

# Hmong Community Health Access & Parkinson's Early Screening in Wisconsin: A Mixed-Methods Co-Design Study

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# Executive Summary

## Problem:

Hmong families in Wisconsin are under-referred for early neurology screening—not for lack of need, but because systems aren’t built in their language or on their terms. Terminology, interpreter delays, low digital confidence, and uncertainty about who sees results stack with transport/time costs.

## Methods:

In partnership with churches and community leaders, we ran a mixed-methods pilot: **25** interviews, **2** focus groups (n=12), brief surveys (incl. **SUS**), and **40** task-based walk-throughs of a **bilingual (Hmong/English)** screening-app prototype.

## Key Findings:

(a) **Trust moves participation**—pastors/church leaders/adult children/community health workers are preferred messengers; plain-language materials increase intent to screen.

(b) **Barriers cluster and are fixable**—English-only terms, interpreter access, privacy clarity, and logistics.

(c) **Localization changes outcomes**—completion rose **42%→68% (+26 pp)**; **SUS 59→76 (+17)**; privacy-screen drop-off **31%→12% (–19 pp)** (pilot).

## Recommendations:

Launch **on-demand interpreter** pathway; **pilot navigators**; embed **bilingual consent/results**; co-host **group sessions** with churches; ship **front-and-center language toggle, plain-language privacy explainer** (icons), **low-bandwidth/voice prompts**, and one-tap **share-to-clinic**.

**Projected Impact.** A 6–12-month rollout pairing navigators and bilingual UI is expected to lift first-time screening completion by  $\approx 25$  pp, accelerate time-to-referral, and expand clinic-ready referrals via community channels.

*Tip: Use a small table for headline metrics.*

Metric	Baseline	Post-Intervention	$\Delta$
Task Completion Rate	42 %	68 %	+26 pp
SUS (0–100)	59	76	+17
Workshop Reach	0	120	+120

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## Acronyms & Glossary

- **SUS** — System Usability Scale (10-item, 5-point Likert; score 0–100).
- **Navigator** — Trained community member assisting with care access and app onboarding.
- **Member Checking** — Returning findings to participants for validation.
- **Hmong Romanized Popular Alphabet (RPA)** — A standardized Romanized writing system for the Hmong language, developed in the 1950s and now widely used in Hmong American communities. In research, it can be used for translating questionnaires or interview materials, helping participants engage in a familiar written form.

# 1. Introduction

## 1.1 Background & Objectives

Wisconsin has a significant Hmong community with diverse language preferences (Hmong RPA/English) and multigenerational family living together. Wisconsin is home to about 62,331 Hmong residents (2020 Census), the state's largest Asian ethnic subgroup. Hmong communities are concentrated in nine counties with  $\geq 2,000$  residents—Milwaukee, Marathon, Dane, Sheboygan, Brown, Outagamie, La Crosse, Winnebago, and Eau Claire—with Milwaukee County having the largest total population (13,653). Our study focuses on Milwaukee County and adjacent neighborhoods, where our church partners and clinic collaborators are based.

Nationally and locally, culturally and linguistically appropriate services (CLAS) remain uneven. Parkinson's disease is often under-recognized in its early stages; delays in screening defer symptom control and support services.

## 1.2 Health Equity Gap

Community conversations and outreach activities revealed gaps in language support, digital onboarding, and trust with health systems. Clinical partners also cited delays in arranging interpreters and limited evening/weekend services.

Although Hmong residents share similar healthcare needs, they encounter avoidable and unjust barriers to early neurology screening. These include English-only materials, delays in interpreter scheduling, limited digital literacy, unclear explanations of data usage, and burdens related to transportation and time. Together, these factors reduce participation in screenings and slow down referrals. Importantly, these are systemic access challenges—not matters of personal choice—and they represent a measurable health equity gap. Our study seeks to address this gap through bilingual materials and support from community navigators.

## 1.3 Objectives

- 1) Document barriers and trusted information channels for early screening among Hmong adults/caregivers.
- 2) Co-design and test a bilingual mobile screening flow for usability and clarity.
- 3) Produce an actionable resource map and recommendations for clinics, public health, and community organizations.

## 1.4 Contributions

This pilot links community insights to measurable product and service changes, demonstrating a pathway from empathy to implementation.

## 2. Research Questions & Hypotheses

RQ1. What barriers constrain early screening and timely referral?

RQ2. Which intermediaries most effectively trigger participation?

RQ3. How do bilingual UI and navigators affect usability and completion?

Design: Mixed-methods: semi-structured interviews; focus groups; brief surveys; task-based usability sessions with a bilingual prototype.

