Implementation of
Joint Treatment Application

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Abstract

In this study, we propose mobile application for medical doctors' joint treatment. The application consists of the following three tabs: schedule, patients, and consultation tab. The schedule and patients tab each manage the care schedule and patient information, and the consultation tab allows doctors to record and store medical records. The information saved in each tabs can be shared with other medical professionals. Easier access to patients' medical history and various opinions from other experts would provide higher quality medical services. Therefore, implementation of this application can make doctors' joint treatment more efficient. In addition, patients can receive regular medical treatments and check-ups through telemedicine. Therefore, this application will help the development of telemedicine and joint treatment.

Keywords: Telemedicine, Joint treatment, Mobile application

1. Introduction

Telemedicine is a medical treatment performed at a place far away from the doctor and the patient[1-2], and is included in the u-Medical of the u-Health domain. U-Health utilizes information technology (IT) to provide healthcare and medical services in real time, covering medical equipment and medical services that remotely manage patients' illnesses as well as maintaining and improving the health of the general public. This is divided into u-Medical, u-Silver, and u-Wellness depending on the service subject. Telemedicine has the advantage in removing constraints of time and space for doctors, leading to overcoming economic problems.[3-4] Therefore, in advanced countries with high-level medical technology, telemedicine is being carried out to underdeveloped countries.[4] To provide smoother communication between the doctors from two or more countries for joint treatment of patients, the information needed for the procedure can be shared through this application. Telemedicine that uses state-of-the-art technology that is embedded in a mobile application would provide easier and more accurate medical services for patients. Therefore, in this study we propose a mobile application that manages patient information, stores diagnosis contents, and manages patient's medical

treatment schedule to facilitate joint treatments in clinical setting. This paper is organized as follows: Section 2 describes the functions and descriptions of the developed mobile application. Section 3 shows the result of implementating the application. Section 4 provides a summary of the contents.

2. Mobile Application Functions

The proposed application consists of three tabs in total. Doctors can check patient's schedule and information by using Schedule tab and Patients tab. By using the Consultation tab, doctors can record and store the contents of medical examinations when the patient is examined, and the stored information can be checked by other medical specialists.
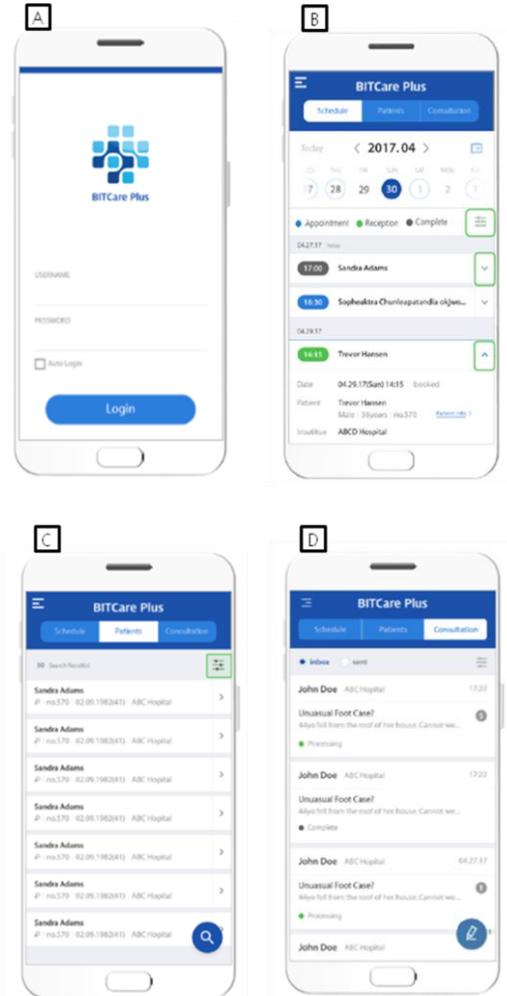
2.1 Schedule & Patient

Schedule tab provides a list of patients who will be consulted and manages the status of schedule; appointments, visits, and payment completion. Patient tab stores information of patients; it allows reviewing of medical history and confirmation of diagnosis.

2.2 Consultation

Consultation tab provides blank windows for doctors to type in the diagnosis or attach image files of medical examinations and leave comments for future treatments as well as for consultations with other medical professionals. User Interface (UI) allows doctors to record the type of medical examination that has been performed, test results, patients' conditions, and prescription details. This UI was constructed so that the corresponding medical professionals can view the patient's medical history, discuss each patient's condition, or share additional opinions to provide optimum medical services to the patients.

