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E-Healthcare-Personalized Health Monitoring System

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ABSTRACT

Background: E-Health care is one of the basic needs of human beings. Living in a civilized society, health care facilities should be equal for everyone. With the development of technology, it has provided us with a more relaxed life and reduced the rush of the hospital. E-healthcare is defined as the use of information and communication technology (ICT) to support health. By using this technology, we can find health care in our own home. By name “E-healthcare,” it makes healthcare faster and easier than ever. The research is called “E-Healthcare: Personalized Health Monitoring System”, which focuses on healthy living routines and lifestyles, how to maintain, balanced diet and E-health records and other key issues. Besides, if people maintain a healthy lifestyle and good eating habits, the risk of developing chronic diseases can be significantly reduced. The vision of an E-health-care personalized Health Monitoring System is developed using today’s and tomorrow’s scenarios. The future of E-healthcare is based on the current information that provides individual patients with the diagnosis and treatment of personal decisions about their health without having to visit a medical facility. E-health, defined as the use of information and communication technologies (ICT) to support health and health-related areas, including health services, health monitoring, health literature and health education, knowledge and research, has the potential to significantly improve health service efficiency, expand or expand development. The treatment of thousands of patients and improve the treatment of patients.

Key Words: Chronic disease, Monitoring, Healthcare, Electronic Health Records, Patients, Privacy

INTRODUCTION

Health care is one of the basic needs of human beings. As a person living in a civilized society, health care facilities should be equal for everyone. As technology evolves, it makes our lives easier and reduces the hospital’s peak hours.¹ By using this technology, you can get health care in your own home. It makes healthcare faster and easier than ever before in the name of “E-healthcare”.

E-healthcare is often defined as the use of information and communication technology (ICT) for healthcare¹. The application of “E-healthcare” is not only intended for traditional areas of clinical diagnosis or patient follow-up but also personalized health and lifestyle monitoring of healthy subjects. All these advantages can be used without the hospital, which makes “electronic medical” very personal.² All these features are added to healthcare by the development of medical informatics. The application will be useable by any individual whose age groups are between 18 to 60 and conscious about their health while facing difficulties to maintain a healthy life

routine. Just added with it is to be able to have a smart phone with internet access.

The development of E-healthcare has made it possible to detect constraints that can more directly describe the patient’s condition². For a fully personalized application, a treatment approach will be adopted that will match the individual’s situation and needs and provide feedback based on data entry. Today, people want health care to be more accessible and cost-effective. To make this possible, it is recommended to use the “E-healthcare” application.

E-HEALTH CARE EVALUATION, PROPAGATION, CONTENT

Evaluation

No one wants to get sick or injured, but when they are sick or injured, they must need medical care at some point. The hospital plays an important role in undertaking this kind of

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health care. But the biggest challenge is the growth of the population, leading to an ageing society. For these ageing societies, it is difficult for hospitals to continue to provide health care services while reducing discrimination. This ageing society with a huge population has made an important contribution to the rise in health care costs.³

As the demand for good health care increases, medical insurance requires a lot of money. Even in the modern world, if people manage to overcome costs, it is difficult to manage people who are busy with work to go to the hospital to see a doctor.⁴

Technological developments in providing medical services cover drugs, diagnostics, treatment and even health monitoring. It is said that the production of Information Technology infrastructure should be able to provide better care and, more importantly, user access and satisfaction with the medical services provided. As the world's population increases, it becomes increasingly difficult to provide appropriate care for patients.⁵ Therefore, this aging society must be as healthy as possible. There may be health issues. According to Time magazine, staying healthy is a nutrition game. People need to be healthy and eat in time.⁶

In addition, everyone should exercise at least 30 minutes per week on the advice of the Centers for Disease Control and Prevention.¹ Those who are unable to maintain a healthy life due to life affairs, unable to manage timetables, and lack information on different food charts will experience the evolution of health monitoring systems.

After development, it's time to release it to someone who needs it. Researchers have chosen to offer this application via mobile technology. Mobile-based web applications provide an experience that users have never had before. As technology continues to evolve, the number of smartphone users is increasing, as seen in the static content Figure 1.

