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**Programme: M.sc Public Health and Social Care in
Practice**

**Module Title: Population Health and Digital Health
Promotion**

Module Code: LCHS7007

**Assignment Title: Task-1 Blog 1, Blog 2
Task-2 Poster**

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TASK 1: BLOGS

BLOG 1: THE IMPACT OF AN EXISTING DIGITAL TECHNOLOGY CURRENTLY USED FOR A DIGITAL HEALTH PROMOTION INTERVENTION

The Impact of Mobile Health Apps in Diabetes Management

Public Health Problem : Diabetes

Diabetes is a core 21st-century public health concern. The World Health Organization approximates its global prevalence has increased almost twofold since 1980, from 4.7% to 8.5% in adults (WHO, 2023). The data analysis from Diabetes UK, in total, shows that 12.2 million people were affected, 4.6 million have diagnosed diabetes, 1.3 million have undiagnosed diabetes, and 6.3 million are with non-diabetic hyperglycemia, otherwise known as pre-diabetes (Theguardian, 2025). The price tag is staggering, with healthcare costs attributed to diabetes over £14 billion in 2021/22 (York, 2024). Complications of poor glycemic control include heart disease, kidney failure, and amputations, reducing quality of life and mortality.

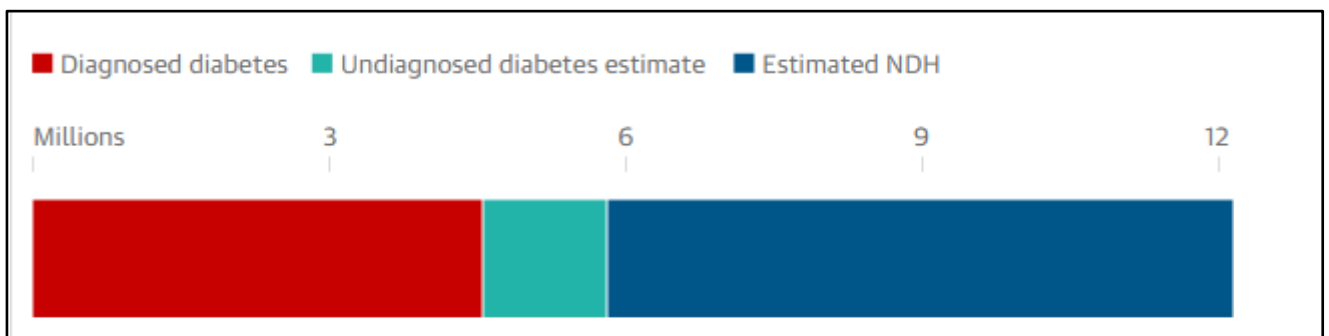


Figure 1: Estimated diabetic affected people in UK

(Source: Theguardian, 2025)

Digital Technology in Health Promotion

Mobile apps for diabetes management revolutionize public health interventions. These provide crucial functionalities such as tracking blood glucose levels, medication reminders, carbohydrate counting, activity tracking, and education. A few of them interface with continuous glucose monitoring devices and insulin pumps and provide real-time information. The technology facilitates more effective management by patients of their condition, optimizing treatment compliance, and lifestyle modification for better glycemic control.

Revolutionary diabetes management apps enable blood glucose tracking, medication reminders, carbohydrate counting and activity tracking. They have some interface to continuously glucose monitors and insulin pumps for real time data. This technology allows patients to intelligently self-manage their condition, ensure greater treatment compliance, and improve their lifestyle habit to bring about better glycemic control.

Evidence of Health Promotion Impact:

Evidence indicates diabetes management apps work. A systematic review demonstrated mHealth app users had a mean decrease in HbA1c of 0.57% (María Gómez et al., 2022). Cardona- Hernandez *et al.* 2023 reported in a trial involving 1,500 individuals, those using such apps were 37% more likely to be at optimal glycemic control after 12 months. A meta-analysis of 28 studies demonstrated mHealth interventions had a 39% improvement in medication adherence and a 28% improvement in self-monitoring (Al-Arkee *et al.* 2021).

