Adaptive Multi-Services System for Maternal and Child Health Care on Mobile Application (AM-Care)

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ABSTRACT

Addressing efforts towards the improvement of maternal and child health management can often prove to be problematic in context to successfully obtaining healthcare and medical treatment information from health care professionals. In this regard, the authors propose an adaptive multi-service system that contains fully integrated health care services, medical treatment services, and maternal and child health management. The system utilized both web-based and mobile technology for implementing the application. A practical framework for generating individual maternal and child health care is also presented from data repositories and fully integrated functional health care services to support an improved quality of life for both mother and children. The application, namely AM-Care, consists of the three main components, i.e., Control Centre Component, Web-based Components, and Mobile Components. Also, AM-Care has the important add-on features such as emergency services and warning services.

Keywords: AM-Care, Global Positing System (GPS), Mobile Health Care, Voice Biometrics, Web Services

1. INTRODUCTION

One of the most difficult obstacles in the practical application of trying to improve the quality of maternal and child life is the effort required to address the problem of getting the correct health care and medical treatment information from healthcare professionals to parents and child caregivers. The health and well-being of both mothers and children are of critical importance that as reflections of the current mothers and child health status of individuals, social communities and the nation as predictors of the health of the next generation. Research and applications for improving maternal and child health care have been ongoing for over 20 years. A variety of applications have been developed to support and assist both mothers and child caregivers to guarantee a healthy start to life. However, studies have found limited support for the use of these methods or appli-

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cations to increase the quality of maternal and child health care.

There are a variety of reasons for the limited use of these applications. First, they are limited because of the advances in technology during the past decades that are not accessible to many users, especially in poor countries. Second, the distribution of healthcare knowledge to maternal and child caregivers without the use of technology is a difficult, expensive, and time consuming task. Third, it is difficult to obtain the correct and appropriate information from healthcare professionals. Fourth, there is no centralized system or organization that has the ability to provide both technical and non-technical healthcare and medical treatment information for mothers and child caregivers. Fifth, although there are a number of high quality research papers on the subject most of the results are not applicable for real-life situations. Lastly, the proposed methods or applications from previous research studies are mainly designed for a specific purpose and cannot be generalized.

There are a number of web-based healthcare applications on the Internet and several mobile healthcare applications available. Accessing and managing information about healthcare and medical treatment services has become easier and more convenient via these technologies. Users can communicate with healthcare professionals or doctors to get medical advice or to make appointments through different communication channels via an on-line health care system. With Google Health (Google Health, 2009), users can manage their health information, and they can access it anywhere, at any time and it is completely free. They can import medical records from many health providers across the Web. It is now possible to share health information with family members, friends, doctors, or anyone in their care network. MSN (MSN health & fitness, 2009) define MSN health and fitness has two primary objectives; to provide users with reliable, credible and detailed information through a medical advisory board that provides an expert professional perspective on emerging trends in disease treatment and condition management, and guidance for preventative health care. Many of today's most popular health care treatment applications have been developed and implemented in an ideal web-based system context. For example, users must access the internet to get their health care or medical treatment information since the systems are based on web applications or windows applications. In addition, the applications lack several necessary features or services which support emergency services and warning services. Thus, the aim of this article is to develop the adaptive multi-service system that contains fully integrated health care services, medical treatment services and maternal and child health management. The system we propose can be utilized both web-based and mobile technology for implementing the application. This article describes an Adaptive Multi-Service System for Maternal and Child Health Care based on a Mobile Application (AM-Care) that can assist maternal and child caregivers who are not healthcare professionals to better understand health and disease issues as well as guidance for mothers on the prevention and treatment for children in both normal situations and emergency situations. The challenge and emphasis is on strengthening health systems, increasing access to health related information and care, and addressing related community and development issues.

This article is organized as follows: Section 2 presents some more detail about the basic core technologies that were adopted for this maternal and child health care system. Section 3 addresses related work. Section 4 describes the user scenarios and system design and implementation. Section 5 presents a conclusion and discusses some perspectives and ideas for future work. An acknowledgement is provided in section 6.

2. FUNDAMENTALS

This section is intended to describe the fundamentals and the core technologies utilized of the maternal and child health care mobile application system.