Updated on 11/07/2025

Combining Machine Learning and Ecological Momentary Assessment of Depression, Cognitive Function and Daily Activity Behaviour to Support Self-Management for Post-stroke Patients: A Feasibility Study

INFORMATION SHEET

We sincerely invite you to participate in the above-mentioned project, led by Prof. Wong Kwan Ching Arkers, Associate Professor at the School of Nursing, The Hong Kong Polytechnic University, and Ms. Kwok Wai Yan Vivian, Nurse Consultant in the Department of Neurology at Queen Elizabeth Hospital. This project has been approved by the PolyU Institutional Review Board [Reference No.: HSEARS 20240524002] ("PolyU IRB").

Before you decide whether to participate in this study, please read the following information carefully to understand the purpose and content of the study. You may also discuss this information with your family, friends, and family doctor. If you would like more information or have any questions about this study, please contact us.

PURPOSE OF THE STUDY

The purpose of this project is to explore the feasibility of integrating machine learning algorithms with EMA data to support post-stroke patients in self-managing their depression, cognitive, and functional impairments.

INVOLVEMENT OF THE SUBJECT

You are eligible to participate in this study because you meet the following inclusion criteria: (1) adults aged 18 or above; (2) diagnosed with stroke; (3) sufficient Cantonese proficiency to understand and respond to assessments and prompts; (4) a score of 18 or above on the Hong Kong version of the Montreal Cognitive Assessment (HK-MoCA); (5) possession of a smartphone. Patients will be excluded if: (1) they have moderate to severe cognitive impairment (HK-MoCA score of 17 or below); (2) they have active psychiatric disorders other than depression (e.g., schizophrenia, bipolar disorder); (3) they have a terminal illness or prognosis indicating limited life expectancy; (4) they have conditions impairing self-care ability (e.g., bedridden).

PROCEDURES

There are two phases of the study. In the first phase (Ecological Momentary Assessment), you will receive 6 random prompts per day for 7 consecutive days. In the second phase (Self-Management Period), which starts one month after the first phase and lasts for 21 days, the app will provide real-time, personalized self-care suggestions to help you self-manage depression, cognitive, and functional impairments in daily life.

You will be asked to complete questionnaires at two time points: baseline (before the first phase) and after the second phase. Within 1–2 weeks after the second phase, you may also be invited to participate in an individual interview to share your feedback and experiences regarding the program. All audio files will be kept confidentially using coded identifiers and used only for transcription and analysis.

OTHER PROCEDURES OR TREATMENTS

This study does not involve any additional treatments. You may choose not to participate. Not participating will not affect your current or future follow-up visits or treatments. All follow-up and examinations will proceed as usual, regardless of your participation.

DURATION

The study will last approximately 24 months. Each participant will be involved for about 3–6 months, from recruitment to completion of post-intervention questionnaires.

POTENTIAL RISKS / DISCOMFORTS AND THEIR MINIMIZATION

Using technology may cause potential discomfort, such as frustration or confusion when using the EMA app. Participants will receive training and ongoing support in using the technology, and technical assistance resources will be provided.

COMPENSATION AND TREATMENT FOR PARTICIPATION

Participants who complete the entire study and questionnaires will receive a HKD 200 supermarket voucher as a token of appreciation. You may choose to receive the electronic voucher via your mobile phone or collect a paper voucher in person at the School of Nursing, The Hong Kong Polytechnic University.

POTENTIAL BENEFITS

Participation in this study may help you better understand your depression, cognitive function, and daily activity behaviors, which can support self-management and improve overall well-being after stroke.

CONFIDENTIALITY

As part of the project, the information you provide is research data. Any research data that can identify you is called personal data. Personal data does not include data from which your identity has been removed (anonymized data). We will minimize the use of personal data in the study as much as possible. Researchers and their teams will have access to personal and research data for research purposes. Your data will only be accessed by the researchers of this study, the Clinical Research Ethics Committee, and relevant statutory bodies under appropriate regulations and laws, and only in ways that do not infringe on your privacy.