Critical Discussion of Impact:

Diabetes management applications are of immense value. They offer patient-specific, convenient access support outside the conventional healthcare environment. The technology supports patient empowerment and activation, enabling efficient healthcare systems by avoiding unnecessary emergency visits and hospitalization. Instant feedback enables rapid behavioral modification, particularly in insulin-dependent patients.

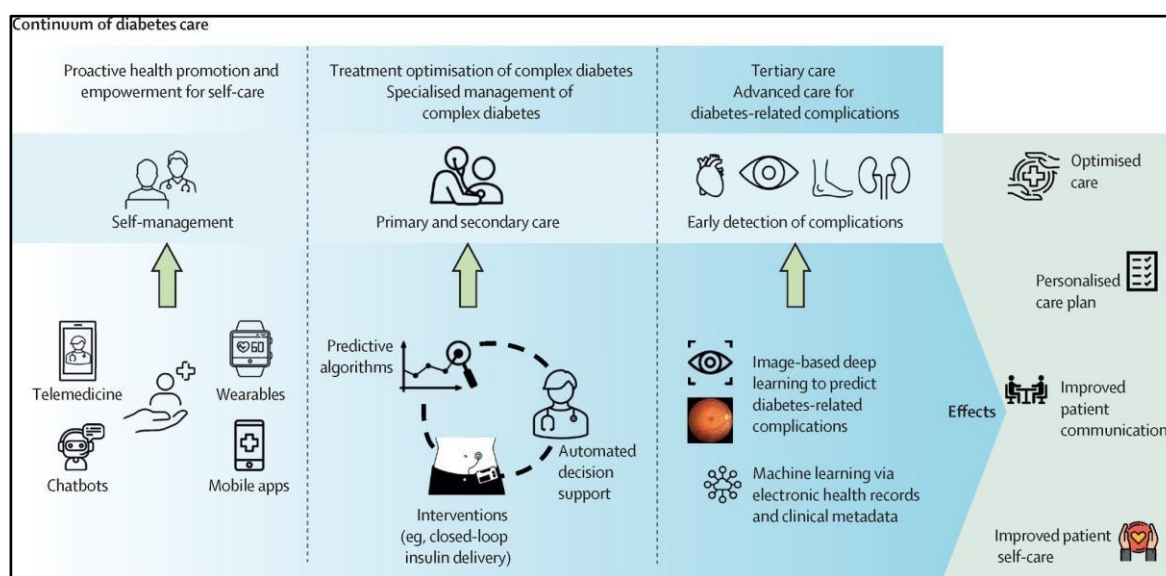


Figure 2: Digital health-care techniques for Diabetic

(Source: Thelancet, 2024)

There are substantial gaps. There are persistent digital health disparities, most notably among older adults, low-income groups, and rural communities with diabetes. There are persistent privacy issues around personal health data, and app quality is highly variable with the majority lacking evidence-based material or clinical evidence. Clinicians are also not generally trained to incorporate app data into clinical decision-making.

Addressing the Shortfalls:

Diabetes management app optimization is a multi-pronged effort. Digital literacy training for at-risk groups and subsidized devices for low-income patients can improve access. Standardized assessment guides and certification processes for health applications improve quality assurance. Electronic health record integration of app data improves clinical encounters. Finally, informing healthcare professionals about digital health technologies must be done in order to bridge the gap between innovation and clinical practice.

BLOG 2: THE IMPACT OF A DIGITAL TECHNOLOGY YOU DESIGNED FOR A DIGITAL HEALTH PROMOTION INTERVENTION

NutriSync: An AI-Powered Diabetes Management Ecosystem

Public Health Problem

Diabetes is still one of the most major public health issues in the world with about 537 million adults being affected globally (World-heart-federation, 2024). In total, Diabetes UK data shows 12.2 million people affected, 4.6 million have diagnosed diabetes, 1.3 million have undiagnosed diabetes and 6.3 million with non-diabetic hyperglycemia, or pre diabetes (Theguardian, 2025).

