

Heart Disease Analysis System

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ABSTRACT

Heart disease describes a variety of conditions that affect the coronary heart. Diseases underneath the coronary heart sickness umbrella consist of blood vessel diseases, together with coronary artery disorder, heart rhythm problems (arrhythmias) and heart defects, human beings are born with (congenital heart defects), among others. If the heart disorder isn't recognized at an early stage, the patient's situation might get worsened and for that reason endanger his life. Therefore, this software program is evolved in order to research the patient check details and give an evaluation as to whether or not the affected person is healthful or requires remedy for heart disorder by giving the intensity of patient's heart situation because the result.

KEYWORDS: Analysis, Heart Disease, Cardiovascular, Diagnosis, Treatment

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INTRODUCTION

Heart ailment is one of the most important causes of morbidity and mortality most of the population of the world. Prediction of cardiovascular ailment is regarded as one of the most crucial subjects in the section of clinical information analysis. The quantity of records within the healthcare enterprise is huge. According to a information article, heart disorder proves to be the leading motive of demise for both women and guys. The article states the following: About 610,000 humans die of coronary heart disease every year—that's 1 in each four deaths. Heart disorder is the leading motive of death for both guys and ladies. More than 1/2 of the deaths because of heart sickness in 2009 have been in men. Coronary Heart Disease (CHD) is the most common type of heart disorder, killing over 370,000 people annually. Every year approximately 735,000 human beings have a coronary heart assault. Of these, 525,000 are a primary heart attack and 210,000 show up in people who've already had a coronary heart attack. This makes heart disorder a prime situation to be dealt with. But it is difficult to identify coronary heart disease because of several contributory risk factors inclusive of diabetes, high blood stress, excessive cholesterol, extraordinary pulse rate, and plenty of other elements.

Symptoms of heart disease inside the blood vessels (atherosclerotic ailment):

Cardiovascular disorder symptoms can be exceptional for guys and women. For instance, guys are more likely to have chest pain; ladies are much more likely to have other signs in conjunction with chest discomfort, which include shortness of breath, nausea and severe fatigue. Chest pain, chest

tightness, chest pressure and chest discomfort (angina), Shortness of breath, pain, numbness, weak spot or coldness on your legs or arms if the blood vessels in those elements of your frame are narrowed, pain in the neck, jaw, throat, top abdomen or back.

The patient won't be identified with cardiovascular ailment until he has a heart attack, angina, stroke or coronary heart failure. It's crucial to observe for cardiovascular symptoms and talk issues with the doctor. Cardiovascular disease can occasionally be discovered early with normal evaluations.

Risk factors responsible for developing heart disease include:

A. Age:

Aging increases your threat of broken and narrowed arteries and weakened or thickened coronary heart muscle.

Gender: Men are typically at greater danger of coronary heart ailment. However, women's danger increases after menopause.

B. Family records:

A family history of coronary heart disease will increase your hazard of coronary artery ailment, mainly if a figure evolved it at an early age (before age 55 for a male relative, inclusive of your brother or father, and 65 for a woman relative, consisting of your mom or sister).

C. Smoking:

Nicotine constricts your blood vessels, and carbon monoxide can damage their inner lining, making them more at risk of

atherosclerosis. Heart attacks are more common in smokers than in nonsmokers.

D. Drugs:

There are positive chemotherapy pills and radiation therapy for cancer. Some chemotherapy pills and radiation healing procedures may boom the hazard of cardiovascular disorder.

E. Poor eating regimen:

A weight loss plan that's high in fat, salt, sugar and ldl cholesterol can make contributions to the improvement of coronary heart ailment.

F. High blood stress:

Uncontrolled high blood strain can bring about hardening and thickening of your arteries, narrowing the vessels thru which blood flows.

G. High blood cholesterol level:

High cholesterol levels in your blood can increase the danger of formation of plaques and atherosclerosis.

H. Diabetes:

Diabetes will increase your risk of heart sickness. Both conditions percentage similar danger factors, such as weight problems and high blood stress.

I. Obesity:

Excess weight commonly worsens different threat elements.

J. Physical inactivity:

Lack of workout additionally is related to many kinds of heart disease and a number of its other risk elements, as well.

K. Stress:

Unrelieved strain might also damage your arteries and get worse other danger elements for coronary heart sickness.

L. Poor hygiene:

Not often washing your hands and no longer organising other habits that could help prevent viral or bacterial infections can placed you liable to coronary heart infections, in particular in case you have already got an underlying coronary heart condition. Poor dental health additionally may additionally make a contribution to coronary heart sickness.

