Post Partum Depression

Introduction

In the journey of human existence, the significance of health, both physical and mental, is incredibly important. The energy of physical health lays the groundwork for robust living, ensuring individuals can navigate life's challenges with resilience and vigor. However, alongside physical well-being, the complexities of mental health weave an equally crucial thread, shaping individuals' perceptions, emotions, and overall quality of life.

Within this complex framework, Postpartum Depression (PPD) emerges as a touching reminder of the interdependence between physical and mental health, particularly during the vulnerable period following childbirth. As we embark on a journey to explore the depths of PPD through the lens of healthcare analytics, we aim to not only unravel the complexities of maternal mental health but also to forge data-driven pathways towards early detection, intervention, and holistic support for new mothers and their families.

Background/Motivation

Most new moms experience postpartum "baby blues" after childbirth, which commonly include mood swings, crying spells, anxiety and difficulty sleeping. But some new moms experience a more severe, long-lasting form of depression known as "**postpartum depression**". Sometimes it's called peripartum depression because it can start during pregnancy and continue after childbirth. Rarely, an extreme mood disorder called postpartum psychosis also may develop after childbirth. Postpartum Depression (PPD) stands as a significant mental health concern affecting mothers worldwide, with profound implications for both maternal well-being and infant development. Despite its prevalence and impact, PPD often goes undiagnosed and untreated, leading to prolonged suffering for mothers and potentially adverse outcomes for their children.

The motivation behind this project stems from the urgent need to address the gaps in understanding detection, and intervention surrounding PPD. By leveraging the power of healthcare analytics, we aim to delve into the multifaceted factors contributing to PPD, including biological and psychological determinants. Through this exploration, we aspire to develop data-driven solutions that empower healthcare providers with improved tools for early detection, personalized intervention, and ongoing support for mothers experiencing PPD.

Evaluation

To ensure the efficiency and significance of the proposed project, we will be following a comprehensive evaluation plan to systematically assess its effectiveness and impact.

- Our project will undergo thorough evaluation utilizing a combination of analysis, visualization techniques using Tableau, and predictive modeling.
- We'll assess how well the predictive model can accurately identify new mothers who are at risk of experiencing suicidal thoughts or attempts based on their reported symptoms of postpartum depression.
- Our successful project will have a predictive model that reliably predicts which individuals are more likely to experience suicidal thoughts or behaviors.
- A successful project will demonstrate that the predictive model provides significant value in terms of improved patient outcomes and healthcare efficiency without imposing excessive financial burden.
- By coupling advanced analytics with predictive modeling, our evaluation aims to not only enhance our understanding of PPD but also provide healthcare practitioners with actionable insights to identify and intervene with at-risk patients more effectively, ultimately reducing the incidence of maternal suicide associated with PPD.

Resources

Dataset:

The dataset utilized in this project is originally collected from a medical hospital using questionnaire administered through survey and is currently uploaded on kaggle.com by researcher. The dataset initially consisted of 1503 records. To enhance its size, bootstrapping technique was used, resulting in an expansion to one and half million records. It includes 10 attributes:

- Age
- Feeling sad or Tearful
- Irritable towards baby & partner
- Trouble sleeping at night.
- Problems concentrating or making decision.
- Overeating or loss of appetite
- Feeling anxious
- Feeling of guilt
- Problems of bonding with baby
- Suicide attempt.