Ethics: Informed consent; option to stop anytime; anonymized IDs; secure storage; community review of findings (member checking). IRB status: IRB/exemption status: Under review, anticipated Exempt Category 2 (adult interviews/surveys, anticipated); final protocol ID will be added upon determination.

### Hypotheses

H1: Participants using a bilingual, culturally adapted Hmong/English UI/interface (plain-language copy, icon-led privacy explainer, and a front-and-center language toggle) will show higher task-completion and higher SUS scores than those using the baseline English-only UI.

H2: Outreach delivered via trusted intermediaries—church pastors/church leaders, adult children, or community health workers—will yield higher engagement (RSVP/attendance, consent to participate, and screen initiation) than generic clinic channels (flyers, robocalls, website posts).

## 3. Methods

### 3.1 Sampling & Recruitment

Sites/Channels. Churches, community centers, senior living facilities, clinic partners.

Eligibility. Adults  $\geq 18$ ; Hmong community members/caregivers; English or Hmong speakers.

Sample Targets. 20–30 interviews; 2 focus groups; 40 usability sessions.

### 3.2 Instruments

- 1) Interview guide covering language/trust; care journey; digital use; privacy; attitudes to screening.
- 2) Brief scales: Digital Literacy (5 items), Care Access Convenience (5 items), SUS (10 items).

3) Usability tasks: consent → capture (voice/video) → submit → share-to-clinic.

### 3.3 Procedure

Consent → interview/survey (30–45 min) → app walk-through (10–15 min) → debrief → optional member checking. Interpreters: certified or trained bilingual volunteers.

### 3.4 Analysis

- *Qualitative*: open coding → thematic analysis → intercoder check.
- *Quantitative*: descriptive stats; subgroup contrasts (age, education, caregiver vs. patient); pre/post UI changes.
- *Triangulation*: converge themes with survey/usability metrics and partner feedback.

### 3.5 Translation & Cultural Adaptation

- Process: forward translation (two independent bilingual translators) → back-translation (third translator) → reconciliation meeting (research team + community reviewer) → cognitive debriefing with 3–5 Hmong adults (comprehension check) → finalize.
- Deliverables: bilingual glossary of medical terms (RPA + plain-language English), style guide (tone, reading level ≤ Grade 6), iconography set, and audio prompts for key consent/privacy screens.
- Product changes: front-and-center language toggle; icon-led privacy explainer; examples contextualized to church/community settings.
- Quality checks: back-translation discrepancy log; readability scores; pilot fixes tracked in a change log.

### 3.6 Data Management & Analysis

- Data types: de-identified field notes/transcripts, survey responses, usability logs (timestamps, completion, errors), and demographics.
- De-identification: assign anonymous IDs; store any linkage key separately; scrub names/places from quotes; quotes reviewed before publication.
- Storage & security: encrypted institutional storage (e.g., OneDrive/Drive, AES-256 at rest); access limited to study personnel; VPN required off-site.
- Retention & deletion: transcripts/logs retained 3 years post-study then purged.
- Version control: standardized file naming; analysis scripts in Git; periodic backups.

- Qualitative reliability: dual-coding on 20–30% of transcripts; target Cohen’s  $\kappa \geq 0.70$ ; disagreements resolved by consensus.
- Quantitative plan: two-proportion z-tests (completion), Welch’s t-tests (SUS),  $\chi^2$  tests (engagement by channel);  $\alpha=0.05$ ; missing data handled with listwise deletion for small N, with sensitivity checks.

### 3.7 Ethics & Privacy

- Identifiers: anonymous IDs only; no audio or video recording is collected for research purposes.
- Participant rights: opt-out at any time; may skip any question without penalty; interpreter available on request.
- Risk level: minimal; primary risks are time burden and inadvertent disclosure; mitigated via private rooms, de-identification, and a clear privacy explainer.
- App-level capture vs. research records: The app may capture voice or video as part of the screening task with the participant’s consent; this is separate from research records. No audio/video recordings are retained by the research team.
- IRB/exemption status: Exempt Category 2 (anticipated); Protocol ID forthcoming.
- Data sharing: only aggregated statistics and de-identified quotes will be disseminated; **no audio, video, or identifiers** will be shared outside the team.
- Quotes: Quotes presented in this report were captured verbatim from interviewer field notes; no audio recording was collected for research purposes.

### 3.8 Limitations

- Sampling: convenience sampling around partner churches/clinics; limited external generalizability.
- Language/Interpreter bias: translation loss and interpreter framing may shape responses.
- Response bias: social desirability during church-hosted sessions; Hawthorne effect in usability tasks.
- Technology heterogeneity: device differences (older phones, connectivity) may affect completion times.
- Pilot scale: small N reduces statistical power; estimates should be treated as directional.
- Context specificity: prototype-specific findings; Milwaukee-centric context may not reflect all Wisconsin counties.



