## Design and Development of the EMPOWER-SUSTAIN Prototype Web-Based Self-Management Mobile Apps: A Novel Empowerment Tool for Patients with Metabolic Syndrome

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## **ABSTRACT**

**Introduction:** Given the proliferation of mobile phone users with accessibility to the internet, web-enabled mobile-based self-management intervention system is a potential solution to improve self-management behaviour among patients especially in the younger age groups.

**Objective:** This study aimed to design and develop the EMPOWER-SUSTAIN prototype webbased self-management mobile apps for patients with Metabolic Syndrome (MetS), to empower them with knowledge and skills to take charge of their health.

Methods: Iterative Model was chosen as the software development model for this study. Content from the newly revised EMPOWER-SUSTAIN Global Cardiovascular Risks Self-Management Booklet<sup>©</sup> was evaluated for its suitability to be included in the prototype. A storyboard was designed to create the flow of prototype usage by Primary Care Physicians and patients during follow-up clinic and at home. In the pre-alpha stage, wireframe was designed to describe and visualize the user interface in static draft layouts based on the content and structure of information. Based on the wireframe, a mock prototype was designed to demonstrate the graphic representations of the content and function. Using the iterative model of the software development life cycle (SDLC), a working prototype was developed based on the mock prototype.

**Results:** High-fidelity mock-up static graphic diagrams demonstrating the content and function divided into eight sections were designed. The sections included My Profile, My Cardiovascular Risks, My Treatment Targets, My Check-Up, My Weight Management, My Smoking Habit, My Self-Management and My Medication. Based on the graphic diagrams, a working prototype of the EMPOWER-SUSTAIN web-based self-management mobile apps were developed using the iterative model of the SDLC.

**Conclusion:** The EMPOWER-SUSTAIN prototype web-based self-management was developed using a robust software development method. It is currently undergoing the alpha (utility) testing by medical experts and beta (usability) testing by patients with MetS.

**Keywords:** EMPOWER-SUSTAIN Prototype, Mobile Apps, Self-Management Support, Metabolic Syndrome