Figure 1: Global smartphone user⁷.

This growth of technology not only give us the increase sells of smartphones but also make us busier than ever said by The Economist. Survey shows 20 years ago people have had at least 10 hours free time to take care of themselves which has decreased to 3 to 4 hours nowadays.

Propagation

Technology is the main power force of our civilization. In the past 25 years, the emergence of technology has changed dramatically. Scholars say that in all the interactions in our daily lives, technology is quickly becoming an increasingly popular theme. These technical devices and services are ubiquitous, which means that it is difficult to survive without technology.⁸ These technologies are designed to accelerate our daily interactions. As reported by the WHO, even in the medical field, technology is intertwined with drugs and human development to cure diseases in an ageing society. Today, technology is most reachable for the poor and marginalized is the mobile phone.⁹ Therefore, if we want to reach the needs of underserved people through health and other economic interventions, then mobile phones should be the technology of choice. As the demand for healthcare grows from time to time as the population grows, this “E-Healthcare” application will be developed to take advantage of this mobile technology to meet this emerging healthcare need.

By applying “E-healthcare” technology, users can easily manage their daily lives. Moreover, it has improved the dissemination of information about health, disease and health advice. This technology provides different levels of service, such as daily routine, healthy food charts, maintaining a balanced diet, and checking for chronic conditions. Studies have shown that E-healthcare technology can improve disease surveillance, data collection and medical record management through health records, thereby increasing transparency and accountability.¹⁰ Therefore, it can be said that e-health improves the quality of medical services and very personalized applications, which will make life easier than ever.

Also, as the population ages, Interminable sickness such as diabetes and heart disease, blood pressure have increased. They bear 85% of medical expenses. At least one of almost half of the patients. They are expensive and difficult to treat.¹¹ Chronic diseases cause 7 of 10 deaths each year, and the cost of treatment for chronically ill patients accounts for the majority of medical expenses (Center for Disease Control and Prevention).¹ It has been found that if people maintain a healthy lifestyle and good eating habits, the risk of chronic diseases can be greatly reduced¹.

However, most people are busy working in developing countries recently. They have little time to go to the hospital to ensure a healthy lifestyle. Even if they try to see a doctor, they have to spend a lot of time on these steps, sometimes even a long queue.

Content

Based on the aforementioned issues, it is clear that having healthy living habits can greatly reduce the occurrence of health problems. Nowadays, people want health care to be more accessible and cost-effective. To provide healthcare facilities based on people's needs, it is recommended to develop an "E-healthcare" application that will provide a variety of services at an early stage to eliminate chronic diseases. The application of "E-healthcare" has not only been recommended in the routine field of clinical diagnosis or patient follow-up but has also been applied in the monitoring of health and lifestyle of healthy subjects. The benefits of using this app are huge. The app will provide advice and support based on the user's lifestyle to maintain healthy lifestyles, which vary from person to person. As the researchers say, maintaining a healthy lifestyle will greatly reduce the cause of even chronic diseases. Similarly, making informed eating choices can protect yourself from these health problems¹² which can also be found within the app.

Again, the app will have a health record for each patient that can be used to further prescribe medications and data analysis prescriptions. This program will reduce medical expenses and support us to have a healthy life. Services provided by the following applications:

- Improved patient care through immediate access to patient records, medical records, content and handwritten doctor notes.
- Enhance patient participation and care management for chronic conditions through seamless communication and information exchange (Exg: self-care instructions, personal health plans, reminders, etc.).
- Reduce workload and save time with electronic health records for further prescribing.
- Reduce costs by automating tasks using Electronic Health Records (EHR).

This health monitoring system is an application that combines multiple functions of different applications running on the market. The app will take input from height, weight, blood pressure, blood glucose levels, etc. from the user and will report a risk or positive level of any disease. One of the systems called the Clinical Decision Support System is very similar to the application. But it helps doctors by suggesting the symptoms of the disease and possible treatments, which is a very successful application. Therefore, it can be said that a health monitoring application is still needed. The health monitoring system will help maintain a balanced life through daily diet plans such as diet and some exercise activities. According to Napala, this routine operation will make users more productive, happier, release stress, help control weight, bring more tests, become healthier and last longer.¹³ She also said that productivity will increase by 66% after maintaining to the recommended health routine.

