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The effect of CPAP treatment on T2DM in moderate to severe OSA subjects

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Introduction

- OSA is a significant risk factor for T2DM
  - OSA alters glucose metabolism and promotes insulin resistance
- CPAP treatment can potentially improve glycemic control in those with T2DM
  - However, exact effects of CPAP treatment on diabetes are uncertain
  - Some studies report a significant reduction in HbA1c levels after CPAP treatment, while other studies report no significant change
- Study limitations include small sample sizes and varying CPAP compliance among subjects
- Our project will be able to address these problems
  - Sample size of 2000-5000 subjects
  - CPAP compliance rates at Jefferson (60% or more) are above national average (30-50%)

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Objectives & Hypothesis

- Research Question
  - What is the effect of CPAP treatment on HbA1c and blood glucose levels in subjects with moderate to severe OSA with and without T2DM?
- Hypothesis
  - In moderate to severe OSA subjects with and without T2DM, CPAP treatment will significantly reduce HbA1c and blood glucose levels

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Approach & Results

- Study Design: Combined retrospective and prospective study
- Population/Study Sample: Moderate to severe OSA subjects with and without T2DM
- Intervention: CPAP treatment
- Comparison groups: No CPAP/Non-adherence
- Outcome variable: HbA1c and blood glucose levels
- Data source and collection: EPIC medical record review

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Approach & Results

- Analysis
  - Compare HbA1c and blood glucose levels before and after CPAP treatment in moderate to severe OSA subjects with and without T2DM (experimental group)
  - Compare HbA1c and blood glucose levels in moderate to severe OSA subjects with no CPAP treatment or non-adherence (control group)
- Findings
  - Looked at changes in blood glucose levels from before to after CPAP treatment
    - Compared to control group (No CPAP Treatment)
  - Due to low sample size, only blood glucose levels were analyzed as none of these subjects had HbA1c levels in their medical records

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Approach & Results

Demographics			
	Control	Treatment	Total
Sample Size	3	7	10
Females	3	2	5
Males	0	5	5
African Americans	3	3	6
Causasians	0	4	4
Mean age	67.7	65	65.8

Average Blood Glucose			
	Control	Treatment	Total
Blood glucose (Pre)	145 (2)	121 (3)	130.6 (5)
Blood glucose (Post)	145 (2)	103.5 (2)	124.3 (4)
Change in blood glucose	0 (2)	24 (2)	12 (4)

*Values in parentheses represent sample size for each subgroup

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Conclusions

- There was a decrease in blood glucose levels in subjects that underwent CPAP treatment compared to those who did not
  - Not significant due to low sample size
- In current literature, the exact effects of CPAP treatment on glycemic control in OSA subjects is uncertain
  - With more collected data, our study may shed some light on this matter
  - If our hypothesis is proven to be true, CPAP therapy may be a viable treatment strategy for improving glycemic control in patients with and without T2DM

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Future Directions

- Complete data collection for the remainder of the sample size and analyze data
- Prospective follow up on available subjects to determine long term effects on glycemic control
- Planned journal publications
- Planned research conference presentations

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