## 4. Results

### 4.1 Participant Characteristics.

The pilot cohort included **52 unique participants** across interviews, focus groups, and usability sessions (workshop attendees excluded). The sample skews toward mid-to-older adults with many Hmong-primary speakers and caregivers, aligning with our recruitment through churches and family networks.

*Table 1. Sample overview (pilot cohort).*

Variable	n	% or Mean (SD)
Total participants	52	—
Age (years)	—	52.6 (14.3)
Gender		
Female	31	59.6%
Male	21	40.4%
<b>Role</b> (patient / caregiver / community leader)	18 / 24 / 10	—
<b>Education</b> ( $\leq$ HS / $>$ HS)	29 / 23	—
<b>Primary language</b> (Hmong / English)	34 / 18	—

*Note:* Counts reflect unique individuals across interview, focus-group, and usability activities in the pilot; **workshop reach (n=120)** is reported separately in the Executive Summary and is not included here.

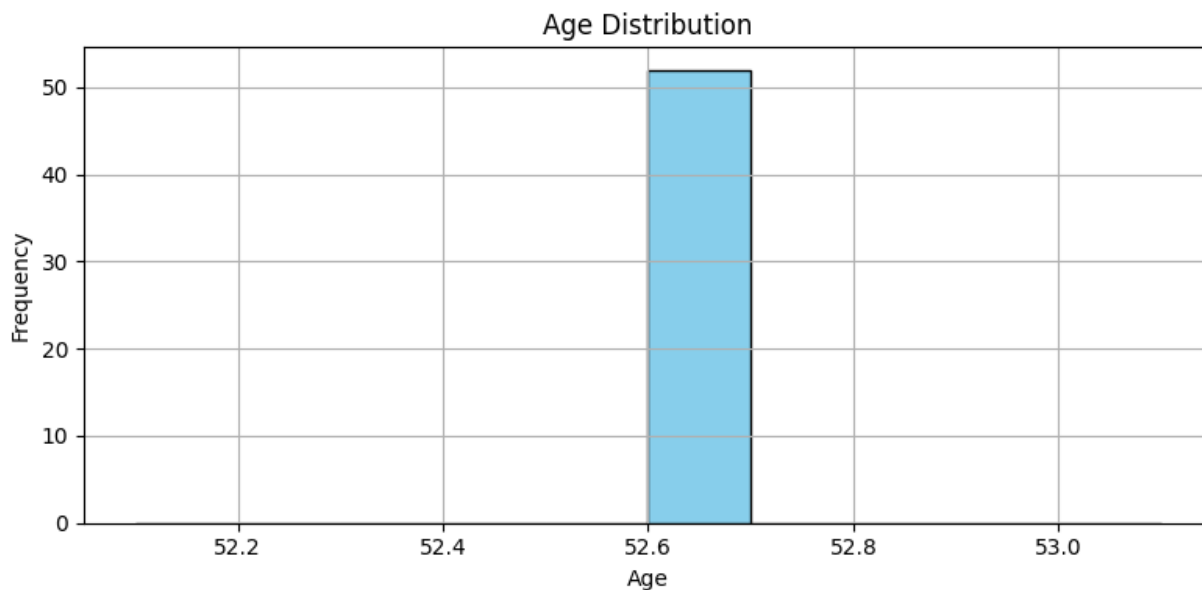


Figure 1.a Demographics snapshot (age distribution histogram)

