DEPARTMENT OF DATA ANALYTICS

VEPHLA UNIVERSITY

LESSON DAY 16 TASK NUMBER 16B (IV)

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VEPH/20B/DA097

TECHNICAL REPORT FOR OCCUPATIONAL SLEEP DISORDER ANALYSIS FOR 2023

OUTLINE

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INTRODUCTION

Objective of the Project: This project is designed to analyze individuals of different gender and occupation and the extent to which sleep quality, daily exercise, BMI and sleep duration influences blood pressure, heart rate and if or not they have sleep disorder.

Problem Being Addressed: This project will try to analyses and address the factors that may lead to sleep disorder.

Key Datasets and Methodologies: The dataset used is the individual health records. The methodology employed is the use of pivot tables, line charts, bar charts, column charts and pie charts to analyze the data to identify trends and hidden patterns.

STORY OF DATA

Data Source: The data was obtained from Kaggle.com

Data Collection Process: This data was obtained from Kaggle.com

Data Structure: The data contains 376 rows with each representing a distinct individual's details and 13 columns representing person ID gender, age, occupation, sleep duration, quality of sleep, physical activity level, stress level, BMI category, blood pressure, heart rate, daily steps and sleep disorder.

Important Features and Their Significance:

- ✓ Person ID – this is the ID number assigned to everyone.
- ✓ Gender- this is the gender of the individual.
- ✓ Age- this is the age of the individual.
- ✓ Occupation – this is the type of work the individual does.
- ✓ Sleep duration- this is the average number of hours the individual sleeps daily.
- ✓ Quality of sleep- this is the actual time spent sleeping daily.
- ✓ Physical activity level- this is the measure of the amount of physical activity done.
- ✓ Stress level – this is the measure of the extent to which the individual is stressed on a scale of 1-10
- ✓ BMI category- this classifies the individuals as being normal, overweight or obsessed.
- ✓ Blood pressure- this is the measure of the individuals blood pressure readings.
- ✓ Heart rate- this is the measure of the individuals total heart beats per minute.
- ✓ Daily steps- this is the measure of the total step taken by the individual daily.
- ✓ Sleep disorder- this feature tells us if the individual has any form of sleep disorder or not.

Data Limitations or Biases

There is no data limitations observed.

DATA SPLITTING AND PREPROCESSING

Data Cleaning: The data was cleaned by removing duplicates, identifying and removing blanks, and ensuring that no inconsistencies are observed. Thereafter, the data was converted to a standard excel table to ease analysis.

To remove duplicate, simply copy the entire data (ctrl +shift + end) then navigate to the data tab and on the data tools ribbon to select “remove duplicates”.

To identify and remove blanks, simply copy the entire data (ctrl +shift + end) on the home tab navigate to the editing ribbon and click “Find and select”, then navigate to “Go to Special” and select “Blanks”, finally click on OK.

Handling Missing Values: There were no missing values in the data.

Data Transformations: No data transformations were performed.

Data Splitting: The data was splitted into dependent and independent variables. The dependent variables are sleep disorder, stress level, person ID, sleep duration, Quality of sleep, Physical activity level, Stress level, and Heart Rate.

While the independent variables are Gender , Occupation, BMI category, Age, Blood pressure.

Industry Context: the data is from the healthcare industry.

Stakeholders: HR Team.

Value to the Industry: This analysis will help to identify factors that may lead to sleep disorder and management approach to avoid any form of sleep disorder.

PRE-ANALYSIS

Key trends: Individuals aged between 43 to 44 have the highest rate and tendency to develop of sleep disorder.

Potential Correlations:.

IN-ANALYSIS

Unconfirmed Insights:

1. Individuals aged between 43 to 44 have the highest rate of sleep disorder.
2. Based on occupation, Nurses have the best sleep Quality.
3. Females have better sleep quality than Males.
4. Males have a higher incidence of sleep disorder than Females.

Recommendations:

1. Find out why individuals of this age category have sleep disorder and explore measures to address it.
2. Investigate why other occupations have poor sleep quality.
3. Find out why Females have better sleep quality than Males and explore measures for improvement.
4. Find out why Males have a higher incidence of sleep disorder than Females and explore measures for improvement.

Analysis Techniques Used in Excel:

Pivot Tables were used to analyze the data to generate meaningful visual insights.

Other features used are

Grouping- this was used to group the ages into a range.

Sorting- this was used to arrange data from the highest to the lowest and vice versa.