Methods and Tools:

- Data Preprocessing (Python)
- Exploratory Data Analysis (Python)
- Data Visualization (Tableau)
- Predictive model (Python)

Project Flow/Architecture
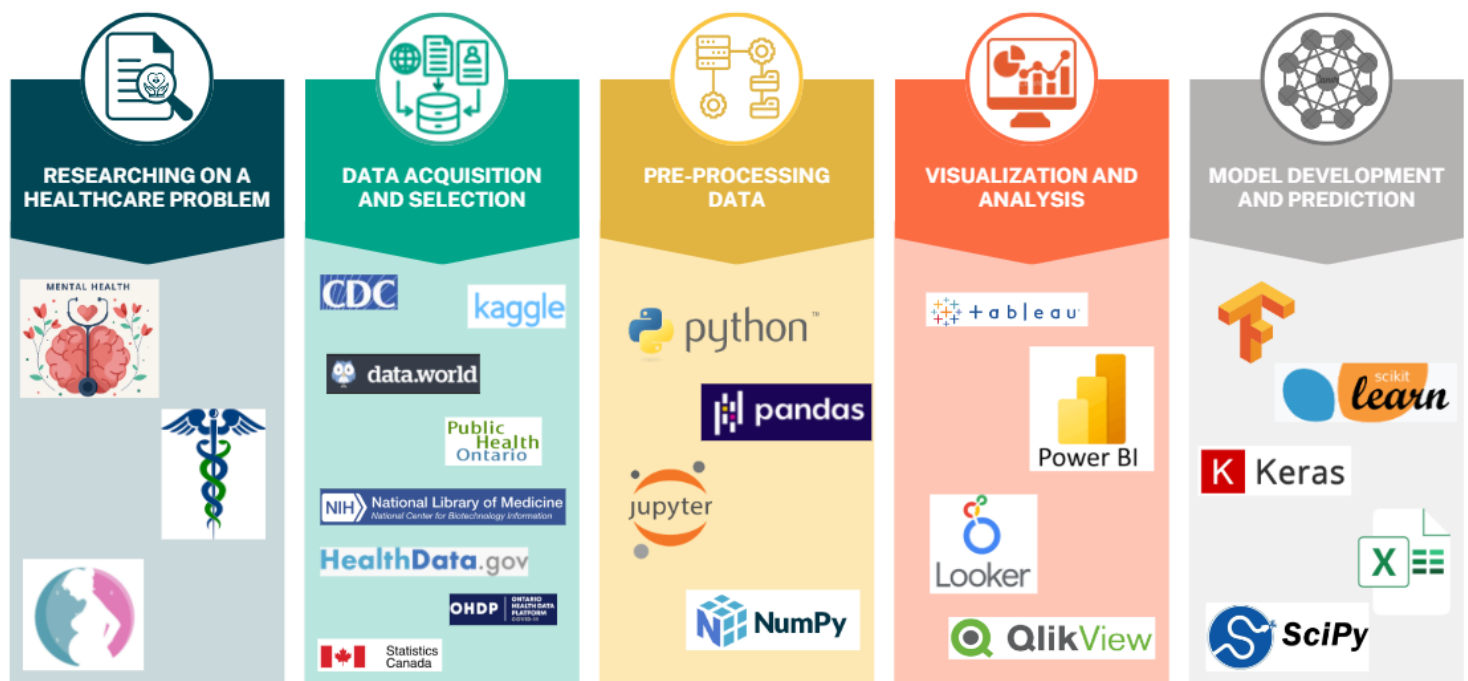
Contributions

Team Member	Contribution
Ikram Patel	Research on Project Ideas Searching dataset related to the topic. Finalizing one project out of three projects Enhanced data set to be suitable for Machine Learning Proposal preparation
Sujata Biswas	Research on Project Ideas Searching dataset related to the topic. Finalizing one project out of three projects Enhanced data set to be suitable for Machine Learning Proposal preparation
Alisha James	Research on Project Ideas Searching dataset related to the topic Proposal preparation
Andrews Truman	Research on project ideas Dataset Exploration Proposal Preparation
Srikanth Ayyalasomayajula	Research on Project Ideas Searching dataset related to the topic

References

- Postpartum depression prediction through pregnancy data analysis report
- Predicting postpartum women with depressive symptoms
- Predictive Modeling of Postpartum Depression
- Regional Differences in Various Risk Factors for Postpartum Depression