

Health Informatics: A Telehealth User- Friendly Design Monitoring Approach

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Abstract

Ideally, numbers of the health care system all throughout the decade is designed without considering the user-friendly centered guidelines that this not only a waste of human resources but economic resources as well. To fully understand the value of knowing how important Telehealth User- Design Approach is, one should consider the simplicity of the system, but makes sure to cater the needs of the patients and gives a user-friendly interface to our medical practitioners. We believe that the design we are about to present is a user-friendly design approach and could comply the basic needs of its users and to deliver results with our medical practitioners.

Keywords: Health Informatics; Telehealth; Monitoring

1. Introduction

Healthcare Informatics is basically not the application of computers itself, but it does cater all aspects of handling, generating, communication, analysis, retrieval, discovery, and analysis and synthesis data. [1] Health care informatics has emerged as a diverse and important new field of study. The field can be widely defined as the science that addresses how best to use the information in the improvement of health care. The field includes the four areas of bioinformatics, medical informatics, public health informatics, and consumer health informatics. Health care informatics applications can be used to improve the quality of patient care, to increase productivity, and to provide access to knowledge in healthcare. [2] With this service that has been widely implemented and used to assist one to live basically independently at home. Telemedicine is a service refers to the system that could notify the others when help is needed by someone. As the problems arising for people aging and disability are converging, this has become an instant help in an emergency. [3]

1.1. Recent Developments

Information technology and consumer health become part of modern public health and health concept national policies. Existing systems for professionals are suitable for use at home by patients. Electronic medical records that patients' access empowers consumers and can be used to adapt health information for people. Software designed to help users clarify their values and decision aids based on the computer can help patients make decisions and help knowledgeable professionals adapt interventions appropriately.

They are developing several initiatives that address the quality of health information on the Internet, including programs to educate consumers, encourages self-regulation and self-labeling providers, and evaluate and evaluate information or respond the criteria [1-12].

1.2. The Goals of Health Informatics

Two principle goals of Health Informatics can be distinguished in Figure 1.

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1. To provide solutions for problems related to data, information, knowledge processing.
2. To study general principles of processing data, pieces of information and knowledge in medicine and healthcare. [1]

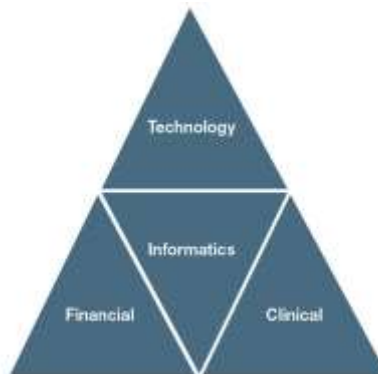


Figure 1. Basic Conceptual Framework of Health Informatics [4]

The concept is illustrated in the diagram. Figure 2, which shows how the generic sciences of healthcare, information and computer technology interact to create the domain of Health Informatics. [5] The use of information systems in the healthcare domain is a proven approach to improving the quality and effectiveness of care processes. For instance, recent healthcare reforms in America include a budget of \$18.9 billion to promote Healthcare Information Systems (HISs) and provide incentives to healthcare organizations for adopting information systems. [6]

1.3. Telemedicine

Many organizations and documents have been encouraged to define telemedicine. The authors Bashshur *et al.*, (1997) attempted to define telemedicine: "In general, telemedicine involves the use of modern information technologies, especially interactive two-way audio and video communications and computers to provide remote patient health services and facilitate the exchange of information between primary care physicians and specialists at a distance from one another. "Later, William Darkins defined the term" telemedicine "as" care (Hackney, 2005) More specifically, the World Health Organization (WHO) defines telemedicine as follows: The practice of medical care through audio-visual and interactive data communications, medical care, diagnosis, counseling and treatment, as well as education and transfer of medical data.)

