PROJECT PROPOSAL: DRY EYE DISEASE CLASSIFICATION

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OBJECTIVES

The goal of this study is to answer the following questions:

- How does **overall sleep quality** influence the prevalence and severity of Dry Eye Disease in the population?
- What distinct clusters can be identified based on **lifestyle choices**, and how do these clusters correlate with Dry Eye Disease outcomes?
- Does **BMI and physical health** contribute to the development of Dry Eye Disease, and can clustering analysis reveal subgroups at higher risk?

DATA SOURCE

The dataset was sourced from Kaggle (in CSV format) and is intended for predictive modeling and diagnostic analysis of Dry Eye Disease based on key attributes such as sleep quality, sleep duration, eye redness, itchiness, screen time, blue-light filter usage and eye strain.

Link: https://www.kaggle.com/datasets/dakshnagra/dry-eye-disease/data

POPULATION OF INTEREST

The population is made up of all individuals aged 18 to 45 from India, representing teenagers, middle-aged adults, and post-adulthood individuals of both genders, whose sleep patterns, lifestyle choices, and medical conditions are relevant for studying Dry Eye Disease.

SAMPLE SIZE

The dataset includes 20,000 observations of individuals' daily habits, medical history, and ocular attributes, organized into 26 columns as described below.

VARIABLES OF INTEREST

Numerical

1. Age (years)
2. Sleep duration (hours)
3. Blood pressure (mmHg)
4. Heart rate (beats/min)
5. Daily steps (steps/day)
6. Physical activity (min/day)
7. Height (cm)
8. Weight (kg)
9. Average screen time (hours/day)

Categorical

1. Gender (M/F)
2. Sleep quality (1-5)
3. Stress level (1-5)
4. Sleep disorder (Y/N)
5. Wake up during night (Y/N)
6. Feel sleepy during day (Y/N)
7. Caffeine consumption (Y/N)
8. Alcohol consumption (Y/N)
9. Smoking (Y/N)
10. Medical issue (Y/N)
11. Ongoing medication (Y/N)
12. Smart device before bed (Y/N)
13. Blue-light filter (Y/N)
14. Discomfort Eye-strain (Y/N)
15. Redness in eye (Y/N)
16. Itchiness/Irritation in eye (Y/N)
17. Dry Eye Disease (Y/N)