Assessing the Relationship Between Daily Moderate Intensity Activity and Type 2 Diabetes

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Introduction

Physical activity may be used alone or in combination with drug therapy to prevent Type 2 Diabetes Mellitus (T2DM). According to a multicenter randomized control trial, physical activity combined with drug therapy is the most effective method of T2DM prevention followed by physical activity alone and drug therapy alone. According to the American Diabetes Association (ADA), the recommended exercise level to prevent T2DM is 150 minutes of moderate intensity activity per week. However, a recommendation does not exist for daily exercise level.

Objective/Method

To assess the association between daily moderate intensity activity level and incidence of diabetes among American people.

Between 2007-2008 data was obtained from 2,633 individuals (age 2 years and older) using the Centers for Disease Control and Prevention (CDC)'s 2007-2008 National Health and Nutrition Examination Survey (NHANES). Participants provided information through Computer-Assisted Personal Interviewing (CAPI) at home or mobile examination centers. Independent variable "minutes of moderate intensity activity" (continuous) and dependent variable "doctor told you have diabetes" (categorical) were cross tabulated using bivariate regression method using StataCorp LLC's Stata 16.1 to explain the relationship.

Figure 1. Graph of moderate intensity level (minutes) and diagnosis of diabetes

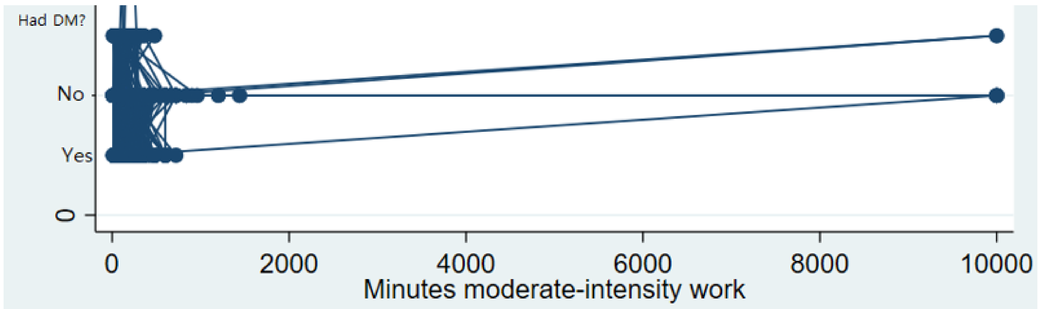

Table 1. Summary of demographics

	PERCENTAGE	NUMBER
RACE		
WHITE	30	800
BLACK	27	729
ASIAN	13	342
MEXICAN AMERICAN	14	371
OTHER HISPANICS	11	286
OTHER (MULTIRACIAL)	4	105
GENDER		
MALE	49	1291
FEMALE	51	1342
LEVEL OF EDUCATION		
NO HIGH SCHOOL/DON'T KNOW	25	675
HIGH SCHOOL	21	563
SOME COLLEGE OR AA DEGREE	28	750
COLLEGE OR ABOVE	24	645

NOTES: N=2,633. ESTIMATES ARE BASED ON WEIGHTED SAMPLE. WHITE AND BLACK ETHNICITY CONSIST OF MAJORITY OF PARTICIPANT POPULATOIN. EVEN DISTRIBUTION IN GENDER AND LEVEL OF EDUCAITON.

Result

The findings suggest that there is no statistically significant relationship between moderate intensity activity level in minutes and diagnosis of diabetes. Increase in one minute of daily moderate intensity activity resulted in 0.000291 decreased incidence of diabetes (*P-value 0.077*, *t-stat 22.8*, *95% CI -3.21e-06 – 0.0000613*).

Discussion

Previously published studies have provided a suggestion of 150 minutes of moderate intensity activity per week. The weekly suggestion is based on statically significant data. However, the recommendation has failed to provide details on how the weekly activity level should be distributed throughout the week. This study, based on the author's literature review, is the first study that attempted to find a clinically meaningful daily activity level that would decrease the incidence of T2DM. Despite the attempt, the results of this study do not provide statistically significant data.

Results indicate that increase in one minute of daily moderate intensity activity resulted in 0.000291 decreased incidence of diabetes (*P-value 0.077*, *t-stat 22.8*, *95% CI -3.21e-06 – 0.0000613*). Due to lack of statistical significance, daily moderate activity recommendation for T2DM prevention cannot be made and warrants further investigation on this topic.