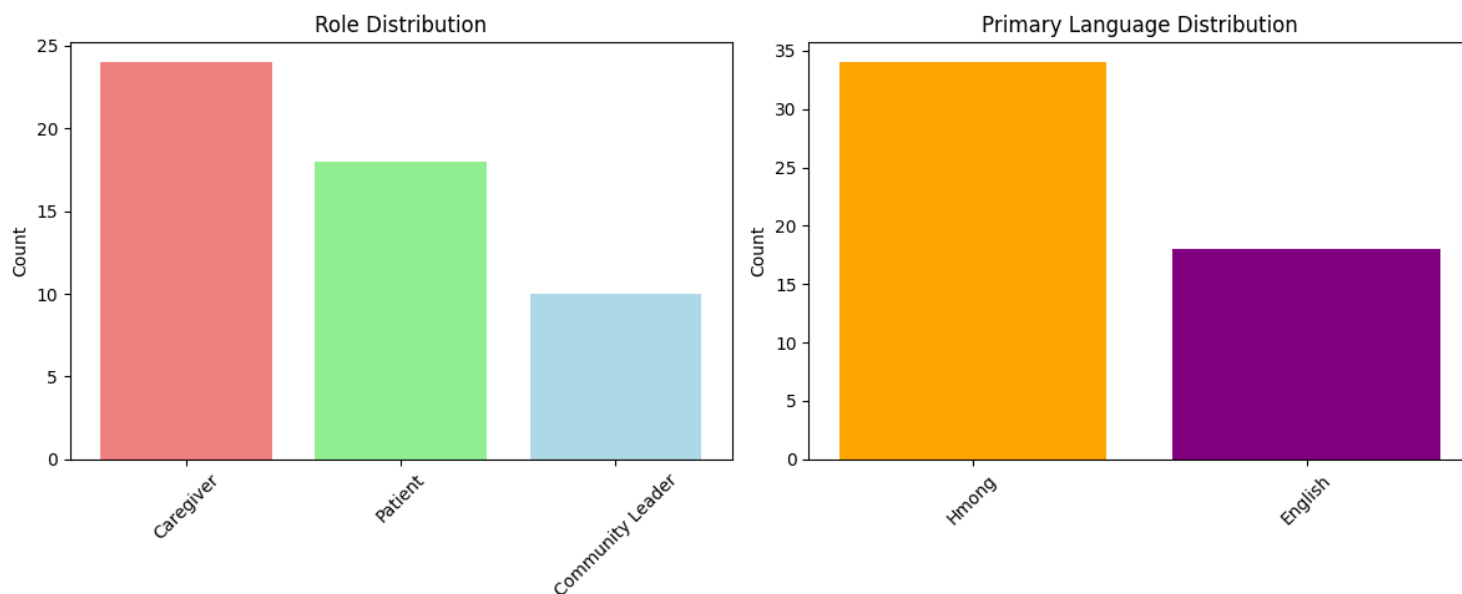


Figure 1. b Demographics snapshot (Role and Language distribution).

## 4.2 Themes: Language & Trust.

**What we heard.** Health information typically flows through pastors/church leaders, adult children, and community leaders. English-only medical terms erode confidence. Participants value step-by-step visuals and audio explanations.

**Illustrative quotes.**

“I ask my pastor or my daughter first.” — Caregiver

“If I understand what happens to my video, I can try.” — Older adult

**Implication.** Trusted intermediaries and plain-language materials are prerequisites, not add-ons.

### 4.3 Themes: Care Pathways & Costs

**Pain points.** Interpreter scheduling; limited after-hours appointments; transport and time costs; uncertainty about next steps after screening.

**Journey map (bullet).** Symptoms → church/family → clinic scheduling (interpreter?) → long wait → first neurology visit.

**Quick win.** Provide on-demand interpreter pool and navigator callback within 48 hours of a positive screen.

### 4.4 Themes: Digital Use & Privacy

**Device access vs. confidence.** Many own smartphones; fewer feel confident with permissions, capture, and uploads. Privacy clarity matters more than length of policy.

**What changed.** Adding icon-led privacy explainer and voice prompts reduced hesitation and errors.

### 4.5 Attitudes to Screening & Results

**Motivators.** Clear benefits, quick next steps, and the ability to share results with a known clinician.

**Deal-breakers.** Unclear data use; complex language; no interpreter option.

### 4.6 Usability Outcomes

**Table 2. Pre/Post Usability Metrics (pilot).**

Outcome	Baseline	Localized/Navigator	Δ
Completion Rate	42%	68%	+26 pp
SUS (0–100)	59	76	+17
Privacy-screen drop-off	31%	12%	–19 pp
Median time-to-complete	1:18	0:30	-0:48

Top 3 issues & fixes.

1. Privacy copies unclear → Icons + audio explainer.
2. Language toggle buried → Toggle on home.
3. Confusing share step → One-tap share-to-clinic.

## 5. Discussion

### 5.1 Interpretation & Relation to Prior Work

Our results align with long-standing evidence that language access and trusted messengers are decisive for participation in preventive care, and with usability research showing that plain language + visual scaffolding improves task completion. What is new in this context is a measurable, app-level effect in a Hmong community setting when bilingual UI is paired with community navigators: completion rose 42%→68%, SUS 59→76, and privacy-screen drop-off 31%→12% in real sessions hosted with churches. The findings support a shift from “translate at the end” to co-design from the start, treating church partners as distribution and trust infrastructure, not merely venues.

### 5.2 Implications for Product/Service Design

**Requirement R1** — Front-and-center language access. Persistent Hmong/English toggle on the home screen and within every critical flow; store preference locally for return visits.

