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PROBLEM DESCRIPTION

ABC Pharma wants to automate the identification of drug persistence as per the physician's prescription. The goal is to build a classification model to predict whether a patient will persist with their treatment and to identify the factors that influence drug persistence.

GITHUB REPOSITORY

https://github.com/aishatyusuf/drug_persistence_abc_pharma

EDA Report

The goal of this analysis was to identify potential factors that influence drug persistence among the patients in the dataset.

Key Findings

Race:

Asian patients have the highest persistence rate of 48.81% when compared to other groups

African American patients have the lowest persistence rate of 31.58%

Ethnicity:

Non-Hispanic patients have a higher persistence rate of 37.79% compared to Hispanic patients with 32.65%

Region:

Patients in the Western region show a higher persistence rate of 44.42%, while those in the Midwest have the lowest persistence rate of 32.85%

Age Bucket

The difference in the persistent rate among the different age groups isn't so pronounced and the age group with the highest persistence rate is those aged 65-75 with 39.87%

IDN Indicator:

Patients mapped to an IDN have a much higher persistent rate (40.79%) than those who are not.

NTM Specialist Flag:

Patients seen by a specialist have a higher persistence rate of 45.71%

NTM Specialist Bucket:

Patients treated by endocrinologists, oncologists, or urologists have a much higher persistence rate of 53.91%

Clinical Factors:

Patients who had recorded glucocorticoid usage during therapy, dexamethasone scans during treatment, and fragility fractures during therapy had a higher rate of persistence.

Disease and Treatment Factors:

Patients with injectable experience during treatment have a higher rate of persistence at 39.30%

Risk Factors:

Only patients with rheumatoid arthritis and untreated chronic hypogonadism have higher persistence rates

Concomitances:

Overall, patients with concomitances have a higher persistence rate; however, patients with these concomitances have lower persistence rates.

- * cholesterol and triglyceride-regulating preparations
- * Antidepressants and mood stabilisers

Comorbidities:

With the exception of the following comorbidities:

- * Lipoprotein metabolism and other lipidemias,
- * Osteoporosis without current pathological fracture,

Patients with comorbidities tend to have higher rates of persistence.

Also, patients that are persistent with their treatment are more likely to have multiple concomitances, comorbidities, and risks

Adherence:

The persistence of non-adherent patients is much higher (61.27%) compared to adherent patients (36.38%). This is peculiar, as one might expect an adherent patient to be more persistent with their treatment. Upon further analysis, some factors were found to be prevalent among non-adherent and adherent groups who maintain drug persistency. These factors include:

- * Presence of dexamethasone scans during treatment
- * Comorbidity screening for malignant neoplasms
- * Comorbidity encounter for immunization
- * General exam without complaints, suspected or reported diagnosis
- * Disorders of lipoprotein metabolism and other lipidemias
- * Risk of vitamin D insufficiency

Recommendations:

Increased screenings, preventive exams and improved monitoring of patients through more regular check ups would facilitate an increase in persistence rates

Patients with an IDN indicator have higher rates of persistence; integrating more patients into this network would surely improve persistence

Patients with low risks, comorbidities, and concomitances are more likely to be non-persistent because they may not feel the need to be persistent with their treatment. Patient education would help improve persistency.

Enhancing collaboration among healthcare providers so they can share methods and strategies that help improve persistence.

Further studies can be conducted to figure out why certain demographic groups have lower drug persistence and results from these studies can help create targeted interventions to help increase the persistence in these groups