



A Framework for Mobile Maternity Data Management on Cloud Computing

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Abstract

Pregnancy period is a special moment of women's life and maternity healthcare is considered as an important part of society healthcare. There are some problems and limitations with the existing services to support gravid women. The first problem is that there is no electronic system to share maternity data between hospitals and clinics. The existing systems do not exploit web and mobile technology, and there is no pervasive and ubiquitous system. Most of health clinics' activities are done with traditional approaches. The second problem is that 20% of pregnant women have to rest at hospital for some days, weeks, or months because of some pregnancy complication such as bleeding, low placenta, and so forth. There is no monitoring service at home to reduce the number of hospitalized pregnant women. The next problem is with rural enceinte women who have higher poverty rates and tend to be in poorer health. Fewer doctors and hospitals, and other health resources will cause more difficulties for them getting to health services. So far, there is no monitoring system for rural enceinte women. Using mobile devices for monitoring pregnant women is a way to overcome those problems. Maternity monitoring by mobile makes an opportunity which by using it we can share maternity data and monitor enceinte women at home instead of being hospitalized. But maternity monitoring via mobile devices can raise other technical problems. The first problem is the quality, availability, accessibility, security and privacy of patients' data. The second problem is mobile device limitation that includes the limitation of memory, battery life span, and processor speed. In this study to solve these problems the literature review has been conducted on maternity data management, pervasive mobile healthcare system, cloud computing, and mobile healthcare system on cloud computing. Then a new architecture is proposed to solve those problems.

Keywords: Cloud computing, Mobile cloud computing, Maternity data management, Mobile healthcare system

1. Introduction

Using cloud computing is a new method for sharing and managing data. It reduces the cost of computing resources. Combining of cloud computing and mobile devices as mobile cloud computing technology make an opportunity which by use it customer can use different computing resources over a network via their mobile. Recently, how to use mobile cloud computing in healthcare area is main goal which researchers try to aim it (Yuan, 2013). By using mobile cloud computing, the healthcare data can be accessed through mobile but there are various problems including security and privacy challenges, mobile's memory and power supply limitation that need to be understood and taken care of (Bhadauria et al., 2011).

The main goal of this paper is to offer a new architecture for managing the maternity data via mobile by using cloud computing. The objectives are:

a) To identify the most suitable maternity data management system on mobile cloud computing to ensure

the quality, completeness, availability, accessibility, and security & privacy of patient's data.

b) To identify the limitation of mobile device on cloud computing technology.

c) To propose the most suitable architecture on mobile cloud computing for managing maternity data.

2. Literature Review

2.1 Maternity Data Management

Maternity data management deals with some challenges including the level of its quality, completeness, availability, security & privacy. These issues need to be improved if we want to have a successful National Healthcare System (NHS). Unfortunately, at a national level, maternity data are recorded based on various methods and it is not possible to make a linkage between different local databases and computer systems to make an integrated storage. In pervasive computer system, accessibility to maternity data is difficult (Kenney, 2009).