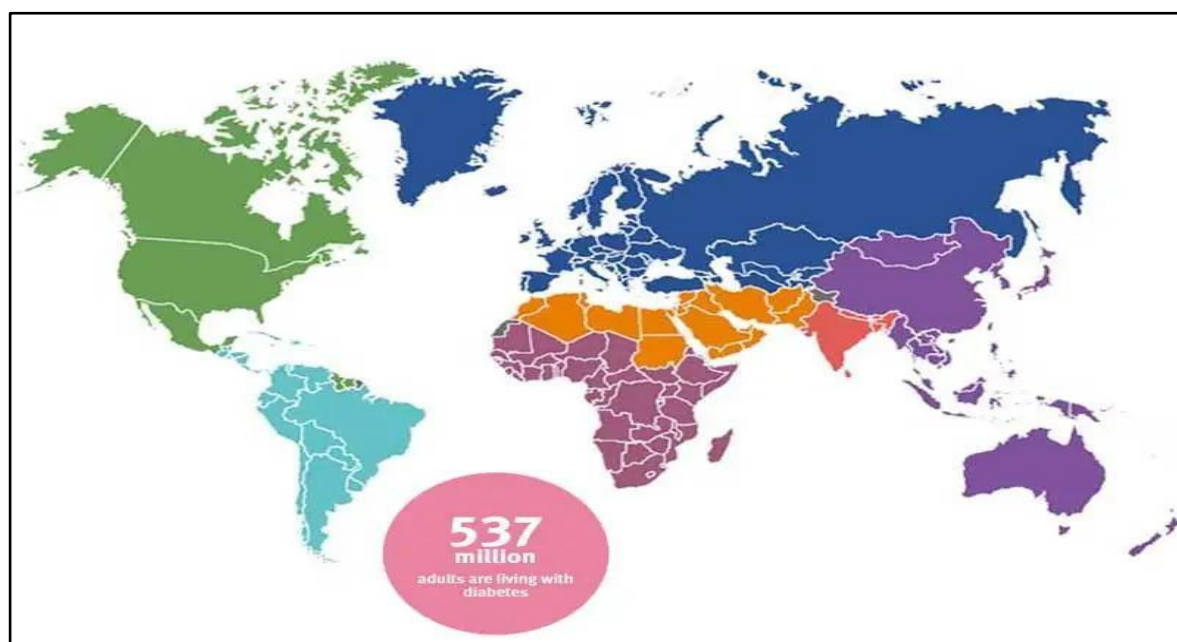


Figure 3: Diabetic affected adult worldwide
(Source: Diabetesvoice, 2023)

Designed Digital Technology:

NutriSync is an integrated system for diabetes care I've built that goes beyond conventional mobile health apps. Its foundation is that NutriSync uses artificial intelligence to generate personalized nutrition and lifestyle advice based on continuous glucose monitoring (CGM) information. The technology integrates three interrelated elements which include a user- friendly smartphone app, a patented algorithm for detecting personal glycemic reactions to foods and activities, and a smart kitchen appliance that continuously scans meal composition in real-time. In contrast to current solutions that only monitor information, NutriSync learns with every user's physiological reaction, making more customized suggestions based on personal metabolic patterns instead of standard rules.

Personalized AI nutrition advice, real-time food analysis through smart kitchen integration, and adaptive learning algorithms that identify unique glycemic responses are just a few of these cutting-edge features that empower users. Improved glucose control, fewer treatment side effects, better self-care capabilities, and better decision-making through tailored insights rather than general advice are some of the benefits of the technology.

Use in Health Promotion:

NutriSync will transform diabetes self-care from reactive to predictive. The system offers meal planning suggestions individually tailored to reduce glucose excursions for each patient. As a meal is being cooked, the intelligent kitchen appliance scans nutritional information and forecasts the probable glycemic effect based on the patient's past data (Coman *et al.* 2024). The app then recommends adjustments, if necessary, maybe portion size reduction, addition of a protein element, or inclusion of certain fiber sources that have been shown to temper that person's glucose response. With time, users gain an intuitive sense of their individual metabolic tendencies, leading to long-term behavioral change rather than short-term compliance with generic advice. The system also includes a telehealth integration module, enabling healthcare professionals to view actionable data summaries and intervention opportunities.