POST-ANALYSIS AND INSIGHTS

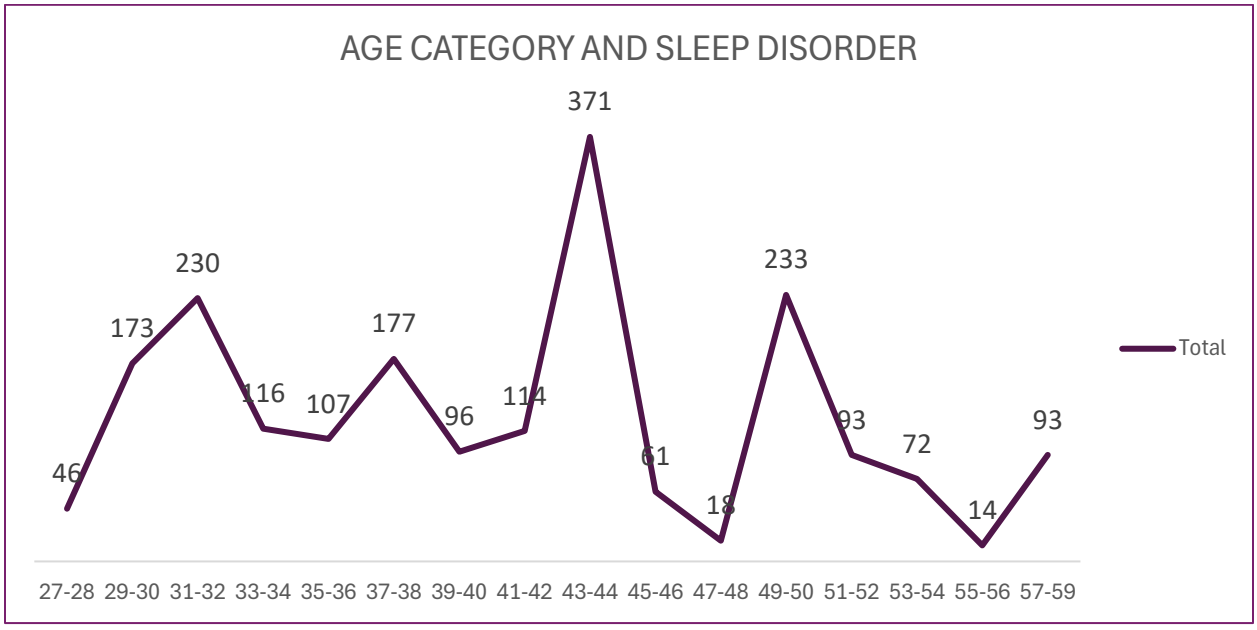
Key Findings:

1. Age 43 to 44 have the highest rate of sleep disorder
2. By occupation, Nurses have the best sleep quality while Managers have the least sleep quality
3. Females have better sleep quality than Males and Males have a higher incidence of sleep disorder than Females

Comparison with Initial Findings:

DATA VISUALIZATIONS & CHARTS

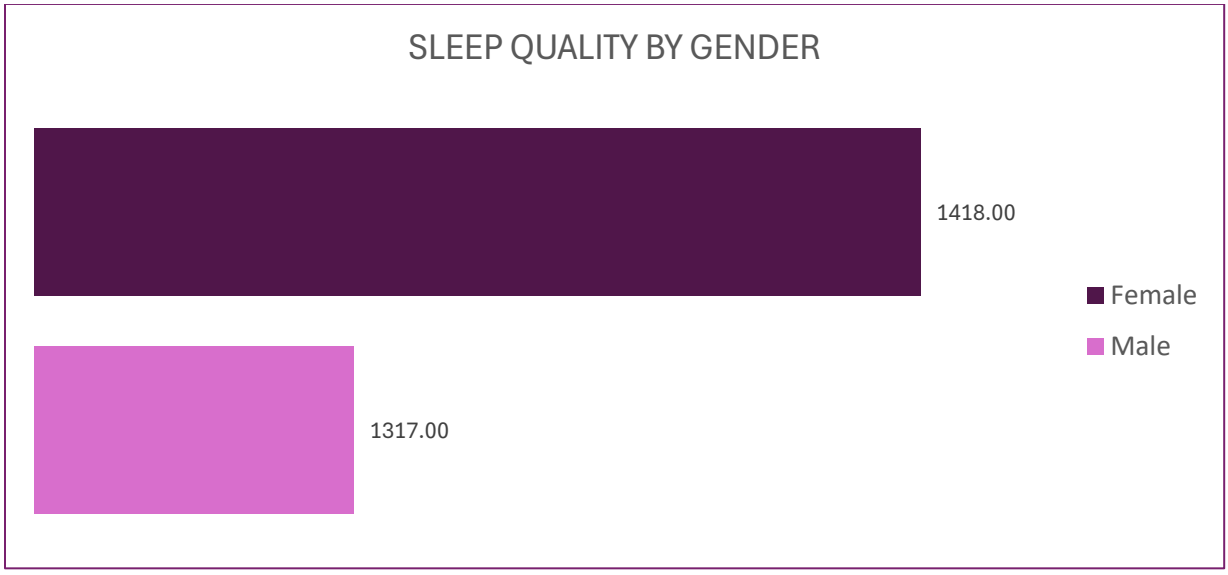
AGE CATEGORY AND SLEEP DISORDER



The above chart highlights the relationship between individuals with sleep disorder and the age category of the individuals in the dataset. 46 Individuals aged 27-28 had sleep disorder while 173 individuals aged 29-30 had sleep disorder, 230 aged 31-32 had

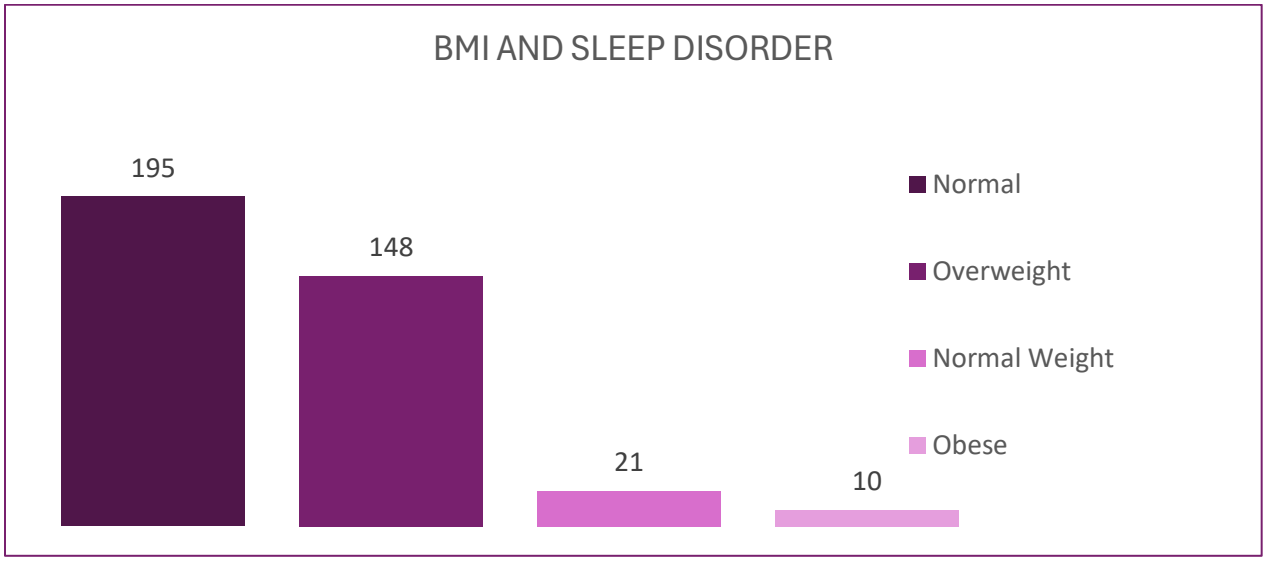
sleep disorder , 116 individuals aged 33-34 had sleep disorder, 107 individuals aged 35-36 had sleep disorder, 177 individuals aged 37-38 had sleep disorder, 96 individuals aged had sleep disorder, 114 individuals aged 41-42 had sleep disorder, 371 individuals aged 43-44 had sleep disorder, 61 individuals aged 45-46 had sleep disorder, 18 individuals aged 47-48 has sleep disorder, 233 individuals aged 49-50 had sleep disorder, 93 individuals aged 51-52 had sleep disorder, 72 individuals aged had sleep disorder, 14 individuals aged 55-56 had sleep disorder, and lastly 93 individuals aged 57-58 had sleep disorder.

