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Designing A Mobile App For Telemedicine Consultations

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Abstract
The development of telemedicine applications represents a crucial and expanding area within the larger healthcare mobile application development sector. This innovative technology facilitates remote healthcare delivery, enhancing accessibility and overcoming geographical barriers. The COVID-19 pandemic significantly accelerated the uptake of telemedicine, necessitated by the requirements for social distancing and safer medical consultations. Even as the immediate crisis has diminished, patients continue to prefer virtual care for non-urgent health issues. The number of global telemedicine users is expected to surpass 116 million by 2024. This guide examines the transformative effects of telemedicine application development on the healthcare industry. We will explore the primary advantages, provide pertinent statistics, and investigate the promising future of this technology..
Keywords: *Mobile App, Telemedicine, development, healthcare remotely*

INTRODUCTION

The health state of a population is a determinant of its development. It determines productivity, potential of children, infant and general mortality, as well as resources allocation in the family, community and country. Better access to health services improves poverty reduction and productivity. Investing in health is a key to economic and social development. Most developing nations lack proper health care and medical facilities to talk about [1]. Developing nations lack doctors and other medical professionals. The poor infrastructures made up of roads and transport further make it hard to deliver the required health care in rural and far-flung areas and for the transportation of patients in a proper manner. The developing nations have several issues regarding the delivery of medical services and health care, e.g., funds, skills, resources, leading to the absence of facilities and systems [13]. For nations lacking much medical expertise and facilities, communication technologies like Internet have the possibility of offering solutions to some of these issues. Telemedicine services can enhance the quality of as well as access to health care irrespective of geography. They provide access to health care and specialists to under-served areas and also increase the efficiency of health care professionals. Telemedicine provides emergency medical help, distant consultation, administration and logistics, supervision and quality control and education and training of healthcare professionals and providers [2]. It can assist in the fight against tropical diseases and in fulfilling the special needs of dermatology, traumatology and numerous other medical specialties. There has been an expanding interest in telemedicine and telehealth in the developed nations at a rapidly increasing pace as a way to relieve the strain of health care on the budgets of the country [10].

REVIEW OF LITERATURE

Numerous healthcare facilities struggle to maintain sufficient health monitoring tools to address the growing population of ill individuals. Traditional systems tend to be slow and require human intervention for operation [3]. For example, measuring temperature with conventional mercury thermometers can take approximately 3 to 5 minutes. Additionally, assessing blood pressure, heart rate, and other vital signs consumes valuable time for medical practitioners [4]. Many healthcare facilities still lack the necessary equipment for rapid patient parameter assessment. Telemedicine, utilizing cost-effective equipment, proves beneficial for the population and reduces time demands. A significant challenge in larger countries is the geographical distance between healthcare facilities and patients [11]. Establishing healthcare centers with specialized doctors in every small village of around 500 residents is impractical; thus, most healthcare facilities are located in urban and semi-urban regions. This makes it difficult for individuals to frequently

travel to urban areas for medical care. The implementation of telemedicine, supported by high-speed communication technology, lessens the need for travel [5]. Furthermore, the data storage capabilities of telemedicine tools are advantageous for doctors during medical outreach in remote areas. [6].In emergency situations such as accidents and cardiac arrests, it is crucial to utilize the golden hour for patient survival, which may be compromised during ambulance transport. Research indicates that telemedicine plays a significant role during this transport, allowing ambulance personnel to provide initial treatment through teleconsultation with a specialist before reaching the hospital [9]. This process involves relaying patient information to the physician and receiving their guidance via telephone or other communication methods. The implementation of telemedicine with interactive multimedia communication in emergencies enhances the likelihood of patient survival. Mercury thermometers, among the oldest tools for health monitoring, are utilized for temperature detection. These devices consist of glass tubes filled with mercury, which expands with rising temperatures and contracts when temperatures fall, typically within a few minutes [7] . Despite their slower response time, mercury thermometers remain prevalent in many healthcare facilities due to their ability to measure core body temperature with unmatched precision at various body sites. However, the mercury contained in these thermometers is highly toxic, posing significant risks to patients if the device breaks and the substance is ingested or inhaled. [12].

