

DESIGNING AN AI-INTEGRATED DIGITAL COACHING PLATFORM FOR TYPE 2 DIABETES (DIGIWELL)

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BACKGROUND

Type 2 Diabetes Mellitus (T2DM) is a worldwide public health problem (Hossain et al., 2024). According to the World Health Organization, there are more than 422 million people living with diabetes across the globe, with 90% of them having Type 2 Diabetes (Lu et al., 2024). In the United Kingdom, there are around 4.3 million diagnosed people, and the number is increasing every year due to rising obesity rates, sedentary lifestyles and an increasing population of elderly people (Diabetes UK, 2024). Lack of control over blood glucose levels increases the risk of heart disease, kidney failure and early death, which puts huge financial strain on the National Health Service (NHS) in England (NHS England, 2022), so effective self-management by people with diabetes is essential to decrease their risk of developing complications and improve their long-term outcomes.



THE DIGITAL INTERVENTION: DIGIWELL

- Real-time CGM glucose data
- Wearable physical activity tracking
- AI-based glucose prediction models
- Personalised dietary recommendations
- Behavioural nudges
- Telehealth booking system
- Peer-support community forum



HEALTH PROMOTION PRINCIPLES AND VALUES

Health promotion is guided by empowerment, equity, participation and sustainability (WHO, 1986).

DigiWell aligns with these principles:

Empowerment:

- Provides personalised insights and education to improve health literacy and self-management (Jones, 2022).

Equity:

- Proposes NHS integration and subsidized access to reduce digital exclusion (Marmot et al., 2024).

Participation:

- Peer-support forums encourage shared learning and social engagement.

Sustainability:

- Focuses on long-term behavioral change rather than short-term clinical correction.

By embedding these principles, DigiWell supports holistic and equitable public health promotion.

BEHAVIOUR CHANGE THEORY: COM-B MODEL

Capability

Educational micro-modules improve knowledge of diet, exercise and glucose regulation (Luschud et al., 2024).

Opportunity

Telehealth integration and community forums provide social and environmental support.

Motivation

AI-driven feedback and goal tracking enhance intrinsic motivation and reinforce behaviour.

Additionally, Social Cognitive Theory (Nickerson, 2024) informs the design through strengthening self-efficacy. Research shows that increased self-efficacy improves glycaemic control (Gao et al., 2022). Embedding theory ensures DigiWell is not merely technological, but behaviourally informed.

EXPECTED OUTCOME

Implementation of DigiWell is expected to:

- Reduce HbA1c levels
- Improve adherence to diet and exercise
- Reduce frequency of hyperglycaemic events
- Increase patient self-efficacy
- Decrease hospital admissions

AI-based predictive alerts may support early behavioural correction, strengthening preventive care delivery.

However, effectiveness depends on sustained engagement and digital accessibility.

CRITICAL ANALYSIS AND RISKS

Despite its innovation, DigiWell presents limitations:

- Digital health inequality among low-income and older populations
- Algorithmic bias affecting ethnic minority groups (Cary et al., 2023)
- Data privacy and cybersecurity concerns
- Behavioural fatigue due to excessive notifications
- Psychological impact of over-medicalisation

Digital interventions risk widening inequalities if inclusion strategies are not prioritized (Watts et al., 2026).

ADDRESSING DIGITAL HEALTH INEQUALITY

To ensure equitable implementation:

- Integrate DigiWell into NHS primary care pathways
- Provide government-funded device subsidies
- Implement AI transparency and bias auditing
- Ensure GDPR-compliant data governance
- Adopt a hybrid care model combining digital and face-to-face consultations (Greenhalgh et al., 2025)

Co-design with diverse patient groups can further enhance accessibility and trust.

CONCLUSION

DigiWell represents a next-generation AI-integrated health promotion intervention for Type 2 Diabetes. By combining behavioural science with predictive analytics, it supports proactive disease management.

Its success depends on ethical AI governance, equitable access, and sustained engagement. If implemented inclusively, DigiWell has the potential to strengthen preventive healthcare policy, enhance patient autonomy, and reduce long-term NHS burden.

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