Predicting longitudinal change in glycosylated hemoglobin: The role of coping and positive affect.

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INTRODUCTION

HbA1c and Health
Glycosylated hemoglobin (HbA1c) is the central clinical indicator of glycemic control in diabetes, with higher values representing poorer glycemic control. Hyperglycemia has been repeatedly linked to a variety of micro- and macrovascular problems. Recently, however, even preclinical increases in HbA1c levels have been linked to cardiovascular health outcomes and other health conditions, thereby provoking interest in factors influencing pre-diabetic glucose metabolism.

Specific Aims
The purpose of the present study was to investigate whether depression was linked to non-diabetic glycemic control (HbA1c) among a national study of adults. Since gender differences in depression prevalence and age-related increases in diabetes are well-documented by previous literature, the moderating roles of gender and age were investigated as well.

HYPOTHESES

Main Effect Models
1. Age  Higher level of HbA1c
2. Depressive Symptoms  Higher level of HbA1c

Interaction Models
1. Age will moderate the impact of depressive symptoms, with depressed individuals having the highest HbA1c levels.
2. Gender will moderate the impact of depressive symptoms, with depressed women having the highest HbA1c levels.

METHODS

Participants and Descriptive Statistics
The nondiabetic subsample of a national sample of adults known as MIDUS (Midlife in the U.S.)
N=874
Age: 34-85, M=57
Gender: 45% Male
Race: 18% Minority
BMI categories: 26% Normal Weight, 37% Overweight, 36% Obese

Measures
HbA1c: Fasting blood samples for assays of glycosylated hemoglobin were obtained prior to 7:00 a.m. during the respondents’ overnight stay at the General Clinical Research Center at UW-Madison.
Depressive symptoms: Depressive symptoms were measured with the CESD scale (Radloff, 1977).

Statistical design
OLS regression was used and covariates included race, gender, BMI, WHR, depression medications, and education. The interaction effect was obtained by multiplying the CESD score to Age60 (a dichotomous variable describing whether participant is older than 60 years).

RESULTS

Descriptive Statistics

Fasting blood samples for assays of glycosylated hemoglobin were obtained prior to 7:00 a.m. during the respondents’ overnight stay at the General Clinical Research Center at UW-Madison. Depressive symptoms were measured with the CESD scale (Radloff, 1977).

MAIN RESULTS
1. In multivariate models, Age was a significant influence on non-diabetic HbA1c levels ($R^2=.18$, $\beta=.263$, $p<.001$).
2. Depressive symptoms were not linked to HbA1c levels ($p>.05$).

INTERACTION MODELS
1. When Depressive Symptoms and Age were both in the model, their interactive effect was significant: as predicted, Depressive Symptoms amplified the age-related increase in HbA1c levels ($R^2=.28$, $\beta=.181$, $p<.01$).
2. Gender did not moderate this relationship.

CONCLUSION

Results suggest that depressive mood becomes a vulnerability factor for dysregulated glycemic control when another risk factor, such as aging, is present. Because the obtained relationships were evident in people without diabetes, the findings indicate that the influence of depression on glucose metabolism is not exclusively mediated by diabetes-related regimens and possibly starts at prediabetic levels. Importantly, these findings add to the body of evidence that implicates depression as a risk factor for diabetes.

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