Global Science Research Journals

Global Research Journal of Education

Open Access

Association between poor sleep and glucose intolerance in pre-diabetes

Li Li, Ibasaraboh D. Iyegha, Angela Y. Chieh and **Bianca M. Bryant**

University of Alabama at Birmingham, USA

Abstract

Objectives: A cross-sectional study was designed to investigate the association between sleep quality and glucose metabolism among people with pre-diabetes and to explore the potential pathways linking poor sleep to glucose intolerance.

Methods: 155 females and males, Caucasians and African Americans, aged 19-70 completed the study for data analysis. All participants were assessed for sleep quality using the Pittsburgh Sleep Quality Index (PSQI). Fasting glucose and 2-h glucose levels were collected via a 2-h oral glucose tolerance test (OGTT) and used to define pre-diabetes. Participants provided blood samples for measuring inflammatory markers. Associations were conducted using Pearson's correlation with adjustments for gender, age and body mass index (BMI). Analysis of covariance (ANCOVA) was applied to compare the two groups, pre-diabetes group versus the control group, after controlling for gender, age, and BMI. Regression was used to investigate predictive power of sleep subscales for inflammatory factors and glucose levels.

Results: More people with pre-diabetes suffered from poor sleep than in the normal glucose group (62% vs. 46%). The OGTT measures i.e. fasting glucose and 2-h glucose levels, correlated with PSQI measures, but these associations did not maintain statistical significance after adjusting for gender, age, and BMI. The C-reactive protein (CRP) levels were greater in the pre-diabetes group than the normal glucose group (0.37±.07 vs. 0.18±0.06 mg/L). Additionally, there was a positive correlation between sleep disturbance and CRP levels ($r=0.30$, $p=0.04$). Regression analysis found that sleep disturbance predicted CRP levels and significance remained after adding covariates ($\beta=0.20$, $p=0.04$). No significant difference was observed in other measured inflammatory factors, including interleukin (IL) - 6, IL-8, IL-10 and tumour necrosis factor alpha (TNFα), between the two groups

Conclusion: Pre-diabetes is positively associated with poor sleep. Increased CRP levels may be a potential underlying mechanism of this association between pre-diabetes and poor sleep which warrants further study. The findings highlight the importance for clinicians to evaluate sleep quality as part of preventing the onset of future diabetes in this particular population.

Citation: Li Li, Ibasaraboh D, Association between poor sleep and glucose intolerance in pre-diabetes, Diabetes Congress 2020, International Conference on Diabetes Research & Endocrinology, Aug 18-19, 2020, 2020, Page No: 2

Glob. Res. J. Edu. 2020
ISSN: 2408-6894

Volume 8| Issue 8 | 02