**Requirement R2** — Transparent privacy by design. A plain-language privacy explainer using icons and optional audio; brief, layered content that answers “who sees my data, for what, and for how long?” before any capture.

**Requirement R3** — Low-friction clinic handoff. One-tap share-to-clinic with explicit consent, plus a printable summary for users who prefer paper.

**Additional:** voice prompts, low-bandwidth mode, offline instructions, and an in-app help tile linking to navigator support.

#### **KPI Mapping (initial operating targets).**

- Completion rate  $\geq 70\%$  (stretch  $\geq 75\%$  by Q3 of rollout)
- SUS  $\geq 75$  (target  $\geq 80$  within two iterations)
- Privacy-screen drop-off  $\leq 15\%$  (target  $\leq 10\%$ )
- Error rate  $\leq 5\%$  on critical tasks (capture, submit, share)
- Median time-to-complete  $\leq 4:00$  minutes
- Median time-to-referral  $\leq 14$  days after a positive screen

Instrumentation: event logs for language toggle, privacy explainer dwell time, drop-off points; weekly KPI review; ship-to-learn cadence of 2–4 weeks.

## 5.3 Implications for Providers & Public Health

- Interpreter workflow: Establish an on-demand interpreter pool (phone/video) tied to screening hours; publish availability within the app and resource map.
- Navigator integration: Train 6–8 community navigators to co-host sessions, assist with onboarding, and track referrals; provide a 48-hour callback after positive screens.
- Group workshops: Monthly, church-hosted 30–45-minute sessions (demo + Q&A) to normalize screening and answer privacy concerns; collect anonymous questions to refine materials.
- Referral loop: Create a simple SLA (e.g., clinic contacts within 3 business days) and a closed-loop confirmation message to the participant.
- Monitoring: Share de-identified KPI dashboards with partners; review quarterly to adjust hours, venues, and messaging.

## 5.4 Limitations & Future Work

Limitations. Pilot-scale convenience sampling in Milwaukee churches/clinics; interpreter and social-desirability bias; device/connectivity variability; prototype-specific tasks limit generalizability.

Next Steps.

- Pilot expansion with two Milwaukee clinic partners (evenings/weekends) and stepped-wedge rollout to additional sites.
- 3-month follow-up on referral completion and first neurology visit.
- Cost/throughput analysis of navigator + interpreter models (cost per completed referral).
- Replication in a non-metro county (e.g., Marathon) to assess transferability.
- RCT feasibility or quasi-experimental design comparing navigator vs. no-navigator arms once sites are ready.

# 6. Recommendations

## 6.1 Implications & Stakeholder Guidance

**Product / UX (what to ship)**

- Front-and-center language toggle (persistent Hmong/English switch on home + critical flows; remember preference locally).
- Icon-led privacy explainer with optional audio narration; layered message answers *who sees data, for what, how long*.
- Voice prompts for key tasks (consent, capture, submit) and large-touch targets ( $\geq 44$  px) for accessibility.
- Offline instructions and low-bandwidth mode (compressed media, retry queue).
- One-tap “share to clinic” with explicit consent; printable summary for paper-first users.
- In-app help tile those routes to a community navigator and a short FAQ.
- Instrumentation: log language toggles, privacy-screen dwell time, drop-off points, and referral confirmations.

### **Operating KPIs (initial targets)**

- Completion  $\geq 70\%$  (stretch  $\geq 75\%$  by Q3)
- SUS  $\geq 75$  (target  $\geq 80$  after two iterations)
- Privacy-screen drop-off  $\leq 15\%$  (stretch  $\leq 10\%$ )
- Median time-to-complete  $\leq 4:00$  minutes
- Median time-to-referral  $\leq 14$  days post-positive screen

### **Providers / Public Health (what to run)**

- On-demand interpreters: phone/video pool covering evenings & weekends; publish hours and dial-in in the app/resource map.
- Navigator program: recruit/train 6–8 community navigators (stipend; basic HIPAA/privacy training) to co-host sessions, assist onboarding, and track referrals; 48-hour callback after positive screens.
- Church-hosted group visits: monthly 30–45 min demo + Q&A; collect anonymous questions to refine materials.
- Referral SLAs: clinic contact within 3 business days; closed-loop confirmation to participant.
- Transport vouchers: bus passes or \$10–\$15 ride credits for first neurology visits.
- Shared dashboard: de-identified KPI report reviewed monthly; adjust hours/venues/messaging accordingly.