DATA RETENTION

Your identity will be kept strictly confidential. Any information or reports to be published will not reveal your identity. All information related to you will be kept confidential, and all personal data will be stored on computers accessible only to the research team. Data can be withdrawn and destroyed upon your request. All data collected during the study will be securely stored and retained for 5 years after the completion of the study. The Hong Kong Polytechnic University takes reasonable precautions to prevent the loss, misuse, unauthorized access, or destruction of the information you provide.

PARTICIPATION AND WITHDRAWAL

Participation in this study is entirely voluntary, and your decision will be respected. You may withdraw before or during the study at any time without giving a reason, and this will not affect your current or future medical care and services.

QUESTIONS AND CONCERNS

The research team will provide you with a copy of the participant information sheet and the informed consent form, and you will have sufficient time to understand the information explained here. If you do not fully understand the information, you may ask questions.

If you have any enquiries, you may ask our research assistants now or later, even after the study has started.
You may contact Dr Wong Kwan Ching Arkers (tel. no.: 34003805/ email: arkers.wong@polyu.edu.hk) or Dr Shi Nuo (tel. no.: 34008172 / email: nuo-catherine.shi@polyu.edu.hk) of PolyU under the following situations:

a. if you have any further enquiries in relation to the study even after the study;
b. if, under very rare conditions, you become injured as a result of your participation in the study; or
c. if you want to get access to/or change your personal data before 28th Feb 2027.

In the event you have any complaints about the conduct of this research study, you may contact the Secretary of PolyU Institutional Review Board in writing (institutional.review.board@polyu.edu.hk) stating clearly the responsible person and department of this study as well as the Reference Number.
In case of a serious adverse event[1], please report to the Principal Investigator/Chief Investigator immediately and the Principal Investigator/Chief Investigator will be required to report it to the PolyU IRB within 48 hours upon the receipt of your report.
Thank you for your interest in participating in this study.

Prof. Arkers Kwan Ching Wong
Principal Investigator

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[1] SAE is any adverse event that:

- results in death
- is life threatening, or places the subject at immediate risk of death from the event as it occurred
- leads to hospitalization or prolonged hospitalization of a subject
- causes a subject persistent or significant disability or incapacity
- leads to congenital anomalies or birth defects
- is another condition which investigators judge to represent significant hazards

(Reference: NIA Adverse Event and Serious Adverse Event Guidelines. https://www.nia.nih.gov/sites/default/files/2018-09/nia-ae-and-sae-guidelines-2018.pdf)

CONSENT TO PARTICIPATE IN RESEARCH

Combining Machine Learning and Ecological Momentary Assessment of Depression, Cognitive Function and Daily Activity Behaviour to Support Self-Management for Post-stroke Patients: A Feasibility Study

I _____ hereby consent to participate in the captioned research conducted by Dr. Wong Kwan Ching Arkers, Associate Professor at the School of Nursing, The Hong Kong Polytechnic University (Principal Investigator of this study), and Ms. Kwok Wai Yan Vivian, Nurse Consultant in the Department of Neurology at Queen Elizabeth Hospital (Site Principal Investigator at Queen Elizabeth Hospital).

I have read the Participant Information Sheet. The researcher has explained the details of the study to me in full. I understand all the benefits and risks associated with this study. I have had the opportunity to ask questions, and he/she has answered all my questions satisfactorily. I have received sufficient information regarding this study.

If I experience any physical discomfort or emotional distress during the study, the research staff will provide treatment or refer me for treatment. By signing this consent form, I do not waive any of my legal rights.

I hereby sign this consent form to certify that all the information I have provided is accurate and correct. I understand that my participation in this study is voluntary, and I may withdraw from the study at any time without providing any reason, and this will not affect my current or future treatment or legal rights.

If I request to withdraw from this study, I □ agree / □ do not agree that the researchers may continue to use the research data I provided prior to my withdrawal.

I understand that study-related personnel may have access to my medical records. I hereby authorize such personnel to review my medical records.

I understand that my identity will be kept confidential. I also permit the Clinical Research Ethics Committee and relevant statutory bodies, under appropriate regulations and laws and without infringing on my privacy, to directly access my research data for the purpose of verifying the clinical research information.

Name of participant _____

Signature of participant _____

Name of Parent or Guardian (if applicable) _____

Signature of Parent or Guardian (if applicable) _____

Name of researcher _____

Signature of researcher _____

Date _____