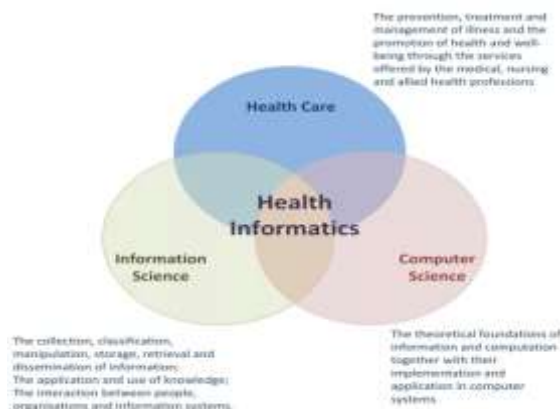


Figure 2. Health Informatics Diagram

Telemedicine have been expanded to include emergency care, telecardiology, telepathology, teledermatology, teleophthalmology, technology and tele-surgery. Given these definitions and techniques, telemedicine can be defined as an information technology that allows doctors to conduct medical consultations and diagnoses outside of patients.

That is, doctors can examine patients remotely by consulting and consulting symptoms through monitors and sound devices and collecting physiological data through telecommunications [7].

There is no generally accepted definition of telemedicine. The literal sense is that of distance health care. Thus, telemedicine can represent healthcare practiced in real time, or asynchronously, perhaps via e-mail. The type of health care interaction is completely comprehensive and can encompass diagnosis and management, education - staff, patients and the general population - and administrative meetings. The history of telemedicine has been invaded by a cowardly terminology which, according to some observers, has not helped its cause. What began as "telemedicine" was successively transformed into "telehealth", "e-health", "e-health", "connected health".

1.4. Scope of the Problem

Telemedicine is one aspect of the use of information and communication technology (ICT) in health care. It is widely believed that ICT generally has the potential to improve clinical care and public health. In addition to facilitating medical education, administration and research, appropriate use of ICT may:

- a. improve access to health care;
- b. enhance the quality of service delivery;
- c. improve the effectiveness of public health and primary care interventions;
- d. improve the global shortage of health professionals through collaboration and training.

However, many questions remain about the potential value of people in resource-limited contexts, such as the developing world. There are major problems of inequality in access to health care in developing countries to which telemedicine offers a potential solution. This can also be valuable in other respects. [8]

1.5. Modalities of Telehealth

As shown in Figure 3, Telehealth has traditionally had three main modes, each with distinct applications in the telehealth industry. Because telehealth is real-time, alive, two-way interaction between a patient (or a caregiver of a patient) and a health care provider through audio-visual technology. Real-time telehealth services can be used to visualize, diagnose and treat patients.

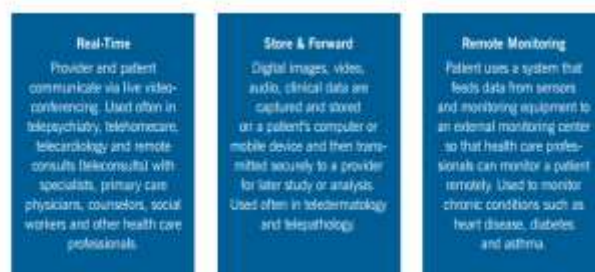


Figure 3. 3 Modalities of Telehealth

Another mode of telehealth is Store-and-Forward, which consists of transmitting the recorded history of a patient's health (for example, pre-recorded videos or digital images, such as X-rays and photos) electronic communication to a medical care provider, usually a specialist. The information is used to evaluate a patient or, in some cases, provide a service outside of a real-time interaction. Storage and transfer technology offers the advantage of providing access to patient data after collection and is particularly beneficial for patients who require the specialty of three traditional modes of telehealth care when providers are not available locally. This method is also used to provide services to patients from other countries. A third mode of telehealth, remote monitoring of patients, involves the collection of medical data and a medical patient through electronic communication technologies.