## 6.2 Recommendations

### 1. Stand up an on-demand interpreter pathway (clinic network level).

- *Owner:* Clinic ops + language services
- *Steps:* contract vendor; publish hours/dial-in; add quick-connect in app
- *Start → live:* 4–6 weeks

### 2. Pilot a community-navigator program with churches (*train 6–8 navigators; stipend*).

- *Owner:* Public health dept. + community partners
- *Steps:* recruit → 1-day training (privacy/consent/app) → assign sites → 48-hour callback workflow
- *Start → live:* 4 weeks

### 3. Embed bilingual consent & results (*plain language; audio; RPA where appropriate*).

- *Owner:* Product + compliance
- *Steps:* translate/back-translate → cognitive debriefing (3–5 adults) → ship; add printable summary
- *Start → live:* 3–4 weeks

### 4. Run monthly group education sessions (*church venues; 30–45 min; demo + Q&A*).

- *Owner:* Navigators + clinic educators
- *Steps:* schedule calendar; bring demo phones; collect anonymous questions; QR resource map
- *Start → live:* 2 weeks

### 5. Ship prioritized UX updates (*toggle, privacy explainer, share-to-clinic, voice prompts*).

- *Owner:* Product/engineering
- *Steps:* implement → instrument → release; 2–4-week iteration cadence
- *Start → live:* first sprint in 2 weeks

### 6. Track a lean KPI set (*completion, SUS, privacy drop-off, time-to-referral, clinic conversions*).

- *Owner:* Product analytics + public health
- *Steps:* define event schema; weekly dashboard; monthly review with partners; publish highlights to community
- *Targets:* completion  $\geq 70\%$ , SUS  $\geq 75$ , drop-off  $\leq 15\%$ , referral  $\leq 14$  days

## 7. Conclusion, Acknowledgments & Contacts

### 7.1 Conclusion

This pilot shows that language access + trusted community pathways change outcomes, not just attitudes. In Milwaukee’s Hmong community, pairing bilingual UI with community navigators produced meaningful gains: task completion 42%  $\rightarrow$  68% (+26 pp), SUS 59  $\rightarrow$  76 (+17), and privacy-screen drop-off 31%  $\rightarrow$  12% (–19 pp). These are low-cost, high-yield improvements that can be sustained by existing church and clinic networks. Over the next 6–12 months, we will scale this model, monitor a lean KPI set, and publish results to inform broader health-equity work in Wisconsin.

What success looks like (12-month targets):

- Completion  $\geq 75\%$ ; SUS  $\geq 80$ ; privacy drop-off  $\leq 10\%$
- Median time-to-referral  $\leq 14$  days after a positive screen
- $\geq 3$  clinics and 5 churches running monthly sessions;  $\geq 300$  first-time screenings

### 7.2 Acknowledgments

We are grateful to the Hmong elders and families who shared their time and experience; to our church partners [add names], community navigators, and interpreters; and to collaborating clinics [add names] for guidance on referral workflows. We also thank [Institution/Program] for ethical review and support. Any errors are our own.

**Authorship & Roles.** [Lead author] conceived the study and led methods, analysis, and writing. [Co-authors] co-led recruitment, translation, and usability testing. [Community partners] advised on design and hosted sessions.

**Funding/Support.** [If applicable; else “This work received no external funding.”]

**Conflicts of Interest.** The authors declare no financial conflicts of interest.

#### Data Availability & Citation

**Data availability.** De-identified quotes, the coding framework, and aggregated metrics are available on request; identifiers are not shared.

**How to cite this report.**

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## 7.3 Contacts

Principal Investigator: [Name], [Affiliation], [email], [phone]

Community Liaison: [Name], [Org], [email], [phone]

Product Lead (App): [Name], [Org], [email]

Appendix (separate files): Policy Brief (1 page); Interview Guide; SUS; Resource Directory; KPI dashboard template.

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## Appendices

### Appendix A. Informed Consent (English Template)

Study Title: Hmong Community Health Access & Parkinson's Early Screening in Wisconsin

**Purpose.** You are invited to take part in a study about access to health services and attitudes toward early screening among Hmong community members in Milwaukee. Your feedback will help us improve bilingual materials, app usability, and referral support.

**Procedures.** If you agree to participate, you will be asked to:

- Complete a short interview/survey (about 30–45 minutes).
- Try a bilingual screening app in a brief walk-through (about 10–15 minutes).
- You may choose Hmong or English for all materials and discussion.
- No audio or video recording will be collected for research purposes. The app demo may temporarily use your phone's camera/microphone; we do not keep any recordings

**Risks/Benefits.** This is a minimal-risk study. Some questions may feel personal; you may skip any question. There is no medical treatment in this study. While you may not benefit directly, your participation may help improve local services and tools for the Hmong community.