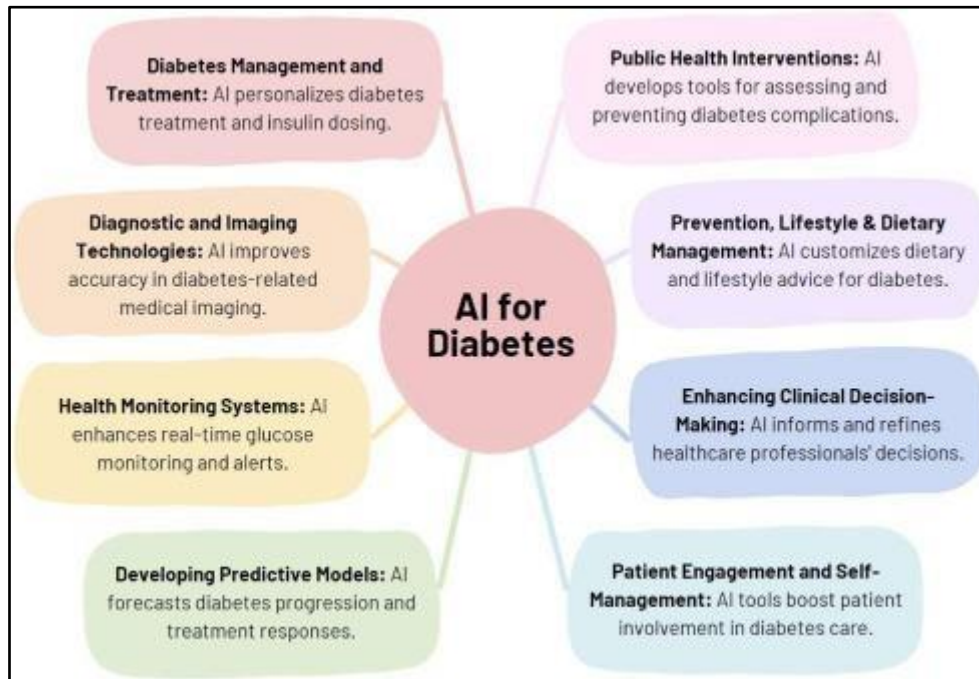


Figure 4: AI in diabetes care management

(Source: Ars.els-cdn, 2023)

Critical Discussion of Impact:

NutriSync has various benefits over existing solutions. Its tailored approach recognizes the important individual differences in glycemic reactions that one-size-fits-all nutritional advice cannot compensate for. The forecasting abilities allow individuals to act on knowledge in advance of developing glucose dysregulation. The emphasis of the system on nutrition and food is frequently the most difficult area of diabetes control and complements the deficiencies in other technologies, which are generally geared toward drug taking and blood glucose monitoring (Petroni *et al.* 2021).

Nonetheless, considerable hurdles persist. The technology takes high computational loads and initial periods of data gathering to produce valuable personalization, with the risk of delaying payback for new adopters. The multi-component nature of the system incurs higher implementation expenses compared to one-function apps, possibly constraining adoption among economically marginalized groups that commonly carry a disproportionate burden of diabetes. AI-powered analysis of individual health information also raises privacy concerns as further adoption barriers.

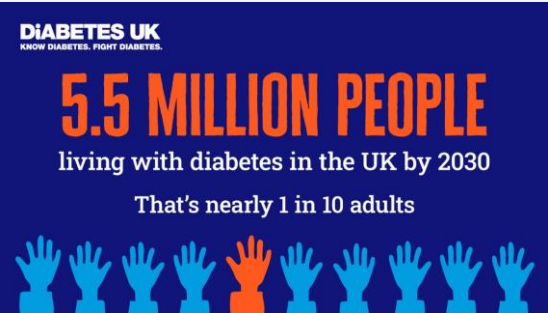
Addressing the Shortfalls:

To overcome these shortfalls, one could design a tiered model of implementation—with minimal functionality developing progressively as the system learns about users from collected data. The costs for sensitive groups might be subsidized through public-private partnerships, and strategic harmonization with ongoing healthcare reimbursement infrastructures would increase financial viability.