Once collected, the data are transmitted to a health care provider in a different location, allowing the provider to continue monitoring the patient's data once the patient has been administered at home or at another facility. Suppose that, in addition to traditional telehealth terms, a growing number of mobile health, mobile health, technologies, applications and online services are being sold directly to patients, such as portable devices for health monitoring and the well-being. Information about these devices and applications will be linked to health information administered by health professionals. For example, Apple sells its application to patients' health, allowing them to add personal health information on their Apple devices and link this data to mobile health applications that work with the Apple platform through HealthKit. At the same time, Apple is partnering with vendors and e-labels to determine how the tool can be used in healthcare settings. Similarly, mobile platforms, such as smartphones, can become a more important part of the telehealth platform over time. [9]

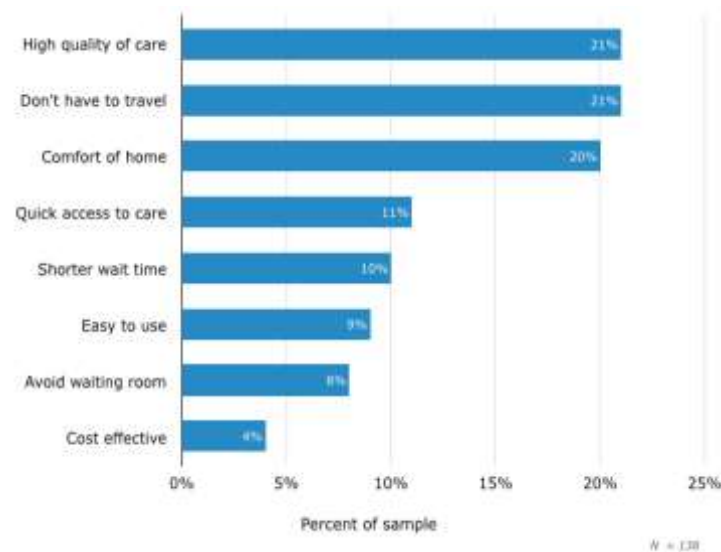


Figure 4. Top Telehealth Benefits [10]

1.6. Testing

As shown in Figure 4, the positive elements most cited in our sample are consistent with the benefits that telemedicine advocates generally promote: quality of care that is similar to or greater than a personal visit (21%), not having to travel, visit (21%); and the ability to enjoy the comforts of home (20 percent). An additional 6 percent of respondents (not included in the table) say they did not receive any benefit during their visit to telemedicine.

2. Related Works

2.1. AFYA Telehealth Diagram Flow

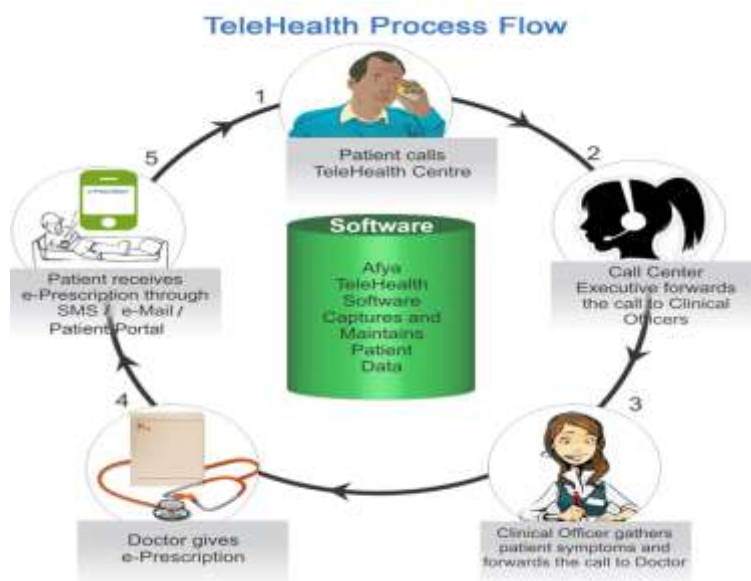


Figure 5. Top Telehealth Process Flow Diagram AFYA

Afya TeleHealth is Best Suited for Health Insurance companies: To reduce the number of hospital visits by their customers and reduction in associated claim costs.