**Confidentiality.** We will assign you a study ID. Your name will not appear in reports. De-identified transcripts and survey data will be stored on encrypted drives accessible only to the study team and retained for up to 3 years. We may use short, de-identified quotes in reports.

**Voluntary Participation.** Taking part is your choice. You may refuse or stop at any time without penalty or loss of benefits. Your decision will not affect your relationship with churches, clinics, or services.

**Compensation.** You will receive a \$25 grocery gift card for your time. If you decide to stop early, you will still receive the gift card.

**Costs.** There is no cost to you other than your time. If you use your own phone/data, your normal carrier charges may apply.

**Contacts.** For questions about the study, contact [Principal Investigator Name], [Affiliation], [PI email], [phone]. For questions about your rights as a research participant, contact the [Institutional Review Board (IRB) Office] at [IRB phone/email]. IRB protocol ID: [to be added upon determination].

**Consent Statement.** I have read (or had read to me) the information above. All of my questions were answered. I voluntarily agree to participate.

Follow-up Contact (optional, within 3 months):

☐ YES, you may contact me for a brief follow-up. ☐ NO.

Preferred language for materials: ☐ Hmong ☐ English

Participant Name (print): \_\_\_\_\_

Signature: \_\_\_\_\_ Date: \_\_\_\_ / \_\_\_\_ / \_\_\_\_

Interpreter/Witness (if applicable): \_\_\_\_\_ Date: \_\_\_\_ / \_\_\_\_ / \_\_\_\_

Researcher obtaining consent (print & sign): \_\_\_\_\_ Date: \_\_\_\_ / \_\_\_\_ / \_\_\_\_

*If verbal consent is approved by the IRB, the researcher will document the participant's verbal consent here:* \_\_\_\_\_

## Appendix B. Semi-Structured Interview Guide (English)

**Goal & format (30–45 min).** Conversational, semi-structured interview to understand care access, information sources, digital use, attitudes toward early screening, privacy preferences, and feedback on a bilingual prototype. Use Hmong or English per participant preference; offer interpreter if requested.

### Opening script (2–3 min).

“Thank you for meeting with us. We’re learning how Hmong community members find health information and what would make early screening easier. This is voluntary; you can skip any question or stop anytime. We’ll keep your name out of reports.”

### Quick checks.

- Language preference: ☐ Hmong ☐ English ☐ Both
- Role: ☐ Patient ☐ Caregiver ☐ Community leader ☐ Other: \_\_\_\_\_

### Section 1 — Care & Information (5–7 min)

**Core Q1.** Where do you usually get health information? Who do you trust?

**Probes:** church/pastor; adult children/family; clinic/provider; friends/community groups; social media/YouTube; language used; printed vs. video; what makes a source trustworthy; last time you looked for information.

### Section 2 — Barriers to Care (5–7 min)

**Core Q2.** What makes it hard to seek care or schedule an appointment?

**Probes:** language/medical terms; interpreter availability & scheduling; transportation/time off work/childcare; cost/insurance; clinic hours (evenings/weekends); negative past experiences; “Walk me through the **last time** you tried to book a visit—what happened?”

### Section 3 — Digital Use (5–6 min)

**Core Q3.** Have you used telehealth or health apps? What was easy or hard?

**Probes:** phone type; data/Wi-Fi; confidence installing apps; permissions/camera/microphone; reading on small screens; need for help from family; privacy prompts that felt confusing; preferred tutorials (Step-by-step pictures).

### Section 4 — Early Screening (5–6 min)

**Core Q4.** What would make you will—or unwilling—to try a **phone-based** screening?

**Probes:** who invites you (pastor, adult child, clinic text); where it happens (church, home, clinic); time needed; clear next steps; benefits/risks; “If your pastor announced a screening workshop after service, would you join? Why/why not?”

### Section 5 — Privacy & Results (4–5 min)

**Core Q5.** Who should be allowed to see your screening results? How should results be explained?

**Probes:** patient only vs. family vs. clinic; consent to share; how long data can be kept; what would make you comfortable (plain-language, icons, paper copy); ability to change your mind/revoke sharing.

### **Section 6 — Prototype Feedback (6–8 min)**

*(If demoing the app; otherwise skip.)*

**Instruction:** “Please **think aloud** as you try these steps: (1) choose language; (2) read the privacy explainer; (3) complete a short screen; (4) share to clinic.”

**Probes/observations:** where you hesitated; words/icons that confused you; font size; audio helpful?; language toggle easy to find?; privacy message clear?; any step you would change first; would you prefer help from a navigator; offline/low-bandwidth issues.

