

Graphical Representation of Blood Pressure Causes in Hospital through Data Mining Using KNN, Bayesian Classification Algorithms

Submitted by: Arti Sontakke¹

M.Tech Student, Computer Science & Engineering Department, JIT Nagpur, India

Guidance by: Dr. Sachin Chaudhari²

Associate Professor, Computer Science & Engineering Department, JIT Nagpur, India

Co-Guidance by: Priyanka Dudhe³

Assistance Professor, Computer Science & Engineering Department, JIT Nagpur, India
p.dudhe@gmail.com

Abstract

The aim of this paper is to present a system that graphical representation for research and analysis of blood pressure for a particular hospital, in which the symptoms of the patients its causes, ratio and analysis through data mining which will be useful for any health organization like WHO or IMA, for Remedies, Precautions and awareness in a society which will help to maintain a blood pressure. Hypertension is called a "silent killer" as per WHO. Most people with hypertension they are not aware of the problem because it may not have warning signs or symptoms. For this reason, it is essential that blood pressure is measured regularly. So that in this system we are storing and measuring Blood Pressure at Regular interval. And using that we can do further analysis and report for the Operational structure. Apart from this the system will show the Graphical representation of data which will help for analysis among other institutions.

Index Terms: *Data Mining, Hypertension, Research and Analysis of Blood Pressure, Health Organizations.*

1. INTRODUCTION

Data Mining is the process of analyzing data from variations of big data and summarizing it into usable Information. Data Mining is applied to find is useful patterns to help in the important task of medical diagnosis treatment [2]. This project aims graphical representation[4] for research and analysis of blood pressure for a particular hospital, in which the symptoms of the patients its causes, ratio and analysis through data mining which will be useful for any health organization like WHO or IMA, for Remedies, Precautions and awareness in a society which will help to maintain a blood pressure.

This project is based on the Graphical Representation of Blood Pressure using Data Mining Algorithms [5] [6]. If Blood Pressure increases is causes Hypertension [1]. Hypertension is one of the most critical predictors of cardiovascular disease (CVD), which is the leading cause of death worldwide [3]. Normally there are 5 ranges of blood pressure [1] First range of blood pressure is that numbers of less than 120/80 mm Hg are considered within the normal range. If patient results fall into this 5 categories, then doctor prescribed some remedies for stick with healthy habits. Second stage is elevated blood pressure which is readings consistently range from 120-129 systolic and less than 80 mm Hg diastolic, with elevated blood pressure are likely to develop high blood pressure stages for this taken precaution is very important otherwise is causes to hypertension. Third range is Hypertension Stage 1 is occurred when blood pressure consistently ranges from 130-139 systolic or 80-89 mm Hg diastolic. At this stage of high blood pressure, doctors are likely to prescribe lifestyle changes and may consider adding blood pressure medication based on your risk of atherosclerotic cardiovascular disease (ASCVD), such as heart attack or stroke [3].

Fourth range is Hypertension Stage 2 is when blood pressure goes at 140/90 mm Hg or higher. At this range of high blood pressure, doctors are prescribe a combination of blood pressure medications and lifestyle changes. And fifth range is this stage of high blood pressure requires medical attention. If your blood pressure readings suddenly exceed contact your doctor immediately. You could be experiencing a hypertensive crisis.

2. STAGES OF BLOOD PRESSURE

BLOOD PRESSURE CATEGORY	SYSTOLIC mm Hg (upper number)		DIASTOLIC mm Hg (lower number)
NORMAL	LESS THAN 120	and	LESS THAN 80
ELEVATED	120 – 129	and	LESS THAN 80
HIGH BLOOD PRESSURE (HYPERTENSION) STAGE 1	130 – 139	or	80 – 89
HIGH BLOOD PRESSURE (HYPERTENSION) STAGE 2	140 OR HIGHER	or	90 OR HIGHER
HYPERTENSIVE CRISIS (consult your doctor immediately)	HIGHER THAN 180	and/or	HIGHER THAN 120

Figure 1. Stages of Blood Pressure

For this system using data mining algorithms KNN , Neural Network [6], Bayesian Classification algorithm, Classification based on Clustering, Decision Tree [5] these algorithms are more accurate and they have less error rate and this are easier Data Mining algorithms.

