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A Review on Hypertensive Disorder in High Risk Pregnency

Shriya Acharya, Sneha Gaywala, Paresh Patel
Research Scholar, S.V.I.T, Vasad, Gujarat, India

ABSTRACT

Data mining plays important role in prediction of diesease in health care industry .many algorithms are developed for prediction of various diesease in this review paper we research for the hypertensive disorder during pregnency and research the different data mining techniiques used for hypertensive disorder in high risk pregnancy.

Keywords: Hypertension, Pregnancy

I. INTRODUCTION

1.1 DataMining

Generally,datamining (sometimes calleddataor knowledg discovery) is the process of reasoning data from and encapsulatin it into useful information that can be used to increase revenue, wound, costsor both. Datamining allows users to analyze datafrom many different extentorslant, categorizeit, and Technically, datamining is the processof finding interrelation or patterns amongdozens offields in large relational databases".

1.2 Dataminingtechniques

1.2.1 Association

Association rule mining rule mining is primarily spotlightonfinding frequent co-occurring associations among a collectionofitems.It issometimes referredtoas "Market BasketAnalysis",sincethatwas the original application area of associationmining[9]. The in tensionist of indassociationsof itemsthatoccur together moreoften than you would expect from a random sampling of all probabilities.

1.2.2 Classification

Classification is theprocess of finding a model (or function) that describes segregate data classes or concepts ,for the determination of being able to use the model to predict the class of objects whose class label is unknown.The imitative model is based on the analysis of a set of training data [9].

1.2.3 Prediction

Prediction models continuous-valued functions. That is, it is used to predict missing or non existent numerical data values rather than class labels. Although theterm prediction may refer to both numeric prediction[9].

1.2.4 Cluster Analysis

The objects are clustered or grouped based on the principle of maximizing the intraclass affinity and minimizing the interclass affinity. That is, clusters of objects are formed so,that objects within a cluste rhavehigh similarityin discrimination to one another, but are very dissimilar to objects in other clusters [9].

1.2.5 OutlierAnalysis

A data base may contain data objects that do not acceded with the general behavioror model of the data.These data objects are outliers. Most datamining methods discard outliers as noise or exceptions. However, in some applications such as fraud detection ,the rare events can be more interesting

than the more regularly occurring ones. The analys is of outlier data is referred to asoutlie rmining [9].

1.3Decision tree

Decision tree learning is a method commonly used in data mining. The object is to create a model that portend the value of a target variable based on several input variables. An example is shown in the diagram at right. Each interior node corresponds to one of the input variables; there are edges to children for each of the possible values of that input variable. Each leaf appear as a value of the target variable given the values of the input variables represented by the track from the root to the leaf.[12]

A decision tree is a simple representation for classifying examples. For this section, hypothesize that all of the input features have finite discrete domains, and there is a single target feature called the "classification". Each element of the domain of the classification is called a *class*. A decision tree or a classification tree is a tree in which each internal (non-leaf) node is labeled with an input feature. The arcs coming from a node labeled with an input feature are labeled with each of the possible values of the target or output feature or the arc leads to a inferior decision node on a different input feature. Each leaf of the tree is labeled with a class or a anticipation distribution over the classes.

1.4 Types of decision trees

Decision tree used in Data Mining are two types.

Classification tree analysis is when the predicted outcome is the class to which the data associate.

Regression tree analysis is when the predicted outcome can be assent to a real number.

The term **Classification And Regression Tree (CART)** analysis is an umbrella term used to refer to both of the above procedures, first introduced by Breiman etal.Trees used for regression and trees used for classification have some similarities - but also some differences, such as the procedure used to determine where to split.Some approches, often called *ensemble* methods, construct more than one decision tree:

- ✓ **Boosted trees** Incrementally building an ensemble by training each new instance to emphasize the training instances previously mis-modeled. A emblematic example is AdaBoost. These can be used for regression-type and classification-type problems.
- ✓ **Bootstrap aggregated** (or bagged) decision trees, an early ensemble method, builds multiple decision trees by repeatedly resampling training data with Re-instatement, and voting the trees for a consensus prediction. A **random forest** classifier is a specific type of bootstrap aggregating
- ✓ **Rotation forest** - in which every decision tree is trained by first applying principal component analysis (PCA) on a random subset of the input features.

