.

Data Sharing

How will you share the data?

We will describe the project and data availability on the lab/project website and in related publications. Interested researchers can contact the study team (PI) through a listed email address to request access. Data will be shared by controlled access on request, rather than open public release.

Are any restrictions on data sharing? If yes, Why?

No further restrictions on data sharing required.

Responsibilities and Resources

Who will be responsible for data management?

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The PI will supervise all data management, including data collection, cleaning, storage, backup, and archiving. PhD student Zihan will be responsible for carrying out specific data management tasks, including defining file naming conventions, maintaining the ID key, monitoring data quality checks, controlling access permissions, and ensuring backups and documentation are up to date.

What resources will you require to deliver your plan?

No additional resources are needed to deliver the DMP.