MATERIALS AND METHODS

The development of telemedicine applications focuses on creating digital platforms that facilitate connections between patients and healthcare providers through interactive technology. These applications allow for virtual consultations, secure messaging, and straightforward access to medical records, thereby enhancing the accessibility and convenience of healthcare services. With over 100 successful healthcare software projects completed, Daffodil Software stands as a reliable partner and guide in telemedicine app development. We excel in designing feature-rich and user-friendly telemedicine applications tailored to your specific concepts [8]. Telehealth presents an opportunity to alleviate the challenges posed by a shortage of healthcare professionals and limited access to medical services.

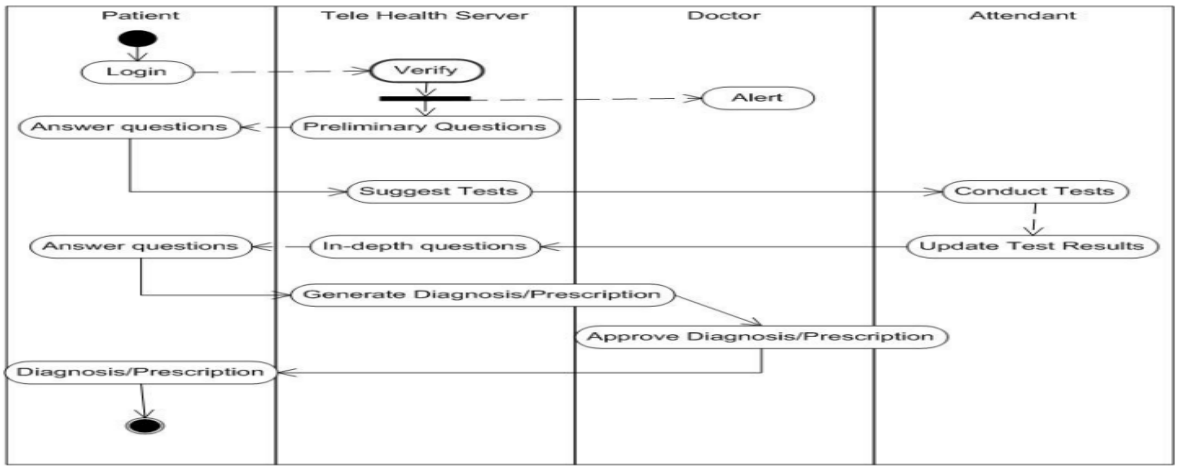

Figure 1: Flow diagram

Expert systems, alternatively referred to as knowledge-based systems or knowledge systems, are computer systems where an explicit separation is drawn between a section in which knowledge of a problem domain is represented, and another section which manipulates the former to reason about or solve a real problem with problem data. Both the form of knowledge are utilized in solving the problem and the nature of the problem-solving techniques employed decide what problems can be solved. The knowledge stored in a knowledge base is formal in form, and is a result of modeling important aspects of the domain for the given problem. The knowledge incorporated can be learned from domain experts, literature or data sets. Development of an expert system typically entails application of techniques for knowledge acquisition, modeling, and assessment. Earlier, expert systems were coded in a high-level programming language, typically in LISP. But application of such a programming language as an expert system development tool, requires disproportionate efforts not proportional to the implementation details of the system

independent of the problem domain. Additionally, the domain expertise and the algorithms for using this expertise will get tightly intertwined. A knowledge base that stores the domain specific expertise, and an inference engine which is made up of algorithms for manipulating the represented knowledge in the knowledge base to arrive at a solution to a problem given to the system.

RESULT AND DISCUSSION

Besides, an expert system can include facilities to explain, illustrate or provide documentation for its reasoning steps, usually referred to as explanation facilities During system development, it could be valuable to trace the reasoning behavior in greater detail, which is offered by a trace facility. The facilities of an inference engine are usually employed to implement particular problem-solving methods, e.g., methods to solve diagnostic problems [14].

