Title
BabySTEPS: a sugar tracking electronic portal system for gestational diabetes.

Permalink
https://escholarship.org/uc/item/62h7z606

Authors
Arnold, Corey W
Nguyen, Tina
Janzen, Carla

Publication Date
2013

DOI
10.3233/978-1-61499-289-9-1123

Peer reviewed
BabySTEPS: A Sugar Tracking Electronic Portal System for Gestational Diabetes

Corey W. Arnold, Tina Nguyen\textsuperscript{a}, Carla Janzen\textsuperscript{b}

\textsuperscript{a} Medical Imaging Informatics Group, University of California - Los Angeles, USA
\textsuperscript{b} Department of Obstetrics and Gynecology, University of California - Los Angeles, USA

Abstract and Objective

Gestational diabetes is a condition occurring in up to 18\% [1] of pregnant women that results in an increase in blood glucose levels due to the body’s inability to produce sufficient insulin given the additional needs of the baby, and/or hormonal changes that lower the body’s sensitivity to insulin. If left untreated, the growing baby may become too large, increasing the risk of injury to the mother and baby during delivery. Controlling blood glucose can be a challenging task, especially for women with no previous experience and who may have unhealthy diets. An opportunity exists to further encourage compliance by providing patients electronic access to data generated during their pregnancy. Previous studies have shown the potential of portals for managing general diabetes [2], but no work has targeted glucose control in pregnant women. We present BabySTEPS (Sugar Tracking Electronic Portal System), a patient portal focused on engaging women with gestational diabetes that provides personalized feedback with the goal of reducing complications at birth and subsequent medical problems resulting from poor glucose control.

Keywords:
Patient portal, Diabetic pregnancy, Glucose monitoring.

Methods

BabySTEPS (Sugar Tracking Electronic Portal System) was developed as a web-based application with components for data collection, data exchange, and data visualization. In the pilot version of the system we aimed to present the user with: 1) a graphical representation of their blood glucose history, 2) ultrasound images, 3) fetal growth charts, 4) automated messages to highlight poor glucose control and to encourage good control, and 5) educational information from a variety of resources. Ultrasound images are displayed in a temporal view, with links allowing users to share images via email. Finally, growth charts are presented on top of normal ranges, giving the user visual feedback relating their baby’s measurements to an ideal range.

Discussion

BabySTEPS is currently being evaluated as a tool to support glucose control in a randomized controlled study at our institution, with comparison to standard of care. Outcome measures of the study include glucose compliance, fetal weight, relevant complications at birth, and monthly patient questionnaires regarding glucose control. In addition, the application provides the platform to introduce future technologies for glucose control support, including wireless glucose monitoring, EMR integration, SMS alerts to cell phones, and social network integration.

References