**Final Conclusion on Sleep Quality Analysis**

**Gender vs. Quality of Sleep:**

* **Males**: Average sleep duration ranges between 6 to 8 hours, with peak sleep quality at 7 hours.
* **Females**: Average sleep duration ranges between 7 to 9 hours, with peak sleep quality at 8 hours.

**Age Group vs. Quality of Sleep:**

* **20-30 years**: Average sleep duration is 6-7 hours.
* **30-40 years**: Average sleep duration is 7-8 hours.
* **40-50 years**: Average sleep duration is 6-8 hours, with peak quality at 7 hours.
* **50+ years**: Average sleep duration is 9 hours.

**Occupation vs. Quality of Sleep:**

* **Software Engineer**: 5.5 to 8 hours, peak at 7 hours.
* **Doctor**: 6-7 hours.
* **Sales Representative**: 4 hours.
* **Teacher**: 7 hours.
* **Nurse**: 6-9 hours.
* **Engineer**: 8-9 hours.
* **Accountant**: 9 hours.
* **Scientist**: 4-6 hours.
* **Lawyer**: 8 hours.
* **Salesperson**: 6 hours.
* **Manager**: 7 hours.

**Sleep Disorders and Their Prevalence:**

* Two unique sleep disorders identified: **Sleep Apnea** and **Insomnia**.
* **Prevalence of Sleep Disorders:**
  + **Insomnia**: 20.59% of the population.
  + **Sleep Apnea**: 20.86% of the population.

**Insomnia Analysis:**

* **Total Insomnia Patients**: 77 (Male: 41 [53.25%], Female: 36 [46.75%])
* **Most Affected Occupations**:
  + Salesperson: 29 (37.66%)
  + Teacher: 27 (35.06%)
  + Accountant: 7 (9.09%)
* **Insomnia by BMI Category**:
  + Overweight: 64 (83.12%)
  + Normal: 7 (9.09%)
  + Obese: 4 (5.19%)
  + Normal Weight: 2 (2.60%)
* **Average Health Metrics for Insomnia Patients**:
  + Sleep Duration: 6.59 hours
  + Heart Rate: 70.47 bpm
  + Physical Activity Level: 46.82
  + Stress Level: 5.87
  + Blood Pressure: 132.04/86.86
  + Daily Steps: 5,901.30
  + Quality of Sleep: 6.53 hours

**Sleep Apnea Analysis:**

* **Total Sleep Apnea Patients**: 77 (Male: 11 [14.10%], Female: 67 [85.90%])
* **Most Affected Occupations**:
  + Nurse: 61 (78.21%)
  + Doctor: 4 (5.13%)
  + Teacher: 4 (5.13%)
* **Sleep Apnea by BMI Category**:
  + Overweight: 65 (83.33%)
  + Obese: 6 (7.69%)
  + Normal: 5 (6.41%)
  + Normal Weight: 2 (2.56%)
* **Average Health Metrics for Sleep Apnea Patients**:
  + Sleep Duration: 7.03 hours
  + Heart Rate: 73.09 bpm
  + Physical Activity Level: 74.79
  + Stress Level: 5.67
  + Blood Pressure: 137.77/92.72
  + Daily Steps: 7,619.23
  + Quality of Sleep: 7.21 hours

**Key Summery :**

1. **Gender Disparity**: Women generally have longer and better-quality sleep than men.
2. **Age Influence**: Sleep quality peaks at different stages, with the highest around 50+ years.
3. **Occupational Impact**: Sales representatives and scientists have the lowest sleep quality, whereas engineers and accountants enjoy the highest sleep durations.
4. **Sleep Disorders**: Insomnia is more common in overweight individuals, while sleep apnea is significantly higher among females, particularly nurses.
5. **Health Metrics**: Sleep apnea patients exhibit higher blood pressure and heart rates compared to those with insomnia.

This study highlights the critical impact of gender, age, and occupation on sleep patterns, emphasizing the necessity for targeted interventions to improve sleep health across different demographics.