SLEEP QUALITY AND BMI



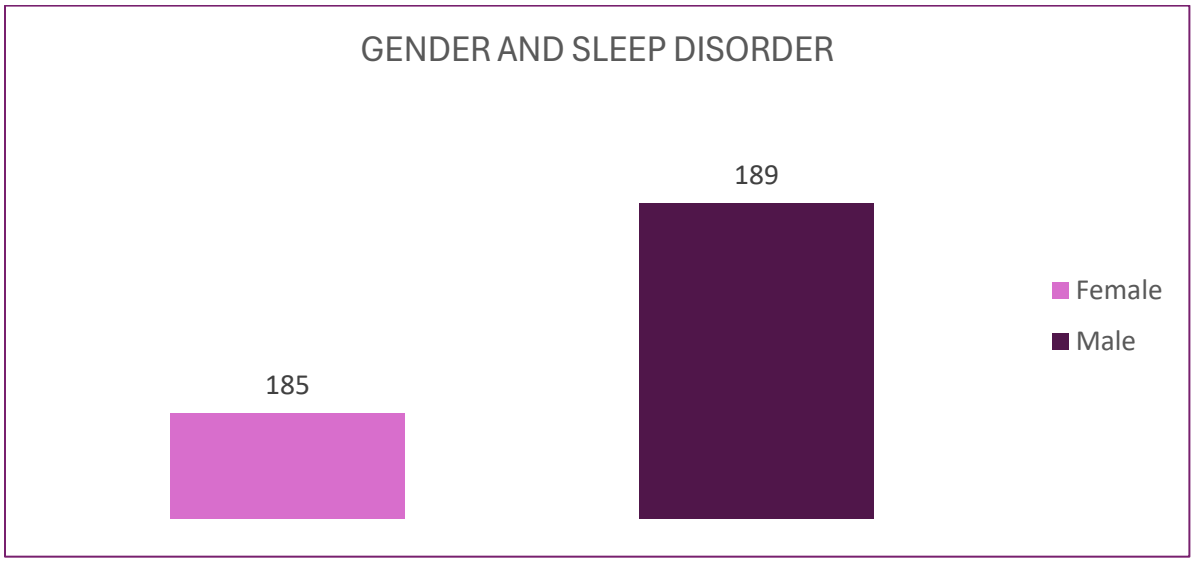
The above chart highlights the spread of sleep disorder based on Gender. females have a better sleep quality at 1,418 while males are at 1,317.

BMI AND SLEEP DISORDER



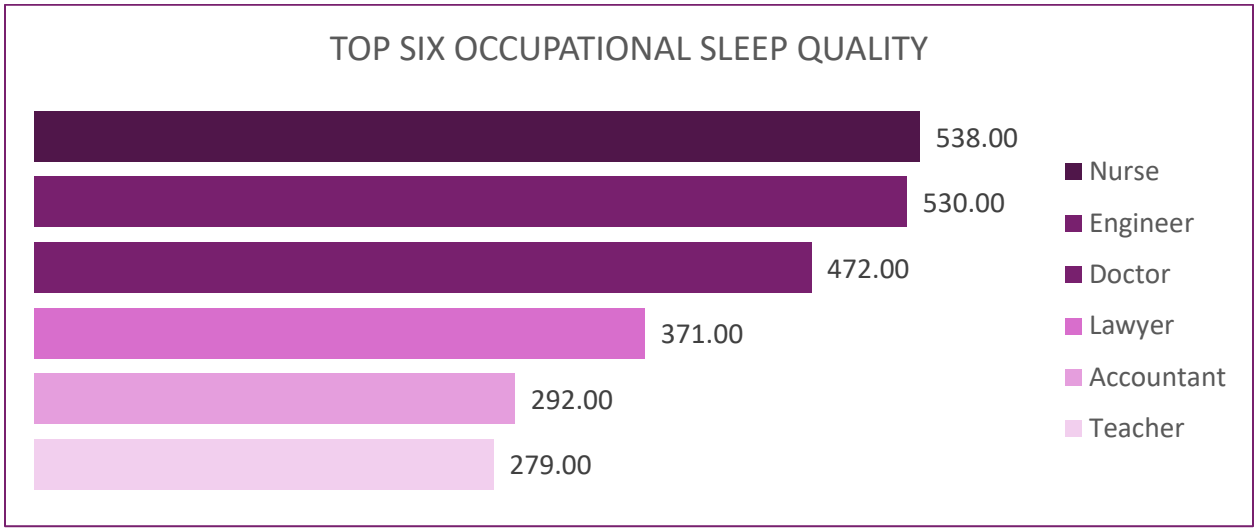
The above chart highlights the relationship between BMI and sleep disorder. Individuals with normal weight have a higher tendency to develop sleep disorder at 195 while overweight individuals closed at 148, normal weight and obese individuals are at 21 and 10 respectively.

