**CHAPTER I**

**INTRODUCTION**

* 1. **BACKGROUND OF THE STUDY**

A recent survey found that people pay more attention and become more engaged in their health and medical care when they have easy access to their health information online. A few health care organizations have created a patient portal to facilitate access to online resources. When integrated with an Electronic Health Record (EHR) system and other electronic health information, portals can offer a feature that enhances patient-provider communication and enable patients to schedule appointments, pay bills, refill, prescriptions, and access lab results. Portals can also assist providers in assigning staff to tasks and monitoring patient conditions.

Several elements are needed in a patient portal system. For example, to facilitate follow-up scheduling, an SMS Notification feature is implemented in the proposed system [STEP2004].

A key requirement for an online patient portal is that patients want to ensure their medical records are secure and confidential [[SETH2011]](https://webmail.capdale.com/owa/redir.aspx?C=7pgOiKQuWuVfsE61p7QCqT3wW67ygknNb1QPotx9MNstFx7ciQLVCA..&URL=http%3a%2f%2fwww.chcf.org%2f%7e%2fmedia%2fMEDIA%2520LIBRARY%2520Files%2fPDF%2fPDF%2520M%2fPDF%2520MeasuringImpactPatientPortals.pdf). Security can be provided for the computers and over the internet with different methods. It is simple but straight forward security is needed in a system [[JEFF2017].](http://computer.howstuffworks.com/encryption.htm) The most popular form of all security relies on encryption, the process of encoding information in such a way that only the person (or computer) with the key can decode it.

Biometrics also can be used to help make operations, transactions and in everyday life both safe and more convenient while protecting privacy [[ROBE2016].](http://www.androidauthority.com/how-fingerprint-scanners-work-670934/) These days, more and more websites are using biometric authentication, especially fingerprints as a form of identification and access control. The need to protect privacy by such measures as encryption and biometric identification raises the questions, “What is wrong with using the username and password combination for login authentication?” The answer is that while this traditional means is viable in many identification systems, it has several disadvantages [[AGD2004]](http://citeseerx.ist.psu.edu/viewdoc/download?doi=10.1.1.108.871&rep=rep1&type=pdf). Users find it hard to remember passwords. But the problem with username/password security is more than an inconvenience. The password-based identification system is vulnerable to user information leaking. Accordingly, when security is highly important, as with patient information, a stronger system is needed.

Big River Orthopedic Massage Clinic (BROMC). BROMC is an Ortho therapeutic massage provider service for treatment of accident, work, and sports injuries and for aging and disease pain relief. BROMC also does maintenance therapeutic massage for people with stress related lifestyles and provides relaxing massage for the general public. The company started in 2002 in Edmonton and Calgary Canada. Since then the company, originally small business has expanded to foreign cities, including Bangkok, Thailand. The company is fully qualified to provide these services and is recognized by the medical profession and the medical insurance industry. Peter W. Lock, 67 years old, is the owner of Big River Orthopedic Massage Clinic.

The proponents interviewed Mr. Lock via Facebook Messenger. One area discussed was what sort of questions BROMC asks the patient. Mr. Lock’s reply was, “Please see our intake sheet. “First of all, we look at how the client walks in, his/her posture and ask some general questions. In case of an injury we ask how the injury occurred, if the there was a medical diagnose, X-rays etc.” In the intake sheet are questions about the following: Orthopedic and or Rehab Medicine, Non-Specific, Neurology, Psychiatry, Gastrointestinal, Pulmonary Medicine, Cardiology, Infectious Diseases, Endocrinology, Rheumatology, Obstetrics and Gynecology, Painful Emotional Menses Otolaryngology (ENT), Nephrology, Oncology, Dermatology, Urology, Breast, Past Medical History and Vascular Medicine. All of these conditions have been categorized by the proponents in order to identify the symptoms for assessment [PETE2002].

**1.2 STATEMENT OF THE PROBLEM**

The interview with Mr. Lock, the owner of Big River Orthopedic Massage Clinic (BROMC) pointed out some problems with present their system. It was found out that they are using manual (hand-written) registration wherein they capture the patient’s data by filling up a form (described above) to capture all information needed from the patients. This means patients have to visit the clinic just to book for an appointment.

The company stores the patients’ information in a file cabinet which consumes space and is prone to loss and damage. Moreover, the paper files could easily be accessed by unauthorized persons.

The last problem identified in the interview is that the company needs to predict its future needs, such as when to hire new therapists, when to expand by opening new branches, and where to invest its resources. This information is critical for decisions on how to improve their business, but the present system makes it hard, or even impossible to find it. The company has recognized this problem as an obstacle to developing as a business.

**1.3 OBJECTIVES OF THE STUDY**

**1.3.1 GENERAL OBJECTIVE**

Online Patient Portal with Secure Socket Layer and Capability for Manpower Forecast, Scheduling, and Patient Data Maintenance

**1.3.2 SPECIFIC OBJECTIVES**

Specifically, this Study aims to develop an Online Patient Portal with the following elements:

* To provides an efficient and accurate means for registration and scheduling and avoiding missed appointments for ongoing therapy by use of an SMS Notification feature. The Average time calculated was 118% online registration compare to 238% manual registration.
* To secures the information of the patients by Secure Socket Layer and integrating a Fingerprint verification as part of system security.
* To provides a facility for the company to project future needs via Manpower Forecasting based on the patients’ appointments, categorized by specialty.

**1.4 SIGNIFICANCE OF THE STUDY**

**1. Customers**

* Customers will reduce effort by not having to go to the therapist just to make reservations for treatment. Instead, this is done remotely using the Online Patient Portal to schedule appointments.
* Customers receive SMS and Email Notification reminders for the upcoming or on-going appointments to avoid missed appointments.

**2. Point of Service**

* More efficient scheduling and registration of patients.
* Allow company progress via prediction statistics.

1. **Management**
   * Easily view or analyze patients records via personalize dashboard in the system.
   * Track the progress of a patient.
   * Make better decisions on need to hire and use staff.
2. **Business**
   * Better management of patients’ portal through the system.
   * Automate System of Online Patient Portal branches.
3. **Future Researchers**

* Serve as a reference for other or future researchers with the same study or system.

**1.5 SCOPE AND LIMITATION**

Scope

* Windows System for therapists’ evaluation and saving data and information about patients.
* The system able to provide projected statistics for the company to use in decisions on future expansion and other management choices.
* The system sends online notification and reminders for both patients and therapist for the schedule of treatment and ongoing therapy.
* The online patient portal is compatible on any platform via Web Browser.
* The patient information will be protected by encryption and fingerprint identification.
* The system online provides instruction of the appointment and patients need to respond upon receiving the SMS via mobile phone.
* The system is secure using SSL.

Limitations

* The fingerprint verification is working only through local system.
* The patient information is not being available to view online.
* The patient dashboard only shows their name, email and phone number and changes of their login password.