**Research objectives**

**By Tasfaye Haile**

**TITLE**: PROTOTYPE DESIGN OF SMARTPHONE DIABETES SCREENING App

**Introduction**

Diabetes is a devastating chronic disease. Numerous people are disabled and dead due to the complexity of the disease and its management. The June 29, 2022, report of the Centers for Disease Control and Prevention revealed that in the USA, 37.3 million people have Diabetes (11.3% of the US population)1. Ninety-six million people aged 18 years and older have prediabetes (38.0% of the adult US population).1 Worldwide, the number of people with Diabetes rose from 108 million in 1980 to 422 million in 2014.2 Prevalence has risen more rapidly. The matter is further complicated when compounded by some social determinants, such as the inability to access proper diabetic medical care due to cost-related issues. The economic impact of Diabetes and its complications bring about a substantial financial loss to people with Diabetes and their families, health systems, and national economies through direct medical costs and loss of work and wages.1,2 There is evidence that disparities exist in diabetes prevalence, access to diabetes care, diabetes-related complications, and the quality of diabetes care.2-3 The existing diabetic patient evaluation, intervention, and monitoring method does not adequately address the preferred goal of blood glucose range to optimize patient wellbeing.2-3

 Prevention of this disease before it happens or at its early onset is more critical than treating the full-blown metabolic syndrome.2 Prediabetes can be treated and its consequences avoided or delayed with diet, physical activity, medication, and regular screening and treatment.2

Mobile applications (apps) deliver Diabetes screening and help to detect the early phase of the disease to reverse it. Currently, the available Diabetes App is not intended for screening purposes. A new innovative user center design that assists the population in preventing Diabetes is not something we overlook.1-4 This project tries to address this gap.

**The aim of the project is described as follows:**

**Aim 1**: - Develop a self-administered, noninvasive smartphone diabetes screening App for previously undiagnosed people to facilitate disease prevention.

**Objective**: a) (0acB) To assess the existing Diabetes screening method from the literature

review

                        b) (0acB) To collect the end user's perception towards self-administered

noninvasive Diabetes screening smartphone App

                       c) (0acB) To collect end-user requirements for self-administered noninvasive

Diabetes screening smartphone App

                       d) (0acB) To develop a prototype self-administered noninvasive Diabetes

screening smartphone App

                        e) (0acB) To get expert feedback on the prototype

                        f) (0acB) To evaluate the final prototype by the end user

This project will be the first phase of Developing a smartphone diabetes screening App, prototype design, and evaluation.

This application aims to enhance an individual's understanding of their diabetic condition and empower those with irregular results to take prompt action toward prevention or reversal.

Furthermore, an accessible, noninvasive screening tool can significantly improve early detection and intervention.

I can complete this objective by using publicly available data, which may be accessed conveniently, and collecting new data using Human Center design focus group discussion; and will learn from an available step-by-step reference guide.

[https://www.google.com/books/edition/Institutionalization\_of\_Usability/Jc5VyXbkymwC?hl=en&gbpv=1&dq=step-by step+reference+guide+for+Human+center+design+approach&pg=PR15&printsec=frontcover](https://www.google.com/books/edition/Institutionalization_of_Usability/Jc5VyXbkymwC?hl=en&gbpv=1&dq=step-by%20step+reference+guide+for+Human+center+design+approach&pg=PR15&printsec=frontcover)

**Aim 2:** Assing user interface design for Diabetes management using Literature review

**Objective**: a) (0aB) To assess user interface design for Diabetes management

                   b) (0aB) To evaluate the effectiveness of the interface design for Diabetes

management

                   c) (0aB) To evaluate the user acceptance of the interface design for Diabetes

management

I can complete this objective by using publicly available data, which may immediately be accessed in a convenient format, and I will learn from an available step-by-step reference guide.

<https://www.google.com/books/edition/The_Literature_Review/DF-oJ0mstfEC?hl=en&gbpv=1&dq=step-by-step+reference+guide+literature+review&pg=PP1&printsec=frontcover>

**Aim 3:** Assessing the existing applications to screen for chronic diseases by literature review.

**Objective**: a) (0aB) To review the existing screening App for chronic diseases

                   b) (0aB) To evaluate the effectiveness of the App for chronic disease screening using

previous studies' findings

                   c) (0aB) To evaluate the strengths and weakness of the App for chronic disease

screening using previous studies' findings

                    d) (0aB) to evaluate the end user's acceptance and use of the App for chronic disease

screening using previous studies' findings.

I can complete this objective by using publicly available data, which may immediately be accessed in a convenient format, and I will learn from an available step-by-step reference guide.

<https://www.google.com/books/edition/The_Literature_Review/DF-oJ0mstfEC?hl=en&gbpv=1&dq=step-by-step+reference+guide+literature+review&pg=PP1&printsec=frontcover>

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6. [**https://www.google.com/books/edition/The\_Literature\_Review/DF-oJ0mstfEC?hl=en&gbpv=1&dq=step-by-step+reference+guide+literature+review&pg=PP1&printsec=frontcover**](https://www.google.com/books/edition/The_Literature_Review/DF-oJ0mstfEC?hl=en&gbpv=1&dq=step-by-step+reference+guide+literature+review&pg=PP1&printsec=frontcover)