Advances in Electrical and Telecommunication Engineering (AETE)

AETE is a peer review journal of the Department of Electrical & Electronics Engineering, Ambrose Alli University, Nigeria

Development of a Medical Expert System for Hypertensive Patients Diagnosis: A Knowledge-Based Rules

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ARTICLE INFO

ABSTRACT

Early detection of ailment or diseases in human has called for smart intelligence system healthcare development. Some of the major problems that both populated and less populated countries are facing is the difficulties in early ailment detection and treatment of ill health people. This is due to minimal number of medical expertise and resources available in various hospitals which leads to spending of huge affluence of their resources to meet those challenges, but still demanding for adequate medical services provisions. Therefore, this paper proposed a medical expert system for early detection of hypertensive patient, ailment diagnosis and characterisation with medical advice based on decision-making. The developed medical expert system is proficient, accurate and avoid time-waste in patient diagnosis with adequate professional advice on the ailments.

1. Introduction

Over the years, effort has been made to improve healthcare services approaches in the area of remote human health monitoring, ailment diagnosis, patient records and clinical data management. This resulted in different techniques of medical diagnostic system development which includes expert system, healthcare automation monitoring and alarm system, decision making support system and various computerised system.

Human health monitoring and diagnosis is very important, which required frequent checking for early stage of illness or disease like hypertension, diabetes, and many other ailment that are deadly or dangerous to human health. There are four healthcare body vital signs that required frequent inspections to keep the body system healthy and to sustain life functions. These includes body temperature, human heart rate/pulse rate, human blood pressure and human respiratory rate (breathing rate). The National Institute for Health and Clinical Excellence (2007) warned that vital signs of individual combination into a single score is recognised as deteriorating signs that can lead to (precede) cardiac problem or serious deteriorating patient health.

Hypertension is a common ailment that threatens human health condition as a result of part of body system infections (heart), mental stress, pregnancy, deficient of body nutrients and others (Gudu *et al.*, 2012). Hypertension is a treat to medical personnel, especially human in pregnancy (HIP), obesity human (OH), diabetic patients and many others. This illness usually lead to maternal deaths in women, strokes in both men and women, heart attack or sudden death. Research showed that not less than two pregnant women are diagnosed with hypertension in pregnancy daily or more (WHO, 2010).