1. Maternal and infant mortality rates, as well as preterm births, are significant public health concerns in India and globally.
2. The healthcare industry must focus on improving the quality of care for pregnant women to address these issues.
3. The study aims to compare logistic regression with data mining techniques to predict low birth weight and develop a decision support system for physicians.
4. Data mining methods are used to extract hidden information and relationships in healthcare data for better decision-making.
5. Low birth weight is defined as a birth weight less than 2,500 grams.
6. Preterm birth is a leading cause of infant mortality worldwide.
7. India faces challenges in improving pregnancy outcomes, with high child and maternal mortality rates.
8. Accurate identification of patients at risk for preterm birth is crucial for prevention and improved treatment.
9. Data mining plays a vital role in healthcare by uncovering patterns and relationships in large datasets.
10. The study discusses various data mining algorithms, including Support Vector Machines, Logistic Regression, Neural Networks, Naïve Bayes, Random Forest, and Decision Trees.
11. Random Forest is an ensemble classifier that can handle high-dimensional data and reduce overfitting.
12. The dataset used in the study consists of maternal information for 189 women, including those with low and normal birth weight babies.
13. The dataset attributes include mother's age, weight before pregnancy, physician visits, race, smoking, previous preterm deliveries, hypertension, and more.
14. The study evaluates the performance of different classification algorithms based on accuracy, sensitivity, specificity, precision, and recall.
15. The Classification Tree algorithm achieves the highest overall prediction accuracy (89.95%) and specificity (72.88%) for low birth weight prediction.
16. Sensitivity is crucial for correct disease diagnosis, and Random Forest achieves a high sensitivity of 99.23%.
17. Mother's last weight before becoming pregnant is identified as the most influential predictor for low birth weight (100%).
18. Hypertension, race, uterine irritability, and smoking are identified as weakly influential predictors.
19. Future work aims to improve prediction accuracy using soft computing techniques and create a powerful tool to assist physicians in predicting low birth weight.
20. Accurate prediction of low birth weight can lead to better treatment and prevention strategies.