GENDER AND SLEEP DISORDER



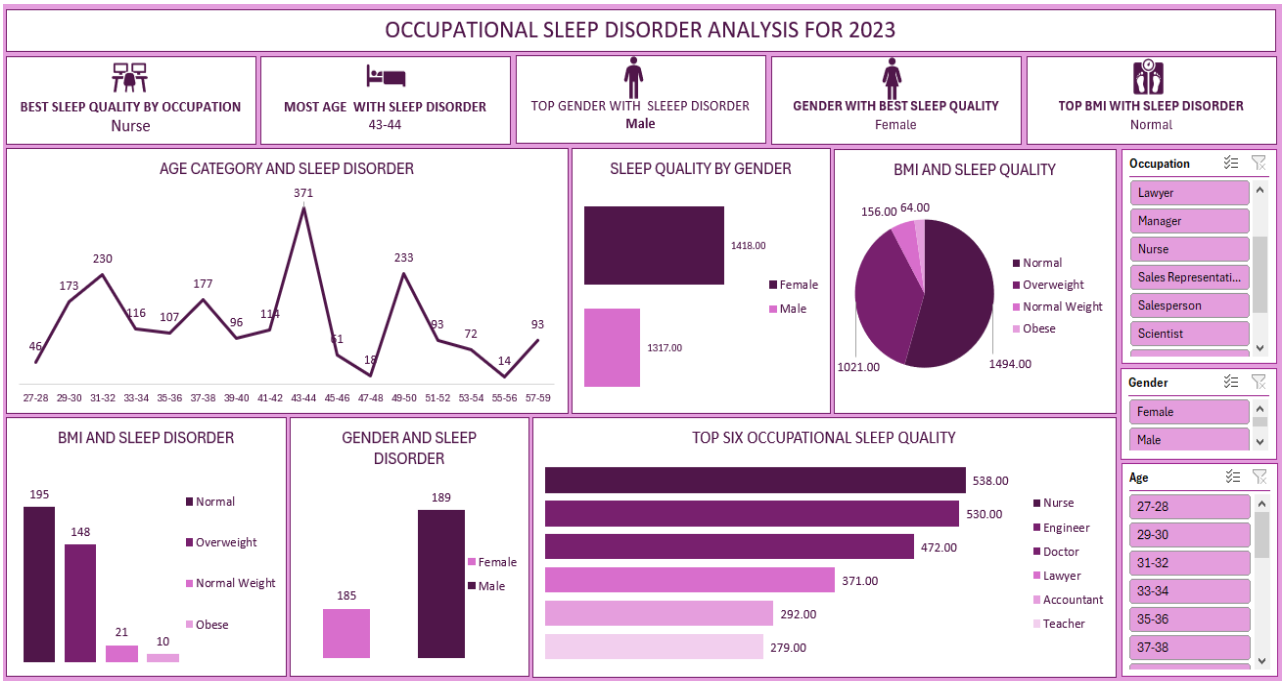
The above chart highlights the the spread of sleep disorder by gender. Males have a higher incidence of sleep disorder at 189 while females trailed behind at 184.

TOP SIX OCCUPATIONAL SLEEP QUALITY



The above chart highlights the occupational spread of sleep quality. Nurses are leading the pack with the highest sleep quality at 538.00 closely followed by Engineers at 530.00, Doctors at 472.00, Lawyers at 371.00, Accountant at 292, and lastly Teachers at 279.

FINAL DASHBOARD



The final dashboard highlights the combined correlations and relationship between the individual charts with the help of slicers.

OBSERVATIONS

1. Age 43 to 44 have the highest rate of sleep disorder
2. By occupation, Nurses have the best sleep quality while Managers have the least sleep quality
3. Females have better sleep quality than Males and Males have a higher incidence of sleep disorder than Females.

RECOMMENDATIONS

Sleep sensitization

Perform a general sensitization program to enlighten individuals on the need and importance of adequate sleep.

encouraging health promotion measures and relaxation strategies to help manage stress.

Introducing and maximizing Shifts

shift work should be introduced to ensure employees are accorded adequate resting time.

Recommend that Nurses be encouraged to keep it up while other professions be encouraged to improve their sleep quality as it will lead to improved productivity.

Males should be encouraged to improve their sleep quality as it can help prevent sleep disorder and lead to improved productivity.

Unexpected Outcomes:

None.

CONCLUSION

Key Learnings:

1. Sleep quality plays a role in the tendency of an individual developing sleep disorder. The better the sleep quality the less likely such an individual develops sleep disorder.
2. Considering that females have a better sleep quality than males, it is expected that males will have a higher incidence of sleep disorder.

Limitations:

The data does not put into account external factors such as working conditions, period of data collection i.e the data may have been collected during Nurses off duty hours or days etc.

Future Research

Additional research can be conducted to analyze how stress level may affect sleep quality and sleep disorder.

REFERENCEE: The data for this project was obtained from Kaggle.com