Personalized Mobile Based Learning Tool for Pregnant Women Regarding Premature Baby

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Introduction

- In an average week in Wisconsin, about 135 infants are born premature.
- In the preterm delivery event, parents are expected to immediately participate in complex and critical decision-making such as
  - whether to resuscitate their extremely premature infant or not.
- Effective participation in such decisions requires parental knowledge of potential health outcomes of their premature child.
- A smartphone-based mobile application (P3 App) for parents at risk for premature delivery can help to deliver health information during routine prenatal care.

Motivation

- Premature births are a national public health problem.
- A full-term birth is defined as 40 weeks' gestation and a premature birth is before 37 weeks.
- Most infants born before 34 weeks of gestation require intensive care.
- In 2005, the national cost of prematurity was $26 billion.
- Despite intensive care, all premature infants do not survive and those who survive are at risk for
  - chronic health problems, physical disabilities,
  - cognitive compromise, hearing impairments,
  - vision impairments, learning problems and behavioral issues.
- African-American women have the highest rate of premature births: they deliver before 37 weeks twice as often as other races and before 32 weeks three times as often as Caucasian women.

Requirement Analysis and Design

a) *The proposed system is analyzed in such a way that the intervention will change where, when and how parents at risk of premature delivery receive relevant prenatal education.*

b) Couple of parents are involved to give input on the design phase as well as information presentation inside the app.

c) Neonatology experts have used their consummate knowledge to present the prenatal care information.

d) Audio visual information make the more lively.
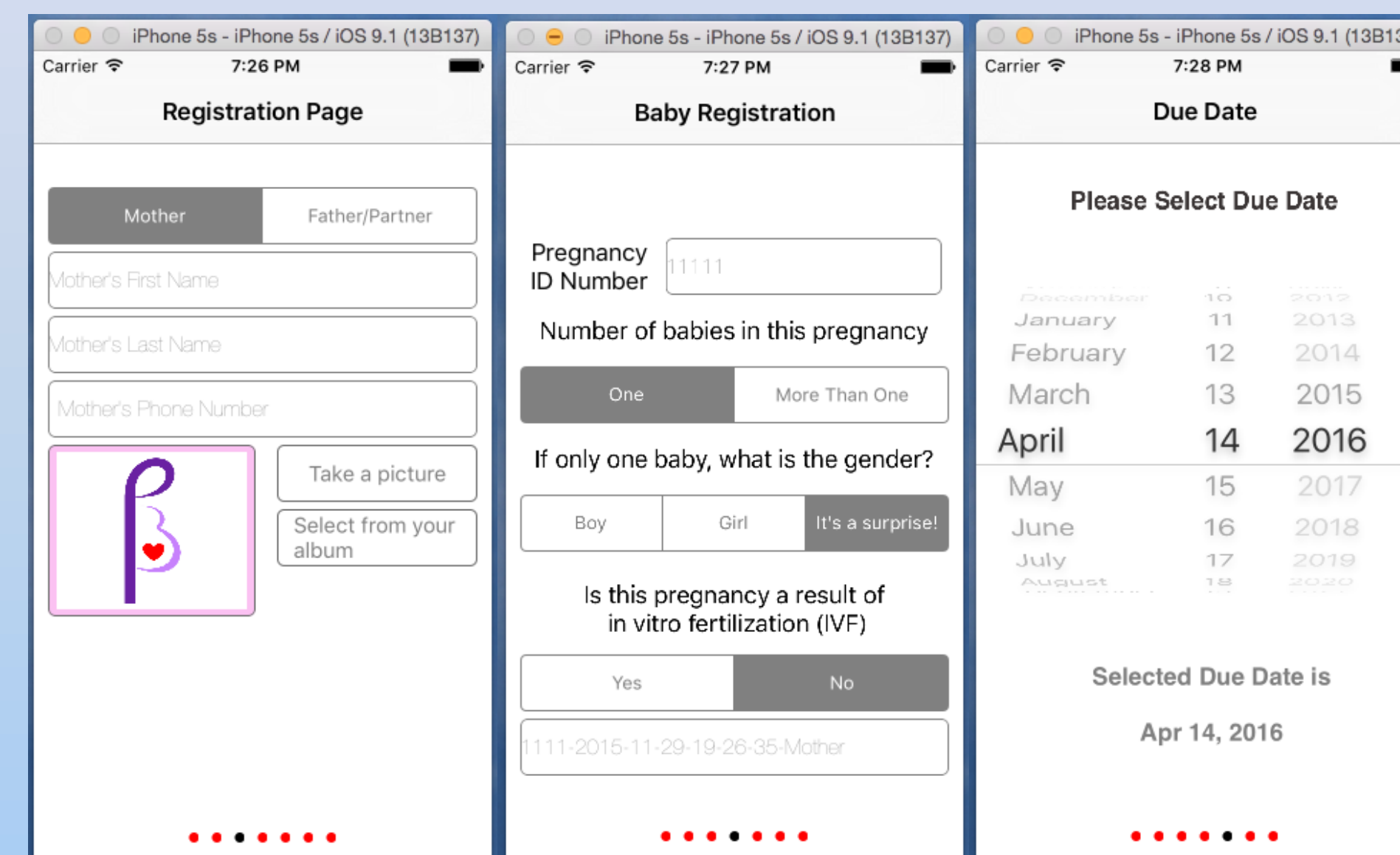
Input: Parents Registration