A special case of a decision tree is a decision list, which is a one-sided decision tree, so that every internal node has exactly 1 leaf node and exactly 1 internal node as a child (except for the bottommost node, whose only child is a single leaf node). While less eloquent, decision lists are arguably easier to understand than general decision trees due to their added poverty, permit non-greedy learning methods and monotonic constraints to be imposed.

1.5 HYPERTENSIO AND PREGNANCY:

Hypertension is the most intermittent medical problem during gestation. In 2000, the National High Blood Pressure Education Program classified this illness in four categories. After,in 2008, the Society of Obstetricians and Gynecologists of Canada revised the guidelines, elucidate this classification into two categories, preexisting or gestational. There is an option to add ”with preeclampsia” to either category, depending on maternal or fetal syndrome presented, signs or test results that timber this classification [2]. Figure 1 shows a scheme for the most recent

classification of hypertensive disorders in pregnancy.[11]

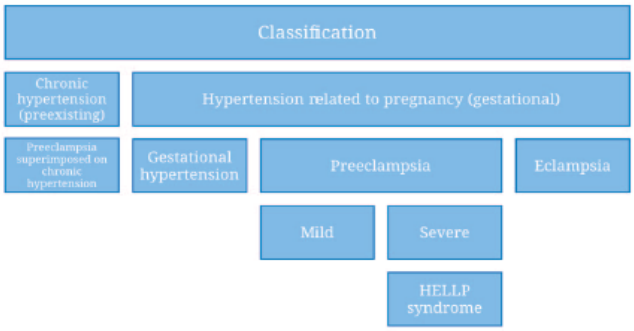

Figure 1. classification of hypertension

Chronic hypertension is usually asymptomatic and occurs when the blood pressure is higher than 140/90mmHg before pregnancy or before 20 weeks gestation, and/or after 12 weeks postpartum. About the Preeclampsia superimposed on chronic hypertension, its main syndroms are a headache ,blurred vision, right upper quadrant pain, elevated creatinine or transaminases , or low platelets. This confinement occurs in women with chronic hypertension but without proteinuria at more than 20 weeks on chronic hypertension. The proteinuria new-onsets higher or equal to 300mg in 24 hours. In gestational hypertension ,the lab abnormalities occur at more than 20 weeks gestation. It appear like chronic hypertension in the absence of proteinuria. The preeclampsia/eclampsia main symptoms are hypertension (BP 140/90mmHg) and proteinuria (≥300mgin 24 hours) at or beyond 20 weeks gestation in previously normotensive women. Creatinine elevated or transaminases, or low platelets, increase the likelihood.[11]

II. ITERATURE REVIEW

Mário.W.L. Moreira, Joel J. P.C.Rodrigues, Antonio M. B.[1] Oliveira research that

According to the World Health Organization (WHO),hypertensive disorders of pregnancy oppress about 10% of all pregnancies around the world. These are the preeminent causes of dysphoria,impairment, and death among mothers and babies .These confusion during pregnancy were an important cause of fatality in Latin America and the Caribbean, contributing to 22.1% of all maternal deaths in this region.With providing up to date and efficient care, the superiority of deaths related to these complications could be escape. Thus, escalation of health care for pregnant women to restrain and treat hypertensive disorders is needed. As reported by the National High Blood Pressure Education Program, hypertension in pregnancy is classified into one of the following five categories: (*i*) Chronic hypertension, (*ii*)Preeclampsia, (*iii*) Chronic hypertension with superimposed preeclampsia, (*iv*) Gestational hypertension, and (*v*) Transient hypertensio. These grouping are critical to differentiating preeclampsia, a pregnancy-specific syndrome of distorted vasoconstriction and reduced organ perfusion, from preexisting chronic hypertension. Nevertheless, this convoluted multifactorial syndrome, that transpire in About 5 to 7% of pregnancies worldwide, has not an etymology established yet, i.e., this inflammation has still no agreement about its classification as well as on the timing of its instance during pregnancy. To evaluate this disorder is unavoidable to define the blood pressure status.