Corporate Customers: Conglomerates in Telecom, Banking, Retail, and Education can avail. Afya TeleHealth for addressing non-emergency health issues of their customers as well as their employees, leading to an increase in customer loyalty and improved employee

Retention NGOs: To ease the process and increase the quality of providing primary healthcare to their adopted communities.

Government: To help deliver better healthcare to the population at a national/regional level. Universities: To provide immediate healthcare access to the students, rendering first level of medical care [11].

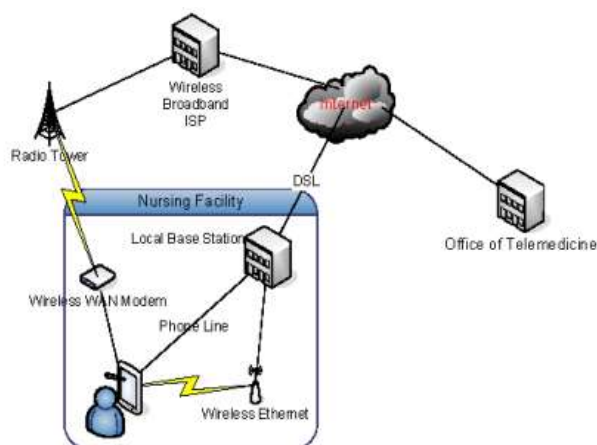


Figure 6. Wireless Telemedicine System Architecture

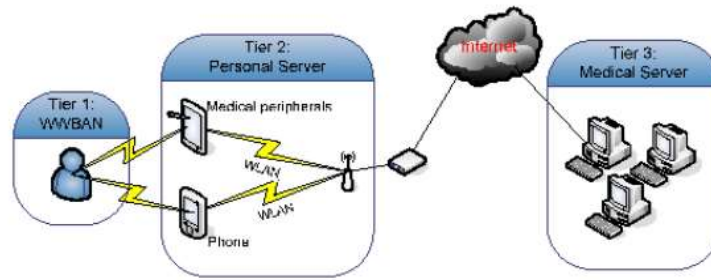


Figure 7. Wireless Telemedicine with WWBAN

As shown in Figure 6, using these two wireless connections, it is possible to use two types of wireless configurations. The first is to use wireless connectivity only at the front of the connection, that is, between the local base of the telemedicine kit and the existing telephone lines as shown in Figure 7.

In this configuration, telemedicine teams allow doctors to drive them to the homes of patients and to do medical consultations away from telemedicine facilities. Recent developments in sensor technology enable low-cost, low-cost, low-cost wireless transceivers or low-cost wireless transceivers to be commercially available. Robots have the basic functionality of detecting, processing, transmitting and receiving data and are usually used for vehicle tracking or duck habitat monitoring. However, these miniature transceivers are now ready for use in medical applications as they integrated into various medical devices.

Portable medical sensors are built in a patch, bandage or a pair of shoes that incorporate a variety of medical sensors that collect physiological data from patients in real time. They can establish WWBAN around the patients. The goal of portable medical sensors is not to hamper medical sensors in patients. [12]

