

Design an Dietary Management App via the User Experience Design Framework

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Abstract:

The objective of this study is to explore user needs and propose a conceptual interface for an app that aided users in dietary management, targeting obese individuals, using a user-experience design framework. The research was conducted in two phases. The first phase involved expert interviews and diary studies to gain an in-depth understanding of the current situation, methods, and issues related to obesity treatment with professional assistance. Long-term, real-time diary recording provided a comprehensive context to investigate user dietary management behavior patterns and habits, acquiring actual data to objectively analyze the issues for subsequent design guidelines.

The second phase converted the design guidelines identified in the first phase into conceptual designs of an app interface relevant to dietary management for obese individuals, planning the app's functional structure. The aim was to assist obese individuals in dietary management. The process and outcomes of this research will serve as reference grounds for future dietary management app developments.

Keywords: Dietary Management, APP, Diary Studies, User Experience.

INTRODUCTION

According to the 11th revision of the International Classification of Diseases (ICD-11) by the World Health Organization (WHO), obesity is categorized as a nutritional disorder defined as "abnormal or excessive fat accumulation resulting from various factors such as energy imbalance, medication, or genetic conditions." [1]. In Taiwan's Ministry of Health and Welfare's National Nutrition and Health Survey [2] findings revealed a notable increase in the overweight and obesity rate among individuals aged 18 and above. The rate surged from 45.5% between 2013 and 2016 to 47.9% between 2016 and 2019. This significant rise in overweight and obesity indicates an ongoing lack of effective control over this issue. According to previous research, the process of dietary management required an extended period to develop and demanded substantial self-control. Each individual's level of perseverance could be influenced by differences in impulses, external perceptions of value, and the efficacy of weight loss. Research indicated [3] that mobile applications effectively assisted in dietary management and were widely accessible across various demographics. Therefore, the main objective of this study was to establish design guidelines for dietary management applications, focusing on adult obesity patients as the primary target group. To achieve this goal, the study employed a user experience research framework and conducted expert interviews to clarify current needs. Based on the interview findings, the study outlined design guideline plans. The outcomes of this research could serve as a reference for the conceptualization of subsequent management application interfaces.

METHODOLOGY

This study was divided into two stages. The first stage was 'User Experience Research (UXR),' aimed at understanding the current status of health management for obese individuals. In this study, two phases were conducted. Firstly, semi-structured interviews were carried out with 5 licensed nutritionists who passed the professional examination. The interviews explored characteristics, behaviors, and lifestyle habits of individuals with obesity, along with successful and unsuccessful methods used in nutrition education, noteworthy case studies, and discussions on functionalities of dietary management applications. These interviews provided in-depth insights into various aspects of managing obesity through dietary interventions.

Secondly, a diary study involved 12 individuals diagnosed with obesity. Participants were provided with a 42-page dietary logbook for a week, allowing one A4-sized page per meal to ensure sufficient writing space. The logbook, following a standardized format, recorded meal sizes, timings, reasons behind food choices, immediate contexts, encountered challenges, and thoughts over a span of 7 days. Based on the research findings, conclusions were drawn, and subsequent design directions and assumptions were proposed.

In the second stage, 'User Experience Design (UXD),' translated the findings from the first stage into design directions and user interface design. Three experts were invited to evaluate the conceptual prototype and operational functionality of each feature using Nielsen's (1994) proposed heuristic evaluation consisting of 10 principles. Subsequently, a usability review was conducted to propose improvements for designs that violated these principles, ensuring that the interface design adhered to our researched direction and incorporated user experience design guidelines.

FINDINGS

Based on expert interviews and diary studies, this study proposed the following design guidelines of dietary management APP:

- 1.Utilized positive and negative feedback experiences to influence self-motivation. Negative feedback served as a cautionary reminder, while positive feedback enhances willingness to use.
- 2.Visualized dietary guidelines and provided real-time reminders during dietary behaviors to cultivate proper dietary concepts and foster good habits.
- 3.Recorded dietary behaviors over an extended period to review the entire dietary pattern, monitoring intake to avoid excessive eating.
- 4.Established dietary goal challenge mechanisms that enhanced user motivation through community encouragement while safeguarding privacy.
- 5.Provided timely and effective ways for users experiencing difficulty in dietary choices to assist them in decision-making."

Based on the above principles, we further developed the user interface and flow of the app. (see Figure 1).

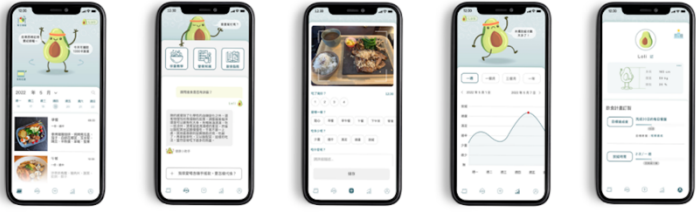
Pages	Dietary List and Role Feedback Experience.	Health Assistant,	Add Dietary Records	Visualized Numeric Curves	Setting Personal Goals
					
Principles	1,3,4,5	1,2	2,3	2,3	4

Figure 1. Main function pages and corresponding guidelines.

CONCLUSIONS

This study utilized user experience research and experience-based design research processes to comprehend the challenges and needs faced by individuals dealing with obesity during dietary management. It aimed to propose an interface design and design guidelines for a dietary management app, serving as a reference direction for future developers of dietary management systems.

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