The Naïve Bayes classifier is germane in health care when there is a set of characteristics that represents each risk factor.Each one of these attributes occurs in a particular disorder hypertensive. This classifier based on Bayes theorem is used to regulate the probability of each hypertensive disease from syndromes never seen.[1]

Mário W. L. Moreira, Joel J. P. C. Rodrigues Antonio M. B. Oliveira research that [2]Bayesian networks are a methodology for the systematization of systems that rely on anticipting knowledge. These systems function with uncertain and incomplete knowledge through of Bayesian Probability Theory. Teles *et al.* [*7*] propose the use of a context-aware podium based on Bayesian networks to support the experts' decision-

making in public health systems. This study is focused on synopsis of dengue. Results show that the use of ideology together with a Bayesian networks advent makes the prophecy more refined. Bobba *et al.* [*8*] present a data based DSS that uses a Bayesian approach to merge gene expression data into foreboding models. This system integrates information from earlier experiments to envision the disease state.

Wenshuai Cheng, Liying Fang, Lin Yang, Han Zhao,Pu Wang ,Jianzhuo Yan[3] research thatIn this paper Auther indicates that To access the effects of known risk factors, we used the suggested method to inaugurate the varying coefficient model. This study showed the possessions of known risk factors on women's blood pressure during pregnancy. These results not only determined the uncertain process of each risk factor over gestational age, but also compared the possessions of known risk factors among gestational hypertension group and preeclampsia group. We establised that the effects of known risk factors varied with gestational age, which will add important knowledge, not only for understanding the cause of gestational hypertension, but also for giving buttress for clinicians. The results indicated that the endlong studies extend cross sectional studies at only one fixed point in time and attained the dynamic effects of known risk factors for disparate gestational ages. Furthermore, According to the clinical consideration, the mean arterial blood pressure for women with preeclampsia is generally larger than those with gestational hypertension. Thus, the result that the effects of peril factors for women with preeclampsia were generally larger than those with gestational hypertension is also legitimate. In conclusion, we have showed that the charismatic effects of known risk factors over gestational age and given the distant effects of known risk factors between gestational hypertension group and preeclampsia group. Based on these results, phychoanlyst can improve medication maneuvering for matron with gestational hypertension.

Ranjan Das, Pallavi Vajinepalli, Rajendra Sisodia and Lalit Gupta research that [4]

High risk pregnancy circumstances such as preeclampsia pregnancy cajoled hypertension, intra-uterine growth stipulation and gestational diabetes are affiliate with inadequate utero-placental transmission. These conditions, if unexplored early during pregnancy, are associated with meager pregnancy fallout including high morbidity/mortality for the fetus/mother. The current state of the art for overseeing such conditions is via (color) Doppler ultrasound with key clinical parameters being observed in uterine and umbilical boulevard being the resistance index (RI), pulsatility index (PI) and AB index and early diastolic notching. High risk conditions in pregnancy unambiguous as aberrant flow profiles and indices in preffered fetal/maternal blood vessels.

It is recognized that the placental pathology is associated with majority of pregnancies complicated by hypertensive disorders, IUGR and diabetes mellitus etc. Abberant uteroplacental circulation in high-risk pregnancies includes deformity in uterine blood flow velocity as well as the uterine blood volume during a pulse cycle (stroke volume). The ³$UHD_ 5atio´ can be used in analysing high-riskpregnancies with orderly uterine artery flow velocity based indices. Identifying transformation in the abundance of the blood supply to the fetus can upgrade the performance of theDoppler uterine artery inquisition in high-risk pregnancies having normal velocity based indication. However this study needs to be corroborate with larger sample size.
Rutvij Mehta,Nikita Bhatt, Amit Ganatra research that[5]Data mining is becoming moderatly popular and indispensable to healthcare institution, finding useful patterns in complicated data, transforming it into profitable information for decision making. The latest consus of WHO and UNICEF show that per

annum approximately 55,000 women die due to avertible pregnancy-related causes in India. Therefore, the ongoing spotlight of health care researchers is to build up the use of e-health technology in flourisshing countries. There have been many studies that spread data mining methods to recognize explanation for health care limitations in obstetrics and maternal care domain. Some of those studies included high risk pregnancy,prognosis of preeclampsia, recognition of obstetric risk factors, discovering the risk factors of preterm delivery, and concluding risk pregnancy in women performing spontaneous interruption of pregnancy.

III. CONCLUSION

At the end of paper ,conclude that due to hypertensive disorder in high risk pregnancy using different types of data mining technique.and also fine accuracy and kappa value from using this technique and get better performance of it.

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