

# PhD Studentship

The AIM Study: AI-Assisted Multimodal and Multilingual ePROMs for Accessible Mental Health Care in Rural Populations with Severe Mental Illness

## Supervisory team:

**Director of Studies:** Professor Dez Kyte, Professor of Physiotherapy, School of Health & Wellbeing, University of Worcester, UK. Associate member of the Centre for Patient-Reported Outcomes Research, University of Birmingham, UK.

**Supervisors:** Dr Chris Bowers, Course Leader for PG Computing and Principal Lecturer in Computing, Worcester Business School, Department of Computing, University of Worcester, UK.

Professor Elizabeth Hughes, Professor of Mental Health Inequalities, Director of Rural Mental Health Research Unit, lead for NIHR THRIVE Programme, University of Worcester, UK.

**External Advisors:** Institute for Mental Health, University of Birmingham [Named Individual TBC]

**Research Unit:** The University of Worcester have been awarded a National Institute for Health and Social Care (NIHR) Mental Health Leaders Award to establish a programme of research designed to address mental health inequalities in rural settings. The programme of research will have 3 areas of focus: Earlier intervention and detection of serious mental illness (SMI); Suicide Prevention; and Digital Support. THRIVE sits in a newly established Rural Mental Health Research Unit at the University of Worcester. The THRIVE programme has been developed in partnership with colleagues at the Institute for Mental Health, University of Birmingham and there will be opportunities for collaborative working for doctoral candidates across both Worcester and Birmingham

## The PhD Studentship:

Applications are invited for a full-time PhD studentship for the project: **The AIM Study: AI-Assisted Multimodal and Multilingual ePROMs for Accessible Mental Health Care in Rural Populations with Severe Mental Illness**

## Context

Mental health inequalities in rural communities are compounded not only by language diversity, but also low literacy, limited digital skills and unreliable connectivity [1,2]. Individuals with severe mental illness (SMI) could benefit from

symptom monitoring for early detection and suicide prevention using validated electronic Patient-Reported-Outcome Measures (ePROMs). However, traditional approaches to translating and culturally validating PROMs can be slow and costly, limiting availability in minority languages and potentially failing to address accessibility barriers for people who struggle with reading, comprehension, or digital interphases.

Advances in AI and large language models (LLMs) provide potential opportunities to support multilingual translation and may enable adaptive, multimodal, personalised communication (such as speech, simplified text, pictorial explanations, context-sensitive wording etc.), which could reduce literacy demands, support neurodiverse user and help people to engage with PROMs even in low-connectivity rural environments.

This project will explore how AI-assisted ePROMs can fundamentally redesign accessibility, supporting equity in mental health care for rural populations.

### **Aims and Objectives**

In alignment with the THRIVE People and Community Engagement and Involvement Strategy (PCIE), the successful applicant will work with local stakeholders and people with lived experience to co-produce a programme of research to meet the following objectives:

- Test measurement equivalence between AI-assisted dynamic translations and traditional culturally validated PROMs for SMI.
- Assess patient preferences and usability of AI-driven PROM interfaces designed to reduce literacy, comprehension and communication barriers.
- Explore feasibility of on-device fine-tuning of small LLMs to address literacy and connectivity barriers through personalised features (e.g., speech-based completion, plain language simplification, tone adjustments, offline functioning).
- Identify barriers and facilitators for implementation in SMI outpatient and home settings.

### **Research Questions**

1. Does AI-assisted real-time translation of mental health PROMs produce equivalent results to traditional validated versions?
2. Can fine-tuned small LLMs improve accessibility for individuals with low literacy, limited digital skills or communication difficulties, compared to standard PROM delivery methods?
3. What are the usability, acceptability, and implementation challenges for AI-assisted multilingual and accessibility-enhanced ePROMs in rural mental health care?

### **Indicative methodology**

#### **Phase 1: AI Training & Cultural Adaptation**

This phase will focus on developing small, efficient LLMs capable of running on mobile devices to translate mental health terminology accurately. Models will be fine-tuned on-device to capture cultural nuances for high-prevalence languages selected

based on ongoing scoping work being conducted within the unit. In addition to translation, models will be adapted to address challenges around literacy, comprehension and communication barriers. Co-design workshops with rural patients and clinicians will ensure that the adaptations meet real-world needs and reflect local contexts.