3. SYSTEM FLOWCHART

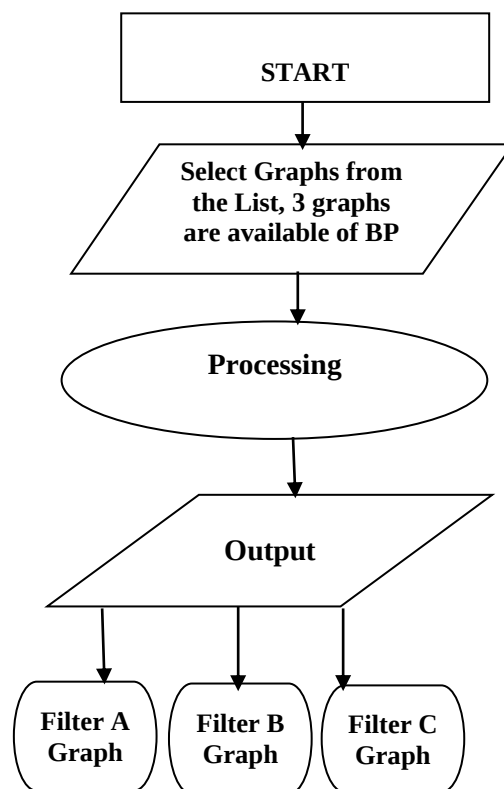


Figure 2. System Flowchart

Filter A graph: Blood pressure patient in a year

Filter B graph: Blood pressure analysis in a month

Filter A graph: Blood pressure analysis for year

In this system hospital's patient data which will display in the form of graph there are two ways to access the data, first section view patient records, in this add, delete, make changes all the process done. Access and process patient record which contain patient details such as name, address, blood pressure which is add at the time of patient will visit to the hospital. In this can stored large amount of data database available because system is fully depends on data.

Other section is graphical section in this three types of graphs are available for analysis select data type this are : blood pressure patient in a year, blood pressure analysis in a month, blood pressure analysis for year this all data shows in graphical form which is useful for health and research organization for research and analysis of blood pressure.

Easily analysis that how many patient check their blood pressure in a year as well as how they aware about their blood pressure and how they control their blood pressure. It also shows how many patient in a month visited to hospital and their blood pressure lie on which categories some patients are critical, some patients are normal, some patients having high blood pressure. This all information shows in the form of graph.

It shows total number of patients percentages which is checked their blood pressure and shows how many patients having high blood pressure. Shows all stages of blood pressure and also shows hypertensive crisis.

4. APPLICATION AREAS

Graphical representation of blood pressure is useful for patient cause's ratio and analysis and processing this data. It helpful in any Hospital for maintains the records in a digital format. This technology is useful in following areas:

- a. Research Organization: Research Oriented Terminology data analysis through data mining and processing the factors which causes the high blood pressure will get analyze and remedies also suggested by doctor. Research organization will get benefit, if they want to get data throughout the country.
- b. Health Institution: Multiple Hospitals are connected to each other through network using Centralized System [7] Technology in future. Large amount of store centralized data is useful for health Institution.
- c. End User: The evolution web and interaction technology determines a corresponding evolution of socio technical organization end user [8] can also use this system so that user can aware about blood pressure.

5. ADVANTAGES & LIMITATIONS

Graphical representation of blood pressure is very helpful for research and analysis of blood pressure symptoms. No data loss, digital information of records will be beneficial WHO or IMA can get the data easily. Through this system symptoms, precaution, and remedies may get analyze.

This technology is limited to particular hospital for now lots of data and records needed for storage. System is fully dependent on data.

6. CONCLUSIONS & FUTURE SCOPE

Multiple hospitals connected to each other centralized system data can easily access. In future centralized system [7] where the analytics group is its own entity independent of any particular group so that any countries hospital data easily access by any research organization and health institute for research and analysis of blood pressure.

So that the using centralized system any health organization likes WHO, or IMA, for remedies, precaution and awareness in a society which will help to maintain a blood pressure.

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