Fig: Registration process of P3 App

Special Features of the P3 App

- Personalization based on users' input
- Stores data in local memory as well as in cloud server
- NICU equipment's audio-video are included
- Notification message starts from 18 week of gestational age
- Current pregnancy week information
- Delivery room information and preparation for delivery are provided
- NICU choosing from different options are available
- Survival graph with pictogram are given for 23 – 34 weeks of gestational age
- Brain graph and weight graph are linked
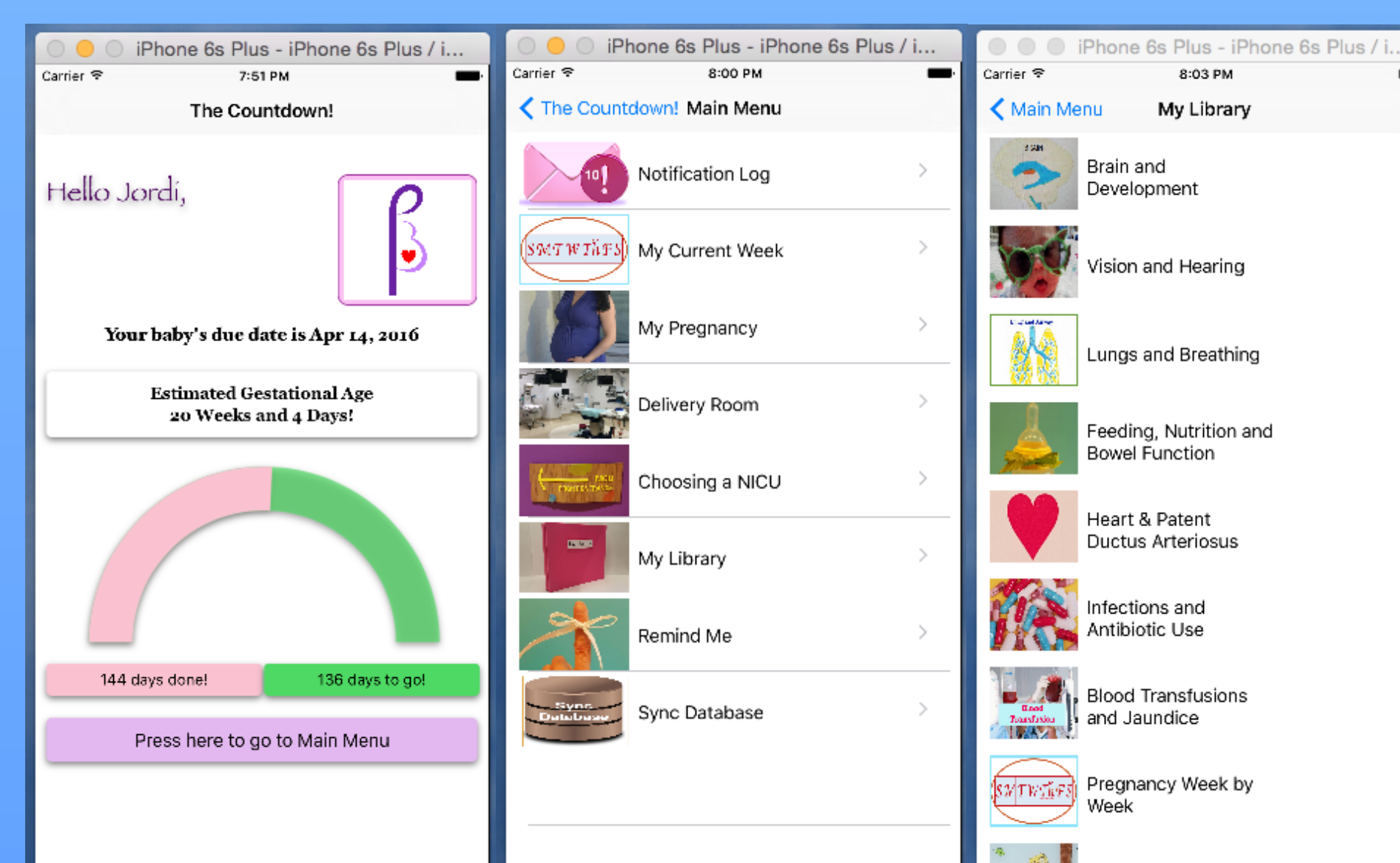- Appointment reminder, bookmark, journal entry