### Phase 2: Equivalence Testing

A randomised crossover trial will be conducted with rural patients living with severe mental illness to compare AI-assisted PROM delivery with traditional methods [4]. Key measures may include widely used mental health PROMs such as PHQ-9, GAD-7, ReQoL-10 and other psychosis-specific PROMs.

### Phase 3: Usability & Feasibility

AI-enabled ePROMs will be deployed in practice settings to evaluate real-world usability and accessibility. Qualitative feedback will be gathered through interviews and focus groups, complemented by usability and satisfaction scales, to identify implementation challenges and opportunities.

### References:

1. Danon G, Dunn CE, Robins M, Nagendra A, Strand C, Palko L, Colborn A, Menjivar J, Saber J. Assessing rural populations' barriers to mental healthcare and perceptions towards prescription digital therapeutics: a cross-sectional survey. *Front Digit Health*. 2025 Sep 4;7:1655446. doi: 10.3389/fdgth.2025.1655446. PMID: 40978697; PMCID: PMC12443765.
2. Lowther-Payne HJ, Ushakova A, Beckwith A, Liberty C, Edge R, Lobban F. Understanding inequalities in access to adult mental health services in the UK: a systematic mapping review. *BMC Health Serv Res*. 2023 Sep 29;23(1):1042. doi: 10.1186/s12913-023-10030-8. PMID: 37773154; PMCID: PMC10542667.
3. Terheyden, J.H., Pielka, M., Schneider, T. *et al*. A new generation of patient-reported outcome measures with large language models. *J Patient Rep Outcomes* 9, 34 (2025). <https://doi.org/10.1186/s41687-025-00867-4>
4. Bolzani A, Kupf S, Hodiamont F, Burner-Fritsch I, Bausewein C, Ramsenthaler C. Measurement equivalence of the paper-based and electronic version of the Integrated Palliative care Outcome Scale (IPOS): A randomised crossover trial. *Palliat Med*. 2023 May;37(5):760-770. doi: 10.1177/02692163231157871. Epub 2023 Mar 1. PMID: 36856258; PMCID: PMC10227101.

### Details of the studentship:

The studentship is offered for a 4-year period on a full-time basis. During the period of your studentship you will receive the following:

- a tax-free bursary of £20,407 for 3 years
- a fee-waiver for 4 years
- a budget to support your project costs
- a laptop and other IT equipment or software as appropriate to the project
- use of the Doctoral School facilities

You will be expected to play an active role in the life of both the Doctoral School and of the School. You will be given opportunities to gain experience in learning and teaching within the School under the guidance of your Director of Studies.

**Application Process:**

The closing date for this studentship is Friday 8<sup>th</sup> May 2026.

To begin the application process for this studentship please go to our [webpage](#) and click 'apply now' next to the project you wish to apply for.

It is expected that applicants will have the following qualifications:

- A Masters in the area of Health Care or equivalent professional experience.
- A First or Upper Second Honours Degree

It is also expected that applicants will be able to demonstrate the following:

- A sound understanding of and interest in both the project and the wider subject area
- Experience of relevant research methods and skills
- Ability to contribute to the research design of the project
- Proficiency in oral and written English
- Proficiency in IT relevant to the project
- Ability to organise and meet deadlines
- Good interpersonal skills
- Ability to work independently
- Ability to work as part of a team

**Completing the Personal Statement on the Application Form:**

To support a fair and consistent shortlisting process, all applicants are required to submit a personal statement of up to 1,000 words, using the structure below.

Statements that do not follow this structure, or that rely on generic or nonspecific content, may be disadvantaged. Write in your own authentic voice; AI generated content is easy to detect and weakens an application. Provide specific examples throughout to support your personal statement. Finally, ensure your statement is well structured, clearly written and carefully proofread.

**Required Personal Statement Structure****1. Motivation for Applying (approx. 150 words)**

Explain why you are applying for this specific PhD project. Demonstrate your understanding of the topic, why it matters, and what motivates you to pursue doctoral study in this area. Outline your longer-term career aspirations and how this studentship supports them. Avoid general statements that could apply to any project or institution.

**2. Relevant Research Experience (approx. 200 words)**

Provide a focused summary of your research experience, including undergraduate or Masters dissertations, involvement in audits, evaluations or research projects, and any research assistant work. Describe your specific contributions, the methods you used, skills developed and outcomes achieved. Include research related training



(e.g., qualitative or quantitative methods, systematic review techniques). Use concrete examples and emphasise what you did.