Patients are required to submit numerous tests due to the fact the tests assist the doctor decide if a coronary heart assault occurred, how plenty your coronary heart was damaged and what degree of coronary artery disease (CAD) you might have. The tests screen your heart and assist the doctor determine what treatment and lifestyle modifications will hold your coronary heart healthful and save you serious future clinical events.

Literature Survey

Benjamin, E. J., Muntner, P., Alonso, A., Bittencourt, M. S., Callaway, C. W., Carson, A. P., Virani, S. S. (2019). Heart disease and stroke statistics-2019 update: A report from the American Heart Association external_icon. *Circulation*, 139(10), e56-e528.

Each year, the American Heart Association (AHA), in conjunction with the National Institutes of Health and other government agencies, brings together in a single document the most up-to-date statistics related to heart disease, stroke, and the cardiovascular risk factors in the AHA's My Life Check includes core health behaviors (smoking, physical activity, diet, and weight) and health factors (cholesterol, blood pressure [BP], and glucose control) that contribute to cardiovascular health.

Fang J, Luncheon C, Ayala C, Odom E, Loustalot F. Awareness of heart attack symptoms and response among adults—United States, 2008, 2014, and 2017. *MMWR*. 2019; 68(5):101–6.

Analysis of National Health Interview Survey data for 2008, 2014, and 2017 found that knowledge of five common signs and symptoms of a heart attack and the appropriate emergency response increased significantly (from 40% to 50% and from 92% to 95%, respectively); however, socio-demographic disparities in knowledge persist.

Greenland P, Knoll MD, Stamler J, et al. Major risk factors as antecedents of fatal and nonfatal coronary heart disease events. *JAMA*. 2003;290(7):891–7.

Antecedent major CHD risk factor exposures were very common among those who developed CHD, emphasizing the importance of considering all major risk factors in determining CHD risk estimation and in attempting to prevent clinical CHD. These results challenge claims that CHD events commonly occur in persons without exposure to at least 1 major CHD risk factor. To address the question of how frequently CHD events are preceded by exposure to major CHD risk factors, we assembled data from 3 large prospective US cohorts followed up for 21 to 30 years. We assessed the prevalence and consistency of major risk factor exposures across the 3 studies, which included both sexes and a spectrum of adult ages, and, where available, nonfatal as well as fatal CHD events.

Khot UN, Khot MB, Bajzer CT, et al. Prevalence of conventional risk factors in patients with coronary heart disease. *JAMA*. 2003;290(7):898–904.

Among patients with CHD, at least 1 of the 4 conventional risk factors was present in 84.6% of women and 80.6% of men. In younger patients (men ≤55 years and women ≤65 years) and most patients presenting either with unstable angina or for percutaneous coronary intervention, only 10% to 15% of patients lacked any of the 4 conventional risk factors.

Agno W, Becattini C, Brighton T, et al. Cardiovascular risk factors and venous thromboembolism: A meta-analysis. *Circulation*. 2008; 117: 93-102.

Cardiovascular risk factors are associated with an increased risk of VTE. This association between VTE and atherothrombosis has great clinical relevance with respect to individual screening, risk factor modification, and the primary and secondary prevention of VTE. Future prospective studies should further investigate the underlying mechanisms of this relationship.

PROPOSED METHODOLOGY AND RESULTS

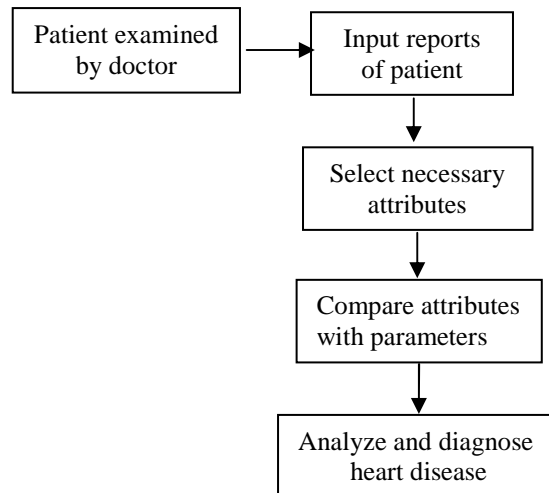


Fig.1 Proposed Methodology Diagram

A. Patient Examined by Doctor

The patient is first examined by the doctor. The necessary tests for diagnosing heart disease are performed by the doctor.

B. Input Reports of Patient

Manually the reports of patient are given as input to the system for analysis. These account as the attributes for comparison with the standard parameters in the further stage. The Analysis Report tab in fig. 2 shows the fields to enter the patient's reports to perform analysis.