Digital Health Interventions for Diabetes Management: Bridging Health Promotion and Behavioral Change

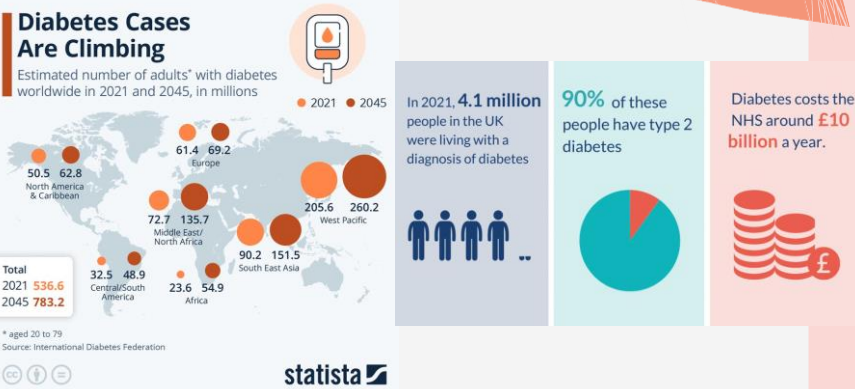
1. Background

Global diabetes rates have surged over the past decades to reach 800 million adult cases worldwide in 2024 (The United Nations Office at Geneva, 2024). The sudden increase proves the necessity of implementing effective intervention tools. Traditional public health interventions in diabetes prevention have included community-based lifestyle transformation programs and healthy rice variety implementation to lower diabetes rates (Root, 2024). Health applications on mobile devices have evolved into essential tools for diabetes treatment throughout the digital environment. Patients can use these digital applications to check their blood glucose levels and get medicine notifications as well as educational information which strengthens personal health management and medication compliance (Doyle-Delgado and Chamberlain, 2020).



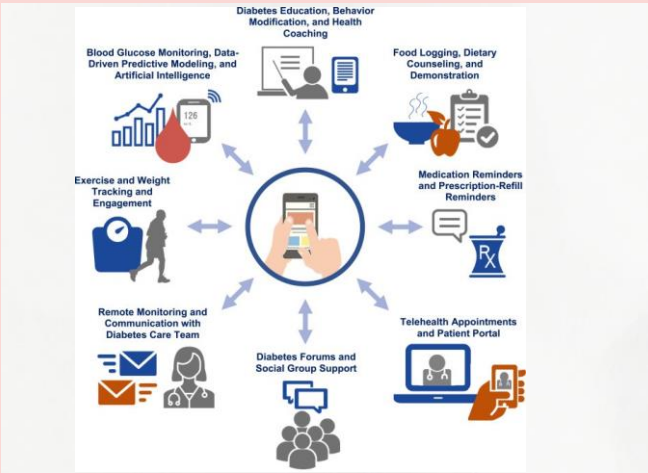
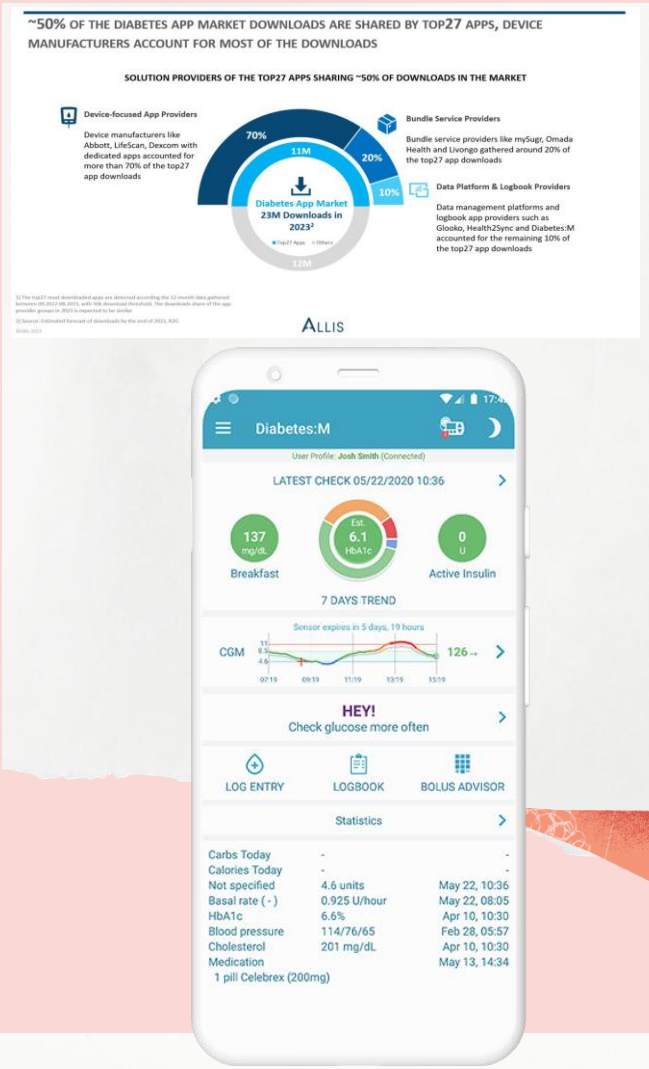
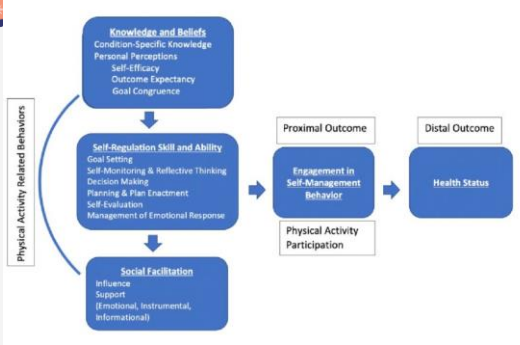
2. Health promotion values and principles

