

Promoting Anaemia Awareness and Prevention Through a Multilingual Digital Health App in Leicester

Programme: MSc Public Health and Social Care in Practice
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Name: Ashok Patel | Student Number: 2532746

Background

Anaemia is a public health problem defined by inadequate healthy red blood cells or haemoglobin, reducing the oxygen available to the body (World Health Organization, 2024). Iron deficiency is a leading cause, although other nutritional deficiencies and medical conditions can contribute (Kiani et al., 2022).

Some Leicester residents may not recognise symptoms or obtain timely advice because of language barriers, limited health literacy, or difficulty accessing reliable information. A multilingual digital health app could translate information, provide iron-related dietary advice, raise symptom awareness, and signpost users to NHS services. Audio features and simple text could improve accessibility and support equitable anaemia prevention.

Health Promotion Values and Principles

Health promotion should enable people to make informed decisions, reduce inequalities, and support communities to act on their health (Gkiouleka et al., 2023). The proposed app applies these principles as follows:

- **Equity and accessibility:** multilingual content, audio explanations and straightforward navigation.
- **Empowerment:** practical information on symptoms, iron-rich foods and when to seek professional advice (Iolascon et al., 2024).
- **Involvement:** engagement of residents, community organisations and health professionals in design and testing.
- **Cultural sensitivity:** culturally appropriate food examples relevant to Leicester, without stereotyping communities (Bishop, 2024).
- **Health literacy:** clear language, illustrations and short educational messages.
- **Prevention and self-care:** promotion of healthy eating and timely medical attention.

Application to the intervention: The app reflects equitable, person-centred health promotion by making information easier to understand and access. However, digital exclusion, limited internet access and translation errors may reinforce inequalities (Saleh, 2024). It should therefore complement, rather than replace, community outreach and face-to-face health education.

Behaviour Change Theory: COM-B Model

The COM-B model proposes that behaviour occurs when people have capability, opportunity and motivation (Lakshmi et al., 2023). It provides a practical framework for designing the app.

- **Capability:** multilingual text, audio, illustrations and symptom-awareness content can improve understanding of anaemia, iron-rich foods and when to seek advice (Khare and Arora, 2025).
- **Opportunity:** links to NHS services, local health resources and community support enable appropriate access.
- **Motivation:** reminders, tips and progress tracking may encourage better food choices and timely professional consultation (Abeltino et al., 2025).

Critical evaluation: COM-B usefully connects education, practical support and motivation. However, improved knowledge does not automatically produce behaviour change: food affordability, cultural preferences, digital access and competing priorities may limit adherence (Balkaya and Baykal, 2025). The app should therefore be integrated with community-based education and available healthcare.

Expected behavioural change: increased anaemia knowledge, healthier food choices where appropriate, and greater uptake of professional advice and recommended testing.

Digital Health App Intervention Design

Proposed intervention: Anaemia Awareness Leicester

Aim: To increase awareness of anaemia, support its prevention, and reduce language barriers to health information for Leicester residents.

Target population

The app will prioritise people who may not speak or understand English, women of reproductive age and pregnant women, and other groups at higher risk of anaemia. It should also serve families and community members seeking accurate nutrition information. Design should be user-centred and based on local evidence and individual needs rather than assumptions about whole population groups.

Key app features

Feature	Practical application
Multilingual interface	Translated content, audio narration and simple language.
Anaemia awareness	Information on common symptoms, causes and risk factors.
Nutrition guidance	Culturally relevant examples of iron-rich foods and vitamin C sources.
Healthcare signposting	Links to NHS information and guidance on consulting healthcare professionals about appropriate services.
Notifications	Optional reminders for educational content and healthy dietary habits.
Accessibility	Clear icons, readable fonts, low-data design and assistive-technology compatibility.

User journey

- **Discover:** find the app through QR codes, community centres, pharmacies and GP practices.
- **Learn:** choose a preferred language and browse short educational modules.
- **Act:** review dietary advice and guidance on when to seek professional advice.
- **Follow up:** receive optional reminders and links to appropriate NHS services.

Implementation and Evaluation

- **Co-design:** involve community members, healthcare providers and community organisations to ensure cultural relevance and accurate translation.
- **Partnerships:** promote the app through Leicester community networks, GP practices and health services.
- **Evaluation:** monitor downloads, module completion, learning and engagement with NHS signposting.
- **Safety and privacy:** protect personal information; the app will not diagnose anaemia and will use trusted NHS guidance.

Although digital delivery can improve accessibility, it may exclude people without smartphones, internet access or digital confidence. Printed materials and face-to-face outreach should remain available.

Expected Outcomes and Critical Evaluation

Feature	Expected outcome
Improved awareness	Greater understanding of anaemia causes, symptoms, risk factors and prevention (Hess et al., 2023).
Healthier behaviours	Greater awareness of iron-rich foods and appropriate dietary practices.
Earlier healthcare engagement	Greater willingness to seek professional advice and appropriate testing when indicated (Wong et al., 2023).
Reduced information barriers	Improved access to understandable multilingual and audio health information.
Measurable impact	Changes in knowledge scores, app engagement, module completion and use of healthcare services.

Critical evaluation: The app may improve health literacy by providing accessible, language-appropriate information. However, higher awareness does not guarantee sustained behaviour change or reduced anaemia prevalence (Benfo et al., 2023). Food affordability, cultural preferences, digital exclusion, engagement and translation or content errors may limit impact (Delfani et al., 2024). Population-health improvements cannot be inferred from download numbers alone.

Evaluation method: Assess users' knowledge before and after engagement, collect feedback from diverse Leicester residents, and monitor accessibility. Where ethical and practical, longer-term evaluation could examine healthcare engagement and relevant health outcomes (Sheather et al., 2023). The app should complement, not replace, professional diagnosis, treatment and community-based prevention.

Conclusion and Recommendations

A multilingual digital health app is a promising way to increase anaemia awareness and prevention in Leicester. Accessible, culturally relevant education and NHS signposting could improve health literacy and engagement, but success depends on accessibility, reliable information and sustained community participation.

Recommendations

Recommendation	Action
Co-design	Engage local communities, community groups and health providers in app development.
Improve inclusion	Offer audio versions, accessible design and printed materials for people experiencing digital exclusion.
Ensure safety	Validate translations, safeguard user information and ensure health information follows NHS standards.
Evaluate effectiveness	Assess changes in knowledge, user engagement and health-seeking behaviour.
Support sustainability	Connect app promotion with community health education and primary-care services (Omrani et al., 2023).

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