FIKDaysWithU App: Development and Pilot Testing of an Android Mobile Application on the First 1000 Days of Life to Improve Maternal and Infant Nutrition

Christian Aaron R. Ordas, Vianca Clarisse D. Baligaya, Ezekiel V. Custodio, Joan Faith C. Mendoza, Pamela Irish A. Razon, Florimae E. Paimalan, RND, MHPEd & Daniel G. Salunga, RND, MSPH

Department of Nutrition and Dietetics,
College of Education, University of Santo Tomas

Introduction

Proper nutrition is crucial during the first 1000 days of life as it is the “golden window of opportunity” for a child to establish optimum health, growth, and development essential for achieving a better quality of life up to their future (National Nutrition Council [NNC], 2016). However, maternal and infant malnutrition in the Philippines (Food and Nutrition Research Institute, 2019) is still prevalent, and evidence showed that one effective way to prevent this is through nutrition education that promotes good nutrition and dietary behavior improvement (WHO, 2019). Furthermore, technology remains widely used, and android mobile phone users have been increasing in the country (Sanchez, 2020), allowing access to applications that provide health services and education. However, no available single mobile application provides nutrition education on maternal, infant, and young children. This study aimed to develop an android mobile application that provides nutrition education and monitoring on the first 1000 days of life in Malabon City, Philippines. The developed FIKDaysWithU app will contribute to the Philippine Plan of Action 2017-2022 and the 2015 Global Targets for Maternal, Infant, and Young Child Nutrition primary target, emphasizing the importance of the first 1000 days of life.

Methodology

Study Design

Design-based Research

Study Site and Duration

Malabon City; Two-month application development and Two-week pilot testing

Instruments and Data Analysis

Phase 1
Designing and Development of Application

Phase 2
Iterative Testing and Evaluation

Phase 3
Producing Enhance Solution and Implementation

Adapted from Reeve’s Framework (Design & Development, Iterative Testing and Evaluation, and Produce Enhance Solution & Implementation)
The app features are user log-in, dual language options, nutrition education modules on pregnancy, lactation, infancy, and young child, push notifications, ToDo task, and monitoring features such as pregnancy weight gain tracker and child’s developmental milestones checklist.

The nutrition education module on pregnancy contains information on Pregnancy Health, Nutrition, Meal Guide and Food Safety.


The nutrition education module on infancy and young children contains information on Health and Nutrition, Feeding Guide, Meal Preparation and Food Safety for infants and young children.
Table 1. User Acceptance Evaluation of the Pilot Tested Mobile Application

*Provides engagement of multimedia elements if >50% has high acceptance level

*Provides efficiency of navigation if >50% has high acceptance level

*Provides ease-of-learning if >50% has high acceptance level

*Provides effectiveness of features’ functionality if >50% has high acceptance level

The majority of the participants (>50%) had a high acceptance level of the application as they found its multimedia elements pleasing; the contents are informative, clear, and easy to understand; the navigation is fast, easy, and clear; and were able to create a user account, receive daily notifications, create a to-do list, and use the pregnancy weight gain tracker.

Table 2.1. Comparison of the nutrition knowledge, attitudes, and practices scores of the Pregnant women at pre- and post-KAP

<table>
<thead>
<tr>
<th>Mean Pre-KAP Score</th>
<th>Mean Post-KAP Score</th>
<th>p value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Total Nutrition Knowledge</td>
<td>24.20</td>
<td>27.73</td>
</tr>
<tr>
<td>Total Nutrition Favorable Attitude</td>
<td>1.73</td>
<td>1.67</td>
</tr>
<tr>
<td>Total Correct Nutrition Practice</td>
<td>7.73</td>
<td>7.60</td>
</tr>
</tbody>
</table>

*significant at p<0.05 based on Wilcoxon Signed Rank Test

The pregnant women showed a significant improvement in their knowledge scores but not with their attitudes and practices scores.

Table 2.2. Comparison of the nutrition knowledge, attitudes, and practices scores of the Mothers with children below two years old at pre- and post-KAP

<table>
<thead>
<tr>
<th>Mean Pre-KAP Score</th>
<th>Mean Post-KAP Score</th>
<th>p value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Total Nutrition Knowledge</td>
<td>17.67</td>
<td>22.50</td>
</tr>
<tr>
<td>Total Nutrition Favorable Attitude</td>
<td>4.33</td>
<td>4.00</td>
</tr>
<tr>
<td>Total Correct Nutrition Practice</td>
<td>5.33</td>
<td>6.67</td>
</tr>
</tbody>
</table>

*significant at p<0.05 based on Wilcoxon Signed Rank Test

The mothers with children below two years old showed a significant improvement in their knowledge and practices scores but not with their attitudes scores.

Conclusion

The developed mobile nutrition application has features that are engaging, efficient, easy to learn, and offers some functionalities that cater to the target users’ needs in the first 1000 days of life. Nutrition education using the mobile application can help increase the knowledge of pregnant women and mothers. However, in changing their attitudes and practices, a longer duration of app usage may be more effective than just two weeks of pilot testing.