The screenshot shows a web application interface with five tabs: 'Add Patient', 'View Patient', 'Your Appointment', 'Analysis Report' (which is highlighted in blue), and 'Result Of Analysis'. Below the tabs, there is a red banner with the text 'Follows the Given Instructions for Better Result' and two bullet points: 'Enter given range only' and 'Enter Patient's specified test'. Below the banner, there are six input fields with the following labels: 'Enter Patient Name', 'Enter ECG Report(Positive/Negative)', 'Enter 2D-ECHO Report %', 'Enter BLOOD Test(CBC) Report', 'Enter Random BLOOD SUGAR Test Report', and 'Enter Creatinine level in Blood Report'.

Fig. 2 Input reports of patient

C. Compare Attributes with Parameters

The attributes are then compared with the standard parameters. These standard parameters are values for different test attributes that imply the range of values under which a person suffers from heart disease.

D. Analyze and Diagnose Heart Disease

From the comparison, analysis and diagnosis is done that gives the result that whether the patient is suffering from heart disease or not. The Analysis result is shown in fig. 3.1, fig. 3.2, fig. 3.3.

In this project, the patient comes with certain symptoms which might relate to heart disease. The doctor runs some tests on the patient and on the basis of the clinical data obtained, rules out the other possible disease symptoms. The reports help the doctor to analyse the intensity of heart disease. By using analysis, we are able to make accurate assessment about anyone suffering from heart disease and give him accurate and effective treatment without any delay.

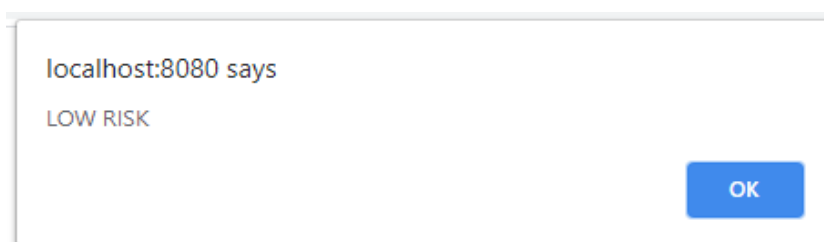


Fig. 3.1 From a patient's test reports result is low risk.

The fig 3.1 illustrates the result obtained about the intensity of the patient's heart condition as at low risk.



Fig. 3.2 Result as high risk

The fig 3.2 illustrates the result obtained about the intensity of the patient's heart condition as at high risk.

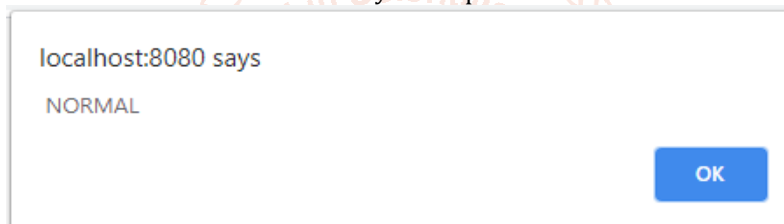


Fig. 3.3 Result as normal

The fig 3.3 illustrates the result obtained about the intensity of the patient's heart condition as at normal.

Patient		View Patient			Your Appointment			Analysis Report			Result Of Analysis				
Patient Name	ECG	2d-ECG	Blood(CBC) Level	Blood Sugar Level	Creatinine	Sodium level	Potassium	Blood Uria	Uric Acid	ALK-Phoshate	SGOT	Total Protein	Albimin	Lipid Profile	Action
suresh joshi	78	54	89	0	0	0	0	0	0	0	0	0	0	565	Prescription
vedant sharma	1	0	0	0	0	0	0	0	0	0	0	0	0	0	Prescription
ram joshi	1	0	1	0	0	0	0	0	0	0	0	0	0	0	Prescription
smita ioshi	1	1	0	0	0	0	0	0	0	0	0	0	0	0	Prescription

Fig. 4 Result of Analysis

The methodology that is used is if-else statements, wherein the conditions are set for the parameters from the various tests that the doctor performs in order to diagnose the heart disease, that is, if the patient's test results comes under the specified range then it can be safely concluded whether he is suffering from heart disease or not. Thus, the analysis is done due to which the doctor can directly input the patient's reports and get the results and start early treatment.

CONCLUSION

In the above paper it's miles studied that if-else statements in PHP can be used for evaluation of coronary heart disorder. It is visible that this different method and technique may be used for accuracy. Wherein the conditions are set for the

parameters from the numerous exams that the health practitioner performs so that it will diagnose the heart disorder, that is, if the patient's check outcomes comes beneath the specified range then it is able to be accurately

concluded whether or not he is affected by heart sickness or not. Thus the analysis is done because of which the health practitioner can directly enter the patient's reports and get the effects and begin early treatment.

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