3. A Proposed Telehealth User- Friendly Design Approach

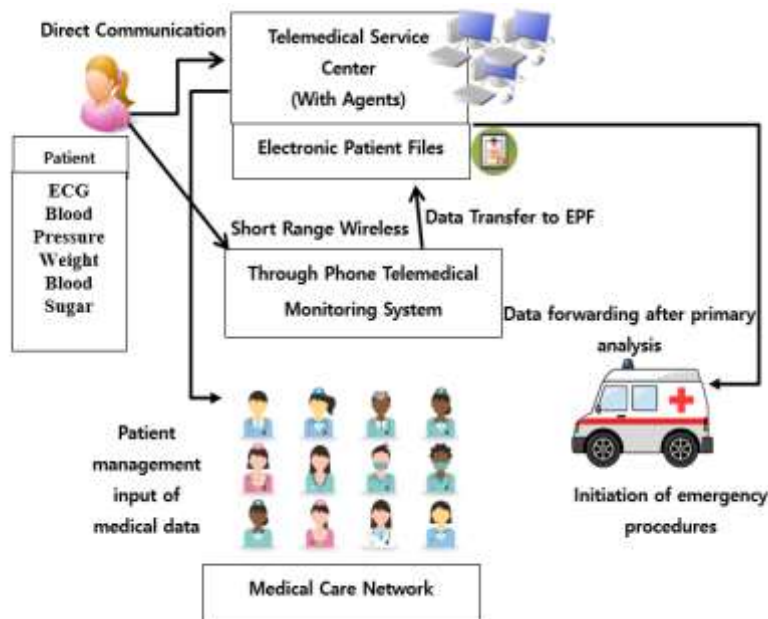


Figure 8. Proposed Telehealth User-Friendly Design

As shown in Figure 8, the system design automatically monitoring the patient's situation alongside with the specific devices with sensors attached through it to deliver the results to the telemedical service center with agents that could monitor, cater, organize and filter the data that is being transferred from the monitoring system (through phone) that is capable of automatically recording the details being given to the Telemedicine Service center. Though it has wireless limited capacity, one could automatically use this with the aid of the telemedical service center that is being operated by the agents; live responses were given to the Medical Care Network such as the specialist to manage the inputted data from the patients. Through that, medical records (Electronic Patient Files) could be easily handled. Results from the latest (Electronic Patient Files) will forward primary analysis to perform initial emergency procedures as needed.

3.1. Consumer Health Informatics

Consumer health applications are designed to interact directly with the consumer, with or without the presence of health professionals, and can be divided into community computing resources, such as health kiosks, community-based online networks and applications. "Cybermedicine" Anyone with a computer at home can access and clinical computer resources or groups of patients are provided.

Consumer health informatics are not limited to the use of computers and telecommunications, but also includes the provision of information to patients by other means: the theoretical framework of information technology for consumers, by For example, the analysis of their needs is independent of the means by which the information is presented. The computer is not always the most efficient way to provide information.

It is the field of medical informatics that deals with

- Analyze and model consumer preferences, information needs and use of information;
- Develop and evaluate methods and applications to help consumers obtain and use health information;
- Develop and evaluate methods and applications to integrate consumer needs and preferences into information management systems in clinical practice, education and research;
- Investigate the determinants, conditions, elements, models and processes for designing, implementing and optimizing the efficiency of computer information and telecommunication systems and networks for consumers; and
- Study the effects of these systems on public health, patient-professional relationship and society. [12]

4. Future Works

4.1. Current Access to Information by Consumers

The gap between the ideal and the real world. Ideally (as long as they wish), all consumers should be able to access valid and relevant information on their health status. They should be able to judge the advantages and disadvantages of all possible actions according to their values, beliefs, preferences and personal circumstances (*e.g.*, their perceived health status, their socioeconomic status).

In fact, we are far from this ideal state, because many barriers prevent consumers from accessing the information they need, when they need it, where they need it, and in the quantity and format they need [13].

Modern telemedicine has gone well beyond a doctor-patient consultation, while remote real-time management has pushed self-management levels for almost all patients remotely controlled, according to health market data and the Intelligence Network (HIN) 2014. With the user-friendly design, we are renewing and focusing on the patient's commitment and experience as the healthcare industry adopts the latest digital technologies to improve quality patient care, patient safety data and cost control. As presented in Figure 9 [14].