Figure 2: Patient entry login

The implementation of the Internet technology has brought new e-Health uses in health care delivery. Medical care can now be delivered to wherever. Telemedicine has revolutionized healthcare delivery dynamics of the interest of expanding health services to everyone and overcoming time and distance limitations.

Figure 3: Diagnosis summary

The primary concern of advanced technologies in telemedicine is to develop an easy-to-use user interface for the patients at point-of-care. With the availability of advanced monitoring devices in the market patient monitoring at a remote place is becoming easier at both the physicians' and patients' end.

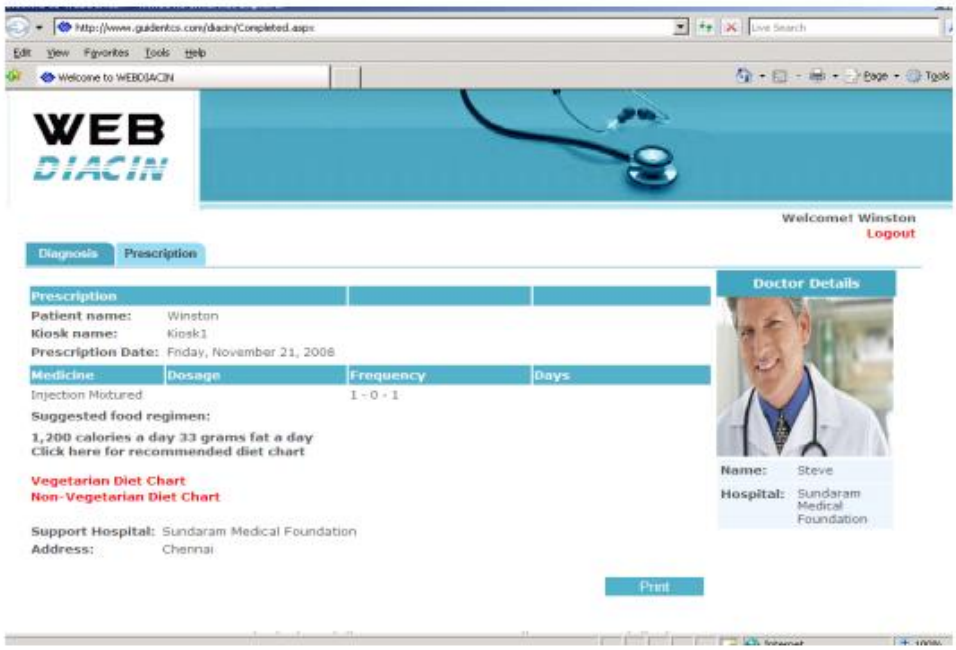

Figure 4: The prescription and diet chart generated by the tele diagnosis system

Healthcare professionals are installing wireless networks in order to facilitate physicians and nurses to share and access important patient information through the network without physically being at the point-of-care, facilitating quicker flow of information resulting in rapid decision and better patient care [15].

CONCLUSION

Disease prevention through improvement in the immunity is the most effective way to have good health. Whereas the individuals are falling ill with diseases, cure is the option that results in a return to normalcy. To enhance quality of life, it is the responsibility of the healthcare delivery system to provide promotion of prevention from diseases by creating awareness which is always first, then afterwards even if the population is ill, then comes treatment, it leads the patient to cure which is the last and final thing to provide cost-effective healthcare. But the majority of the countries are trying to implement independent solution at various times that does not properly address the source of the accessibility, availability and affordability and quality of the healthcare services from bottom of the pyramid to top in an integrated way. Achieving universal coverage for health coverage that includes protection against financial risk and access to quality essential care health services, access to good quality, effective, safe, and affordable essential drugs and vaccines for all is the challenge. If quality health service is well-designed and instituted in an integral manner, then it will significantly reduce the number of deaths and diseases caused owing to all types of pollution as well as illness.

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