### **3. Research Outputs, RKE Activity or Scholarly Achievement (approx. 150 words)**

Summarise research related achievements such as publications, reports, conference presentations, workshops, knowledge exchange activities, involvement in funding applications, or academic awards. Be clear about your personal contribution to collaborative work and distinguish between published, accepted, in progress, or planned outputs.

### **4. Professional or Employment Experience (approx. 200 words)**

Outline employment or voluntary roles relevant to this programme of doctoral study. This may involve work in health, social care, education, community or research settings. Highlight responsibilities such as data collection, participant engagement, safeguarding, communication or project coordination. Provide examples showing independence, reliability, time management and resilience. Explain how these experiences have prepared you for PhD level research and informed your interest in the project area.

### **5. Skills, Values and Personal Attributes (approx. 200 words)**

Provide evidence of the qualities expected of a doctoral researcher, including a strong work ethic, conscientiousness, commitment to ethical practice, curiosity, critical thinking, independence and effective communication. Use specific examples that demonstrate these attributes in practice. Avoid generic lists, focus on behaviours and experiences that show your readiness for doctoral study.

### **6. Fit with the Project and Supervisory Team (approx. 100 words)**

Explain how your experience, interests and career goals align with the project and supervisory team. Highlight relevant methodological expertise, subject knowledge or lived/professional experience. Demonstrate awareness of the broader research area in which the project sits and articulate clearly why you are a strong match.

#### **The Interview:**

Shortlisted candidates will be given at least 7 day's-notice of interview. In advance of interview, shortlisted candidates will be asked to submit their CV and a sample of their written work (e.g. a publication or a dissertation).

Alongside the interview, shortlisted candidates will be asked to deliver a brief presentation (10 minutes) on a topic related to the studentship. This will provide an opportunity to demonstrate understanding of the project context and potential research approaches. Candidates are invited to present on the following suggested topic: **The role of AI-Assisted Multi-modal/Multilingual Electronic Patient-Reported Outcome Measures (ePROMs) in Supporting Delivery of Equitable Mental Health Care in Rural Populations with Severe Mental Illness**. To support their presentation, candidates are encouraged to use a concise slide deck and reflect on how their background or interests align with the aims of the AIM project.

## Research at the University of Worcester

Research is central to the University's mission to make a difference in everything that we do. We are committed to delivering excellent research which extends the boundaries of human knowledge but which also improves people's lives by enabling better health outcomes, improving food security, developing environmentally sustainable solutions for crop production and socially sustainable solutions to our ageing population, enhancing public knowledge and understanding of the past and present.

The University hence focuses its research around five high-level challenges facing society, locally, nationally and globally:

- [Human Health and Wellbeing](#)
- [Sustainable Futures](#)
- [Digital Innovation](#)
- [Culture, Identity and Social Exclusion](#)
- [Professional Education](#)

The success of our research is reflected in our continuous improvement in external research assessment processes. In the most recent Research Excellence Framework, REF 2021, the University saw a near 50% increase in the scale of its research and 12% increase in quality, building on its performance in REF 2014 when it was the UK's most improved university in terms of Research Power, a combination of scale and quality.

## Research Degrees at Worcester

Our research students are central to our overall mission for research. They are working at the cutting edge of their disciplines and driving forward the quality of our research whilst enriching our research culture. We are looking to increase our research student numbers as a strategic imperative.

Our commitment to our students is reflected in the results of the Postgraduate Research Experience Survey 2023 in which we ranked 3<sup>rd</sup> for overall research student satisfaction nationally. Key to our success in this area is the Doctoral School, a focal point for all our research students.

It provides:

- day-to-day support for our students, both administrative and practical, through our dedicated team
- a Research Student Study Space with both PCs and laptop docking stations
- a comprehensive Researcher Development Programme for students and their supervisors
- a programme of student-led conferences and seminars

**Widening Participation:**

As part of its mission statement the University is committed to widening participation for its higher degrees. Although most candidates will have an undergraduate and/or a Masters degree, the University is happy to accept applications from candidates with relevant professional qualifications and work-related experience.

**For further information or an informal discussion on this project, please contact Professor Derek Kyte by email [d.kyte@worc.ac.uk](mailto:d.kyte@worc.ac.uk)**