Fig: Home page, Main menu and library page of P3 App

HIPPA Compliant Server Storage

- The database of the P3 app is uploaded in HIPPA compliant server
- The usage time of the prenatal information from P3 app are uploaded.
- Parents comments and feedback are considered for the future modification of the app.
- No personal information are stored in cloud server though the app is personalized for the user.
- Data from the app can be sent automatically and manually through internet
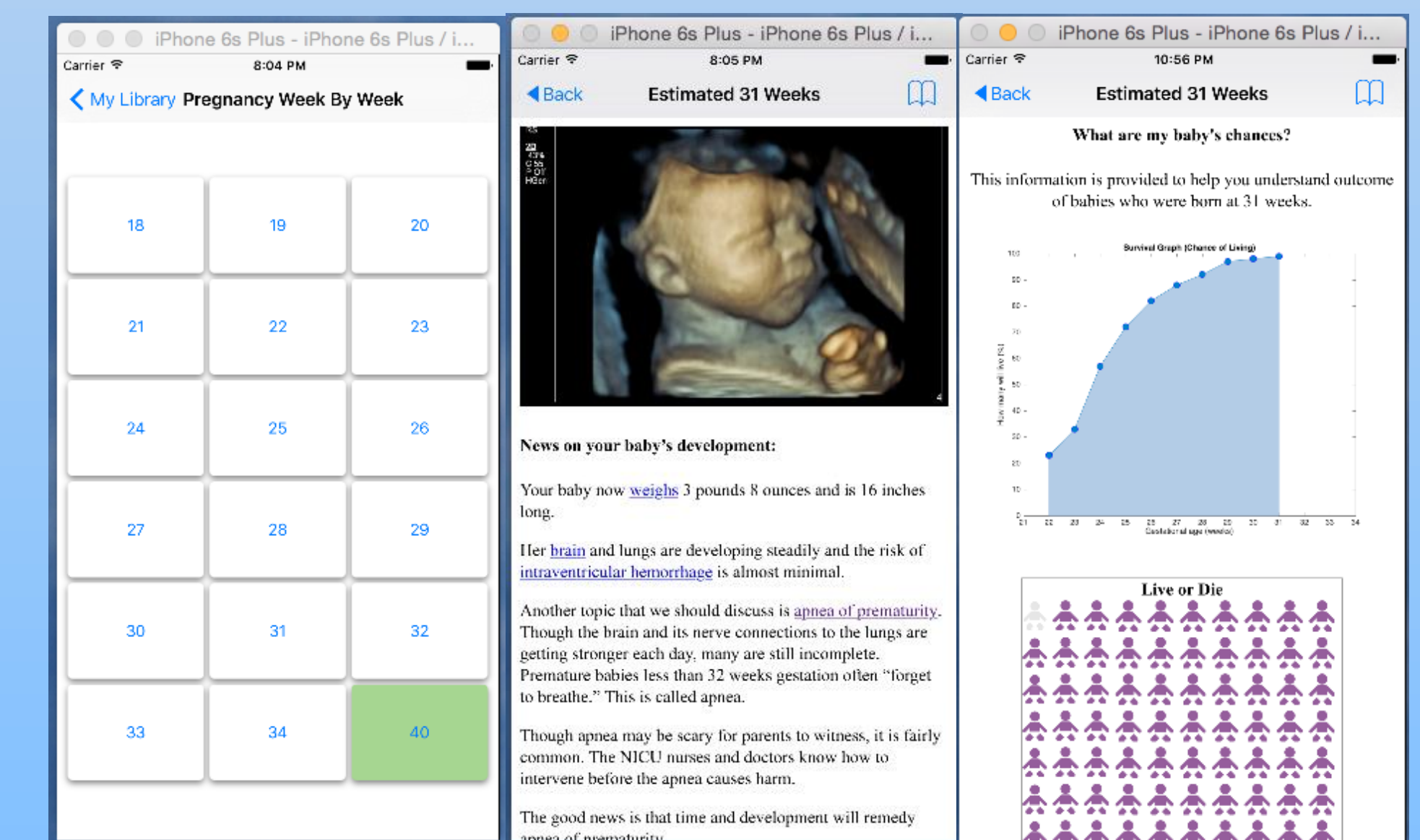

Fig: 18 – 40 weeks information of P3 App

Present work

- Promote parental understanding of prematurity to prepare them for informed decision-making in the event of a premature birth.
- Trying to provide accurate and up-to-date neonatal outcome information during pregnancy and prenatal care.
- Overcomes the limitations of current education materials.

Future work

- Include more audio visual information.
- Interactive user feedback are to be considered.
- The content of the app are to be presented more better way.

References

American Academy of Pediatrics, Committee on Fetus and Newborn, American College of Obstetricians and Gynecologists, Committee on Obstetric Practice. Perinatal care at the threshold of viability. *Pediatrics*. 1995;96(5):974-976.