



The Use of Artificial Intelligence Systems as a Tool to Differentiate in Quality and Competitiveness

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ABSTRACT

Expert systems have a major role in medicine. The expert system can: Diagnose and treat diseases by building intelligent database. There are many expert systems used in the treatment of diseases. In this paper, the researcher reviews some of the expert systems used to diagnose diseases.

General Terms

Intelligent database, Expert System

Keywords

Artificial Intelligence, Intelligent System, Expert System

INTRODUCTION

In any society, hospitals represent the cornerstone of health care and development and the fight against infectious and non-communicable diseases. Hospitals are an essential core of the health services economy. It is widely believed that hospitals are still

dealing with modern information systems, especially artificial intelligence systems. Although artificial intelligence enables an enterprise to perform efficiently and efficiently, it contributes to the preparation of reports and the provision of required databases, which means improving the quality of decisions and services based on this data, the proportion of artificial intelligence systems used in hospitals is limited. This may be due to a number of reasons, the most important of which is the view of senior management and hospital administrators on the application of the artificial intelligence system that these systems are considered additional costs, In addition to his term as a complex process and it requires high skills.

The inability of some hospital administrators to benefit from artificial intelligence places the organization in a competitive position, not a pioneer. The subject of industrial intelligence is one of the topics to be considered. It is important to contribute to the success of health projects of all kinds and develop them within an integrated administrative program. This study deals with the dimensions of information systems technology affecting the formation of the dimensions of the digital organization and the definition of the digital organization behind the application of artificial intelligence as the intellectual mind of the digital organization serves decision maker in decision-making in high quality. This study focuses on the importance of industry and decision-making in hospitals based on intelligence applications In order to improve the quality of services.

IMPORTANCE

Hospitals in all types and fields have a prominent and effective role in health care and the economic progress of their role in providing health services, in addition to their importance in health and social development. Artificial intelligence represents an effective role in the decision-making process which improves the quality of hospital services.

THE STUDY PROBLEM

The rapid changes in technology require medical professionals to keep pace with these developments so that they can raise their level of service. Therefore, we need to develop and research in the field of modern technology systems, especially artificial intelligence systems, although these systems are expensive but necessary Hospitals have a key role in putting the hospital in the leading role and it is becoming increasingly important in a rapidly changing competitive environment.

The problem of the study is that some hospitals and small clinics still use the manual system in the preservation of files, which led to the lack of access to data and information ready for the appropriate doctor and management alike, which leads to the following:

1 - Lack of ability to plan well since the information is not available in a timely manner and in the appropriate form in addition to the difficulty of retrieval and treatment.

2 - Lack of access to hospitals to the standards of quality and comprehensive, which enable them to measure the level of general performance.

3. Weak competitiveness: Artificial intelligence is one of the few systems used in hospitals, which leads to a decrease in the quality of medical services and increased costs and waiting hours in hospitals. Thus, the problem of research lies in answering several questions, including:

- How well artificial intelligence is used in hospitals
- The role of artificial intelligence in the development of hospital performance
- The role and effectiveness of artificial intelligence in supporting hospitals to respond positively to the environmental influences and variables surrounding the institution.

OBJECTIVES

The study aims to achieve the following objectives:

1- Definition of hospitals and their importance in health, economic and social development

2 - Identification of artificial intelligence used in hospitals

3- Identifying obstacles to the use of artificial intelligence in hospitals and its causes.

4. The relationship between industrial intelligence and the quality of medical services.

5 - Adapting artificial intelligence to solve some of the problems faced by hospitals.

6 - Employ artificial intelligence to upgrade hospitals in terms of competitive quality.

7- The extent of the senior management's belief in hospitals in supporting the use of artificial intelligence.

METHODOLOGY

The study follows two approaches:

- 1 - The analytical descriptive approach, which depends on the knowledge of Arabic and Western references and previous research in this field.
- 2 – Practical approach, which depends on the design of the components and applied one of the languages of artificial intelligence and then analyze their data to reach the conclusions and recommendations for the subject of study.

The Study sample

A sample of hospitals will be selected to determine the extent of the use and obstacles of application and the impact of industrial intelligence systems in these hospitals. The sample will be based on three major hospitals in Khartoum state. In the administration, doctors and patients, in order to identify the extent to which industrial intelligence in these hospitals is applied by applying the entities at these levels.

Study limits:

The idea of artificial intelligence will be applied to three hospitals in Khartoum state

- Time limits: six months
- Spatial boundaries: Khartoum state

Data collection tools:

The data will be collected by means of the office tools, which are access to foreign and Arabic references as well as internet research sites and experts at each of the predefined levels.

Intelligent database will be designed and distributed to hospitals and applied to the use of artificial intelligence.

Analysis:

The researcher presents an analysis of three different diseases and is widely distributed in Sudan. The analysis focuses on the following points:

First: Definition of diseases (diagnosis, treatment, prevention).