- SOA design provides high flexibility and scalability to meet the evolving needs of telehealth
- Automatically processes vital signs and, at the same time, informs caregivers and / or family members if the patient needs immediate medical attention
- Centralized real-time data collection allows real-time or real-time processing of vital signs with alert functions
- The web interface allows physicians, caregivers and family members to monitor patient health at any time
- The communication gateway simplifies configuration on the patient's site with great potential to extend application offerings in the future
- The construction of an engineering platform for medical devices allows TelehealthLink to meet the different requirements of users with options from several device vendors
- The use of high-speed Internet connections takes advantage of existing high-speed network resources. Internet security measures allow TelehealthLink systems to be well protected.

In Figure 9, The system allows you to match patient need and accuracy level with the right technology for your business model. It combines clinical experience with leading web-based technology to create patient-specific telehealth solutions that help to improve both clinical and financial outcomes [15].

5. Conclusion & Recommendations

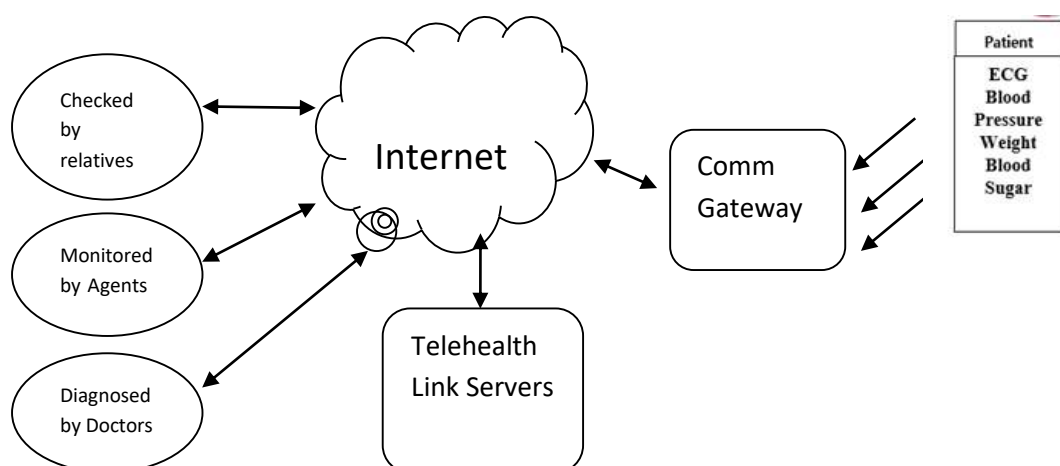


Figure 9. TelehealthLink System Approach

Telehealth is a promise to increase access to care and improve health outcomes. Current health information systems, including electronic records and electronic health, are a downward philosophy and do nothing to provide more information on health and health development. Telehealth can improve patient comfort while reducing health system costs and increasing opportunities for physicians. It allows patients to seek care closer to home so they do not have to travel long distances to receive consultations. Telehealth applications have been designed, developed and deployed in a variety of clinical settings; however, the corpus of evidence supporting its use has been slow to evolve. Important questions about the value, effectiveness and efficiency of these technologies remain unanswered.

Telehealth is being promoted as a way to improve access to care while reducing transportation costs and increasing patient comfort in obtaining care. Access to medical care is a problem in areas where physician-patient proportions are insufficient or when sufficient medical specialists are not available to meet the needs of the population. As such, it has become a key element of multi-faceted strategies to improve the delivery of health services in poorly medicated areas, both in rural and urban areas. When patients are better able to access health care, they may have locally treated acute ailments, receive treatment for medical problems before they are criticized, and receive care to better manage chronic diseases [16-17]. As the progress of health informatics came into the picture, we wanted to make sure that we do not waste of human resources. Thus, to fully understand the value of knowing how important Telehealth User-Design Approach is, one should consider the simplicity of the system and makes sure to cater the needs of the patients and gives a user friendly interface to our medical practitioners. One should consider the simplicity of the system, but makes sure to cater the needs of the patients and gives a user-friendly interface to our medical practitioners. We believe that the design we are about to present is a kind of user-friendly design approach. To deliver the best service to the patients.

Acknowledgements

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