Health promotion develops methods which enable people to achieve greater control of their well-being through principles that include fairness alongside empowerment and societal duty (World Health Organization, 2019). Mobile applications for diabetes management serve as examples of health promotion principles because users get personalized tools to measure blood glucose and track medication and educational content (Fleming et al., 2020). The method enables participants to gain control over their health outcomes and contributes to fair health results. Internet access remains out of reach for 3.7 billion individuals worldwide in 2024; highlighting the need to address digital health disparities to ensure inclusive health promotion.



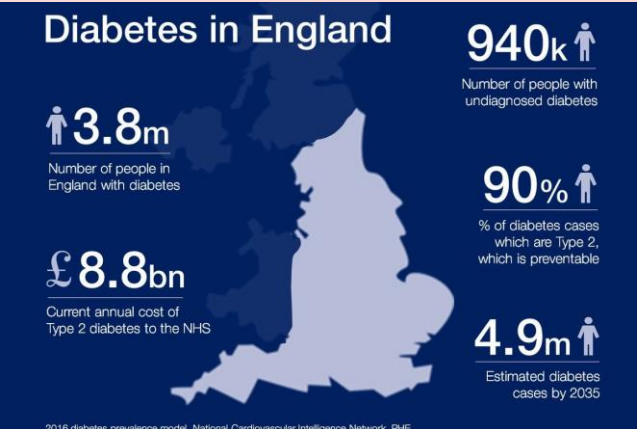
3. Behavioral Change Theory

The Health Belief Model (HBM) shows that individuals will embrace health-promoting behaviors after recognizing personal health vulnerabilities and severe risks while understanding action benefits with easy access to that action (Lo et al., 2015). Mobile health applications implementation of the HBM provides specific blood glucose feedback that boosts users' understanding of their illness susceptibility and the problem's severity (Jorvand et al., 2020). The mobile applications supply educational materials and scheduling tools to raise awareness regarding adherence benefits and eliminate user-facing obstacles. Study shows that as of 2023, diabetes management apps reached 20 million downloads since 2018 with a 21% annual growth rate, which indicates its increasing impact on patients' need and behavior change (Allis, 2023).



4. Expected outcome

The utilization of Health Belief Model (HBM) principles in digital diabetes management interventions projects major enhancements in treatment outcomes (Sazali et al., 2022). Type II diabetic patients who participated in a digital education program based on the HBM showed enhanced foot care knowledge and behavior improvements than control subjects (Widodo et al., 2025). A 2021 study revealed that Patients experienced important knowledge and self-care behavioral improvements after completing an HBM-based educational training (A Mohamed et al., 2021). Such interventions demonstrate potential to enhance diabetes treatment and lower the chances of diabetes complications.



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Top features of diabetes management app



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