3. Implementation of Application

Fig. 1 shows the contents of an Android application based on the above-mentioned functions. In Fig. 1, the images marked as (A) through (D) show the Log-in screen, Schedule tab, Patients tab, and Consultation tab, respectively.
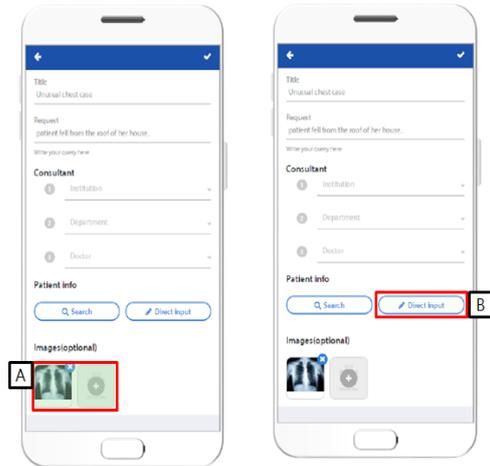

Fig. 1. Mobile Application Functions
(A) Log-in (B) Schedule
(C) Patients (D) Consultation

The detailed functions of Patients and Consultation Tabs are shown in Fig. 2 and Fig. 3 in captured screens, respectively. In the Patients tab, patient information can be checked in detail. Fig. 2 (A) shows the basic information and (B) shows the patient's biometric information. The icon marked as (C) leads to the next page on to the Consultation tab. Fig. 2 (D) allows the user to check the details of patient's biometric information such as ECG or X-ray results in images or graphs.
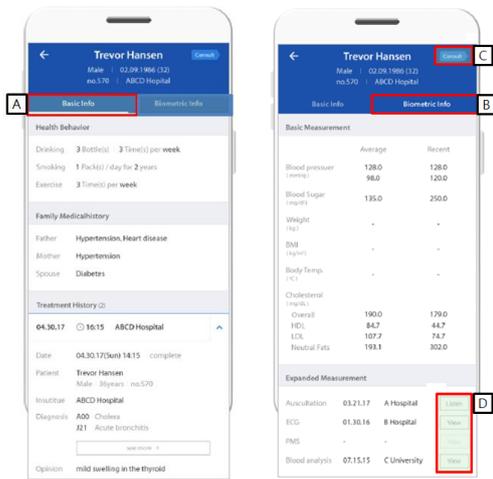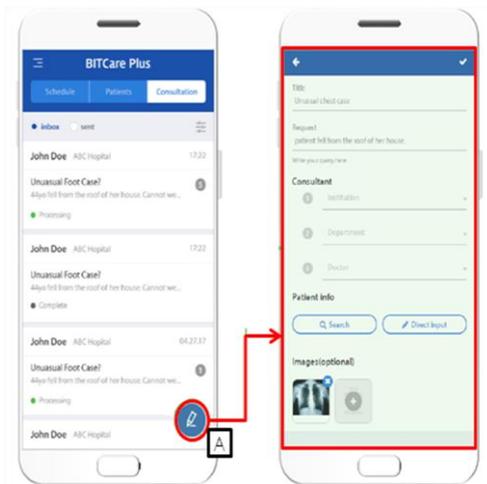
Fig. 2. Mobile Application Patients Tab
(A) Basic info (B) Biometric info
(C) Consult button (D) Measurement

To type in and record the patient's medical information on the Consultation Tab, the user touches the 'pencil' icon marked as (A) in Fig. 3 and the screen will show a window of blank data sheet. By touching the 'plus' icon in Fig. 4 (A), the user can upload the images and results from the latest medical examination. Fig. 4 (B) provides recording of patient's detailed information regarding the symptoms and chief complaints, and readings of diagnostic findings.

Fig. 3. Mobile Application Consultation Tab
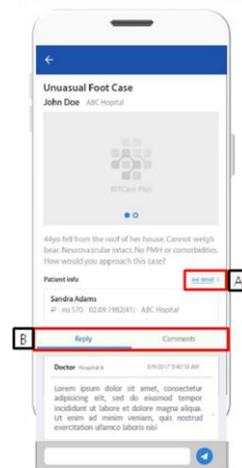(A) Create new window

Fig. 4. Mobile Application Consultation Tab
(A) Attach images (B) Directly input patient's info

When the icon marked as (A) in Fig. 5 is touched, the window will present the records of detailed patient's information for joint treatment with other medical professionals. For the doctors who wish to leave comments on the patient's treatments for joint care, the 'reply' icon in Fig. 5 (B) is to be touched. It will open a window for text input where opinions can be typed in. All doctors have open access to the comments and medical information of the patients saved on this application.

Fig. 5. Mobile Application Consultation Tab
(A) Patient detail info (B) Reply and comments

4. Conclusions

In this paper, we implemented a mobile application for joint treatment in clinical setting. When doctors need joint care of patients, the medical information including types and results of medical examinations, the image data, and doctor's comments can be recorded on this application. The information can be viewed and shared by other medical professionals for joint treatment or when reference to diagnosis is needed. With the implementation of the present application, higher level of medical services is anticipated to be provided to patients. Furthermore, this application may help improve the efficiency of telemedicine.

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