Since the application primarily helps users prevent diseases or diseases, it is possible to prevent or enable chronic diseases such as diabetes and cardiovascular disease or to achieve a safe level by monitoring the health of the user. Studies have shown that 70% of patients have chronic diseases¹. Even in the case of obesity, statistics show that more than one-third of adults (36%) or approximately 84 million are obese (defined as body mass index [BMI] ≥ 30 kg / m²).¹⁴ The chart below shows the obesity rate of the growing country "Malaysia" that needs to be produced in comparison with other Asian countries.

Adult prevalence in some Asian Countries
(overweight + obesity)

WHO collaborating centre for obesity prevention- Deakin Uni. Australia
KUALA LUMPUR: Malaysia has been rated as the highest among Asian countries for obesity.

Figure 2: Obesity rate¹⁵.

From Figure 2, it is seen that over 40% of Malaysian are having obesity and the main reason for having overweight is not taking a balanced diet and avoiding a healthier lifestyle. All these chronic diseases can be getting rid of with the assistance of health monitoring application thus it provides a vital role in saving a whole nation.

Key Opportunities and Challenges

A great number of outcomes will be achieved by developing the e-healthcare application. These outcomes bring us great opportunities:

- **Organizational health record:**
One of the obvious benefits of using this system is the tracking function with health records. Users do not need to remember their health records, nor do they need to bring documents every time they go to the doctor. Users can effectively manage health data and documents through health records.¹⁶
- **Enhance patient engagement and let patients know about their health status:**
By communicating with patient data, the application analyzes the data entered by the user and determines if the user is at risk of chronic disease. If danger of level is reached, it will alert the user and then provide

a personal health plan and recommendations to reduce the level of danger.¹⁷

- **Saves Time:**

Save time searching for the ideal diet table, as the system will provide the nutritional value and balanced diet of the food based on the calories the user wants.¹⁸

- **Free to use:**

The system will be free to use, so anyone with a health awareness can use the system to manage and check their primary health. It's just that they need to have a smartphone to interact with the system.¹⁹

Nowadays, people want health care to be more accessible and cost-effective. To provide healthcare facilities based on people's needs, it is recommended to develop an "E-healthcare" application that will provide a variety of services at an early stage to eliminate chronic diseases. It is recommended that anyone who has access to the Internet can use the Health care & personalized monitoring system. A system cannot solve all healthcare-related problems, Table 1.

Besides there are few ensuring sustainable developments is ensured by recommending healthy lifestyle routines.

Table 1: Ensuring sustainable development

- Improve user care the system will continue to help maintain the healthy lives of busy people. For those who have forgotten their habits, the app will help them manage when they need it and provide notifications to remind them.
- Help patients achieve disease-free goals and satisfy patients. You will maintain a balanced life and increase your productivity. Therefore, they will be more energetic at work.
- It is convenient for users to track health records, rather than having to check with a doctor or read files manually each time.
- Maintain health records of medications and prescriptions faster and more reliably than written records. Even if the system is free to use.

CONCLUSION

The healthcare system is frequently described as a complex adaptive system; a collection of individual agents that have the freedom to act in ways that are not always predictable. Complex organizations, such as the public health system, have demonstrated adaptive, creative and capable ways of developing solutions to problems for decades and many of these innovations have arisen from the bottom up. However, in attempting to make sense of the future and to create some sense of control and stability; scenario analysis and other such predictive tools have been utilized to support a predominantly top-down approach to strategic planning. People will participate in planning and support the implementation

of plans if they value the intended outcomes and believe they are achievable. If the strategy does not fit with their current lived experience and seems intangible, then the challenge lies in gaining commitment. This needs to be part of the thinking associated with the planning process. E-healthcare System managed to bring up some issues with health which faced by most people in their busy lifestyle, which is hard to maintain healthy life routine and the difficulties of the balanced diet to stay fit and energetic. The researcher managed to come up with the goals and objectives of the project that will alleviate the problem.

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