Second: developing a practical model based on a knowledge base that helps to reduce the manual work of the patient and the doctor.

Third: The researcher conducted a survey on how to work out a model that illustrates the problems of diseases through diagnosis, treatment, prevention.

Fourth: There was no interaction on the survey and there were no results, so the researcher created a program and linking this program to the Internet to be available to all.

Stages of analysis:

The researcher divided the analysis into three stages, which is a description of diseases (diagnosis, treatment, prevention).

The first stage:

Diabetes

The researcher dealt with two cases of diabetes, high diabetes and low diabetes.

Symptoms of high diabetes:

This is due to a significant increase in the level of sugar in the blood and resulting from a decrease in the insulin secreted by the pancreas.

- Feeling thirsty because of the sensation of dry mouth and throat
- The feeling of tiredness and dizziness continuously and the vision becomes blurred.
- Feeling tired and tired.

Symptoms of low diabetes are:

- Frequent sweating without any physical effort.
- Unusual tremor or tremors in the body.
- Strong persistent headache.
- Excessive appetite for eating.
- Accelerating heart rate.
- Noise and lack of absorption.
- Feeling sleepy and anxious to sleep
- Dizziness and inability to balance
- Loss of consciousness, falling and the possibility of getting into a coma.

Treatment of Diabetes Height:

Some oral medications are used to lower blood sugar:

- Biguanides: Reduce the secretion of the liver to glucose and increase the sensitivity of the body cells to the hormone insulin.
- Sulfonylureas compounds: increase the secretion of insulin from beta cells in the pancreas.
- Alpha-glucosidase inhibitors: The action of the enzyme in the digestive system responsible for converting starch compounds into simple sugars
- Use of artificial insulin to control blood sugar

Treatment Low Diabetes:

Eat sugary foods.

- Dessert (a tablespoon of honey) or (of sugar).
- Drinks (half a cup of apple juice or pineapple).
- Fruits (bananas, orange, raisins)
- Glucose tablets
- Glucagon injection.

Prevention of diabetes highest:

- To avoid the symptoms of high blood sugar: repeated examination and check the blood sugar in home appliances for the examination of diabetes.
- Exercise regularly.
- Follow a special diet.
- The sugar-level portfolio of 120 to 140 to avoid angina pectoris.
- Maintain levels of harmful cholesterol causing strokes.

Prevention of diabetes low:

- Do not delay meals during the day.
- Lack of excessive physical effort.
- Eat a piece of candy or local juice immediately after the feeling of landing.
- Continue to take medicine doctor

The second stage related to blood pressure disease where the researcher dealt with two types of this disease (high blood pressure and low blood pressure).

Symptoms of hypertension (high blood pressure):

- Heart beat quickly
- Redness of the white eye
- Muscle spasms
- Persistent headache.
- Blood bleeding from the nose
- Redness of the ears
- Dizziness and fainting in some cases

Symptoms of low pressure:

- Paleness of the face, drowsiness, irregular heartbeat.
- Lower body sugar.
- Extreme thirst and cold feeling
- Dizziness and eyes squinting.
- breathing difficulties

Prevention of hypertension (high blood pressure):

- Maintain the ideal weight.
- Quit smoking and alcohol.

- Reduce salt intake in food.
- Monitor the blood pressure in the home appliance.
- Sports

Prevention of low pressure:

- Drink plenty of water a day (drink 6-8 cups).
- Wear socks to return blood from the bottom of the body.
- Eat several snacks during the day

The third stage related to Malaria, where the researcher dealt with symptoms of disease and treatment and how to prevent.

Malaria symptoms:

- Severe pains in the stomach.
- Headache and severe headache.
- Severe fever with a strong desire to vomit.
- Extreme sweating.
- Lack of sugar and acidity of blood.
- Severe pains in the organs of the body.

Treatment of Malaria:

- Chloroquine is the first choice to treat this disease and is used as a pill for three days.
- Quinine is a second option to treat this disease and is used as a pill or injection.

Prevention of Malaria:

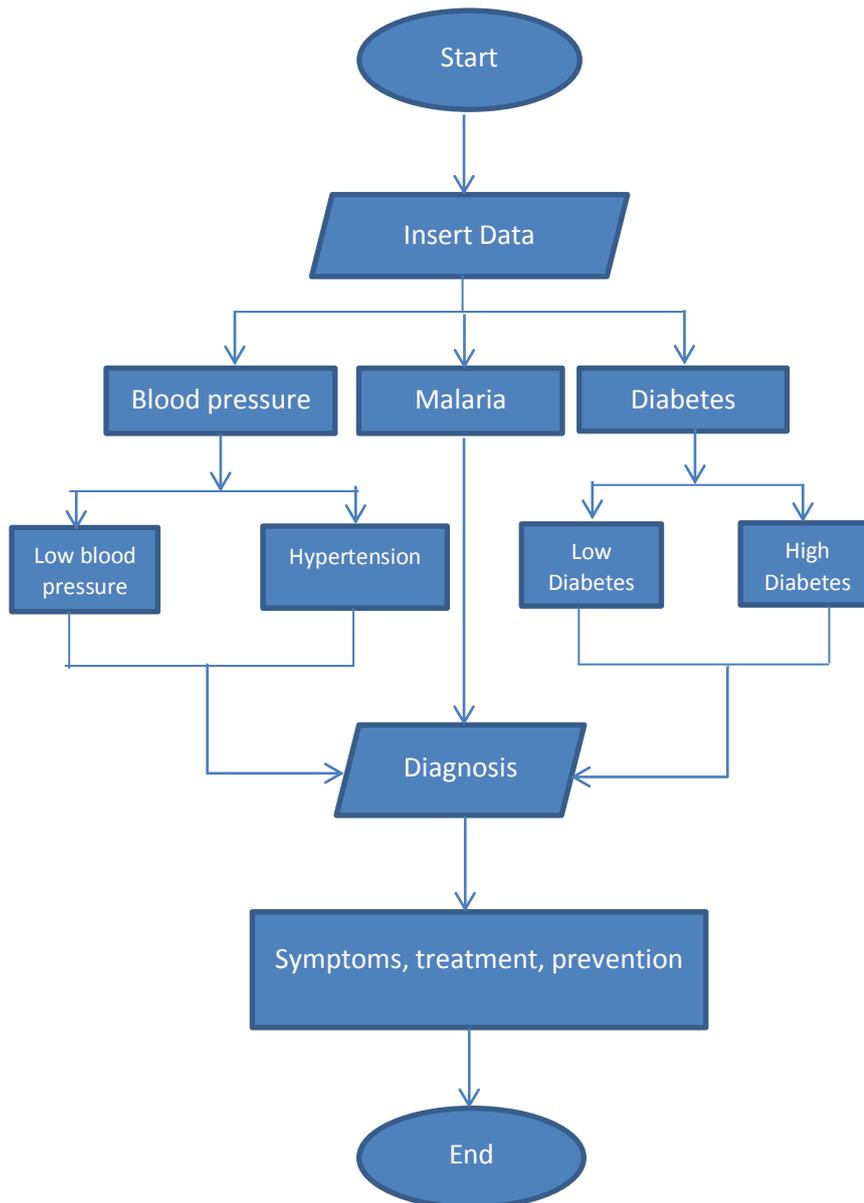
- Vector control (long-term insecticide treatment)
- Use of mosquito nets.
- Use of malaria prevention pills in high-prevalence areas such as Doxycilin, Purgnil

- Use of topical creams to repel mosquitoes.

This data represents a knowledge base.

Design

The researcher used flow charts to illustrate data flow.



Algorithm

1-Thirsty, tiredness, dizziness, tired, headache, a sense of tension and anxiety.

Low Diabetes:

2-Heart palpitations. General fatigue. Paleness of the skin. Shiver. Increase sweating. Sense of hunger.

Treatment of high diabetes

-Fluid, either by mouth or intravenous injection, Insulin therapy.

- Treatment of low diabetes

-Eat sugary foods, Take medications containing glucose compounds and if there are no changes and the patient's condition worsens, call the doctor immediately.

First: Hypertension:

Symptoms:

Heart beat quickly

- Redness of the white eye

- Muscle spasms

Persistent headache.

Blood bleeding from the nose

Redness of the ears

Treatments (Hypertension):

Stay away from salty foods, foods containing fat, and smoking.

- Focus on eating foods that contain potassium.

- Exercise relaxation exercises.

Second, low blood pressure:

Symptoms:

Paleness of the face, drowsiness, irregular heartbeat.

- Lower body sugar.

- Extreme thirst and cold feeling
- Dizziness and eyes squinting.
- breathing difficulties

Treatments (low blood pressure):

Drink large amounts of water.

- Reduce (diuretics such as Lasix, Captopril).
- Drink tea or coffee.

Malaria:

Symptoms:

- Severe pains in the stomach.

Headache and severe headache.

- Severe fever with a strong desire to vomit.
- Extreme sweating.
- Lack of sugar and acidity of blood.
- Severe pains in the organs of the body.

Treatment (Malaria):

- Chloroquine
- Quinine

Tips & Advice (Function) :

Good diet

Sports

Cleanliness

Reduce excess weight

Reduce stress

Results:

- Representing a knowledge base containing three diseases.
- Provide an expert program containing data on the three diseases on the Internet to help the patient, the employee and the doctor in a technical way instead of manual work.

Conclusion:

The researcher recommends establishing a medical system for diseases and their symptoms, methods of treatment and linking them to cloud computing techniques so that there is more development in this field

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