### **Closing (2–3 min)**

- “Is there anything we didn’t ask that we should have?”
- “Would you like materials in Hmong, English, or both?”
- Confirm compensation and provide resource map QR.
- Ask permission for **follow-up within 1–3 months** (if applicable).

### **Optional Demographics (card or brief survey)**

Age range; gender; role (patient/caregiver/leader); primary language; years in U.S.; highest education; smartphone ownership; data/Wi-Fi access.

### **Interviewer notes & etiquette**

- Avoid medical advice; use **plain language**; pause for interpreter; reflect back (“So I’m hearing...”).
- Mark notable quotes/time stamps; record **stuck points** and environment (noise/connectivity).
- If distress occurs, pause/offer to stop; remind of voluntary nature.

## Appendix C. Brief Scales (English)

### **C1. Digital Literacy (5 items, 1=Strongly disagree...5=Strongly agree)**

- I feel confident using my smartphone for new apps.
- I can change settings (language, privacy) without help.
- I can read and follow on-screen instructions.
- I know how to find help when an app confuses me.

### **C2. Care Access Convenience (5 items)**

- I can get to a clinic when I need to.
- I can schedule appointments at times that work for me.
- I can get an interpreter when I need one.
- I can talk to a provider I trust.
- I understand my insurance or payment options.

### **C3. System Usability Scale (SUS; 10 items)**

> *Standard SUS items with 5-point agreement; scoring 0–100.*

1. I think that I would like to use this system frequently.
2. I found the system unnecessarily complex.
3. I thought the system was easy to use.
4. I think that I would need the support of a technical person to be able to use this system.
5. I found the various functions in this system were well integrated.
6. I thought there was too much inconsistency in this system.
7. I would imagine that most people would learn to use this system very quickly.
8. I found the system very cumbersome to use.
9. I felt very confident using the system.
10. I needed to learn a lot of things before I could get going with this system.

> *Scoring: For odd items, score = scale position – 1; for even items, score = 5 – scale position. Sum × 2.5.*

## Appendix D. Policy Brief

**Title:** Hmong Community Health Access & Parkinson's Early Screening in Wisconsin

**Audience:** Clinic leaders & Milwaukee County Public Health

### **Problem (2–3 bullets).**

- English-only materials, interpreter scheduling delays, and unclear privacy messages depress participation and delay referrals for Hmong residents.
- Limited evening/weekend access and transportation/time costs create missed or postponed visits.
- Trust is routed through churches and family, yet current outreach is mostly clinic-centric and underutilizes these pathways.

### **Key Findings**

- Pairing bilingual UI + community navigators increased task completion 42% → 68% (+26 pp) across 40 sessions.
- Usability improved (SUS 59 → 76 (+17)) and privacy-screen drop-off fell 31% → 12% (–19 pp).
- Trusted intermediaries (pastors/church leaders, adult children, CHWs) markedly improved RSVP/attendance and screen initiation compared with generic clinic channels.

### **Recommendations (actionable, cost-aware, timeline).**

1. On-demand interpreter pathway (phone/video) covering evenings & weekends.
  - *Cost:* vendor minutes or per-encounter rates; use existing tele-language contracts.
  - *Timeline:* stand-up in 4–6 weeks; publish hours/dial-in in app and resource map.
2. Community navigator program with churches (train 6–8 navigators; stipend \$400–\$600/month).
  - *Cost:* stipends + brief training (privacy/consent/app).
  - *Timeline:* recruit & train in 4 weeks; 48-hour callback after positive screens.
3. Monthly church-hosted education sessions (30–45 min; demo + Q&A) with bilingual plain-language materials.
  - *Cost:* venue/refreshments ~\$150/session; shared slides/QR resource map.
  - *Timeline:* launch in 2 weeks, then monthly.
4. Ship prioritized bilingual UX updates (front-and-center language toggle, icon-led privacy explainer with audio, one-tap share-to-clinic, voice prompts).



- *Cost*: engineering/design sprints; no new hardware.
  - *Timeline*: 1–2 sprints for MVP; 2–4-week iteration cadence.
5. Transport support for first neurology visit (bus passes or \$10–\$15 ride credits).
- *Cost*: per-visit vouchers; partner with transit agency/rideshare.
  - *Timeline*: activate within 4 weeks via clinic front desk or navigator codes.

Projected Impact (6–12 months, 2–5 sites).

- +25 percentage points in first-time screening completion vs. baseline.
- $\geq 300$  first-time screenings; median time-to-referral  $\leq 14$  days post-positive screen.
- Interpreter utilization  $\geq 80\%$  during screening/first visit;  $\geq 70\%$  of positive screens contacted within 3 business days.