

# Feasibility Study of Maternity Connect – A Web-Based Mobile Application for Maternal and Infant Health

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## Abstract

Maternity Connect is an innovative web-based mobile application designed to support the health and well-being of mothers and infants during the first two years of life. This feasibility study evaluates the application's core functionalities through a Proof of Concept (PoC) trial, highlighting its impact on maternal and infant health outcomes. The results aim to inform further research and development, leading to an integrated and advanced prototype.

**Keywords:** *Maternal health, Infant health, Mobile application, Health tracking, Community support, Feasibility study.*

## Introduction

The first two years of a child's life are critical for development, and maternal health plays a significant role during this period. Despite available healthcare services, many new mothers face challenges in accessing reliable information, managing their infants' health, and finding social support. Maternity Connect aims to address these challenges through an integrated, user-friendly platform.

Maternity Connect provides comprehensive support through several core functionalities:

- **Coaching for Nursing and Basic Baby Care (Video-Based):** This feature includes high-quality educational content such as articles, videos, and tutorials on essential baby care aspects like breastfeeding, feeding, bathing, and sleeping. The application also offers video-based coaching sessions with pediatric and nursing experts, providing mothers with practical and personalized guidance.
- **Nursing Tracking:** This tool allows parents to log breastfeeding and bottle-feeding sessions, monitor their baby's growth, and receive personalized alerts and notifications.

- The tracking feature helps ensure that parents can maintain consistent feeding schedules and monitor developmental progress.
- **Vaccination Management:** The interactive vaccination calendar is personalized based on the baby's age and medical history, providing automatic reminders for upcoming vaccinations. Detailed information on each vaccine, including benefits and potential side effects, helps parents stay informed and prepared.
  - **Interactive Health Services Map:** This map shows the locations of hospitals, clinics, pediatric practices, and vaccination centers. It includes contact information, opening hours, and details of services offered, along with reviews and ratings from other parents. This feature helps mothers easily find and access healthcare services.
  - **Networking Tool for Mothers:** The app facilitates connections between mothers with babies of similar ages and living nearby. It provides forums and interest groups for discussing motherhood and infant care, and enables the organization and participation in local or virtual events, fostering a sense of community and support.
  - **Artificial Intelligence and Avatar-Based Coaching:** Future versions of Maternity Connect will include AI-powered features and avatar-based coaching available 24/7, providing personalized recommendations and early health interventions. However, this component was not included in the initial feasibility study to focus on evaluating the core functionalities.

This study evaluates the feasibility of these core functionalities, providing a foundation for further research and development.

## 2. Methodology

### 2.1. Development of Maternity Connect

Maternity Connect was developed to provide comprehensive support for maternal and infant health. The application's core functionalities include the aforementioned features, aimed at addressing the specific needs and challenges faced by new mothers.

### 2.2. Proof of Concept (PoC) Implementation

A PoC trial was conducted with 45 mothers and their infants over a period of 30 days. Participants were divided into three groups, each evaluating different functionalities:

- **Group 1:** Coaching for Nursing and Basic Baby Care (video-based)
- **Group 2:** Nursing Tracking and Vaccination Management
- **Group 3:** Interactive Health Services Map and Networking Tool for Mothers

Participants were selected based on specific criteria, including first-time motherhood and access to a smartphone. Data were collected through pre- and post-trial surveys, weekly interviews, and in-app usage analytics to assess the application's impact on maternal and infant health.

## 3. Results

### 3.1. Group 1: Coaching for Nursing and Basic Baby Care (video-based)

The educational content and video coaching sessions were widely used, with 90% of participants engaging with the materials. Of these, 85% found the coaching sessions useful for improving their baby care practices, with reported increases in confidence and competence.

### 3.2. Group 2: Nursing Tracking and Vaccination Management

The nursing tracking tool was utilized by 80% of participants, who reported that it helped them maintain consistent feeding schedules and monitor their babies' growth. Detailed analysis showed an average 20% increase in adherence to feeding schedules. The vaccination calendar was used by 95% of participants, with automatic reminders ensuring timely immunizations. Additionally, 88% of participants found the vaccine information provided to be highly informative and reassuring.

### 3.3. Group 3: Interactive Health Services Map and Networking Tool for Mothers

The interactive health services map was used by 75% of participants to locate healthcare services. The inclusion of reviews and ratings helped users make informed decisions. The networking tool effectively reduced feelings of isolation, with 85% of participants connecting with nearby mothers and participating in forums and events. This feature fostered a sense of community and provided valuable emotional support, with participants reporting a 30% reduction in feelings of isolation.

## 4. Discussion

The PoC demonstrated that Maternity Connect is a viable and effective solution for supporting maternal and infant health. The application addressed key challenges faced by new mothers, including access to personalized healthcare information, effective health tracking, and emotional support. The division of participants into groups allowed for detailed evaluation of specific functionalities, providing insights into their individual impact. However, the study faced limitations such as the small sample size and short duration, which should be addressed in future research.

## 5. Conclusion

Maternity Connect represents a significant advancement in maternal and infant healthcare. By leveraging video-based coaching, comprehensive health tracking, and community support features, the application enhances the health and well-being of mothers and their infants. The positive results from the PoC suggest that Maternity Connect has the potential to make a meaningful impact on maternal and infant health outcomes.

## 6. Future Work

The findings from this feasibility study will inform the next phase of research and development, focusing on integrating advanced features such as artificial intelligence and avatar-based coaching. Additionally, a comprehensive customer discovery phase will be implemented to gather deeper insights into user needs and preferences, ensuring that the application is finely tuned to the target audience. Future studies should aim to conduct larger-scale evaluations to validate these findings and explore additional functionalities to further enhance the application's capabilities. Addressing the current study's limitations, including increasing sample size and extending the trial period, will be crucial for the continued development and refinement of Maternity Connect.

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