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# The Effect of Health Behaviors on Mental Health

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### Abstract

A large population of adults in the United States suffer from depression and anxiety. Currently, the most common form of treatment is antidepressants, which can have serious side effects (ADAA, 2019). However, day-to-day health behaviors may be overlooked as an equally effective method of treatment without the side effects. (Dinas et al., 2011; McKercher et al., 2013). The present study aimed to examine the effect of health behaviors (physical activity, diet, and sleep) on mental health (depression and anxiety) among younger and older adults; and age and sex differences in the hypothesized relationships between health behaviors and mental health. The study was a cross-sectional secondary analysis of the data from the MIDUS Refresher: Biomarker Project, 2012-2016. The study sample consisted of 863 participants. Self-questionnaire measures were used. Results found that sleep was positively associated with depression and anxiety across all study groups (older adults, younger adults, males, and females). A significant relationship was found between diet and depression among the female study group. The study can be used by mental health providers to add the improvement of health behaviors to mental health treatment and to advocate for preventative policy change.

### Introduction

**Significance:** Increasing physical activity, maintaining a healthy diet, and improving sleep have been shown to be just as effective as antidepressants on relieving depressive and anxious symptoms (Dinas et al., 2011; McKercher et al., 2013).

**Purpose:** To assess whether health behaviors have an impact on a person's mental health by answering the following research questions:

1. What is the effect of health behaviors (physical activity, diet, and sleep) on mental health (depression and anxiety) among adults?
2. How does age (i.e. younger and older adults) and biological sex (i.e. male and female) affect health behaviors relating to mental health?

**Hypothesis:** Health behaviors (physical activity, diet, and sleep) will be negatively associated with levels of anxiety and depression.



### Literature Review

- Improving health behaviors has been shown to be just as effective as psychotropic medications on decreasing symptoms of depression and anxiety (Dinas et al., 2011; McKercher et al., 2013).
- Improving health behaviors as intervention strategies can be applied less expensively than a prescription medication and without side effects (Goodwin, 2003).
- Increasing health behaviors can have positive effects not only on an individual's mental health but also their physical health, life satisfaction, and cognitive functioning (Goodwin, 2003).

### Knowledge Gaps

- Gaps in research include analyzing health behaviors across different age and gender groups.

### Methods

#### Research Design

- Secondary analysis of the data from the Midlife in the United States (MIDUS Refresher): Biomarker Project, 2012-2016.
- The purpose of the Biomarker Project was to analyze the data collected to explain how sociodemographic, psychosocial, and biological pathways contribute to morbidity and mortality health outcomes.

#### Data Collection Procedures

- Data was collected with multiple assessment measures including self-administered questionnaires, staff administered interviews and physical exams were conducted by trained staff and medical personnel.

#### Sample and Sampling Method

- The sample consisted of 863 participants ( $n = 746$ , main MIDUS sample,  $n = 117$  African Americans from Milwaukee project), aged 25 to 76 years old.
- Participants who were 55 or older were identified as older adults ( $n = 396$ ) and those who were younger than 55 were identified as younger adults ( $n = 467$ ).
- A nearly equal number of men ( $n = 413$ ) and women ( $n = 450$ ) were included.
- The MIDUS Refresher study was used as a sampling frame for the Biomarker Project.

#### Measures

##### Dependent Variables (Mental Health)

- Depression: Center for Epidemiological Studies Depression Inventory (CES-D, 20 items).
- Anxiety: General Distress-Anxious Symptoms subscale (11 items) and Anxious Arousal subscale (17 items) of the Mood and Symptom Questionnaire.

##### Independent Variables (Health Behaviors)

- Physical activity: 2 questions on the Medical History Screening questionnaire regarding how often participants engaged in regular physical activity.
- Diet: 9 questions on the Medical History Screening questionnaire regarding how often participants consumed various types of food.
- Sleep problems: Pittsburg Sleep Quality Index (PSQI; Buysse et al., 1989).

#### Statistical Analysis

- A series of multiple linear regression analyses were conducted separately with older and younger adult groups and male and female groups.

### Results

Table 1

Multiple Regression Analysis Predicting Depression and Anxiety in Younger and older Adults.

Variable	ANOVA	R <sup>2</sup>	B	SE	Beta	t	Sig.
<b>Younger Adults Sample</b>							
<b>Depression</b>							
	$F(5, 328) = .25$						
	22.11, $p = .00$						
Constant			10.35	3.30	--	3.14	0.00
Physical Activity age 20-35			-1.83	1.26	-0.07	-1.45	0.15
Physical Activity currently			-0.91	0.91	-0.05	-0.99	0.32
Healthy Diet			-0.14	0.11	-0.07	-1.34	0.18
Sleep Disturbance			1.099	.117	.456	9.393	.000
Biological Sex			-1.14	0.80	-0.07	-1.43	0.15
<b>Anxiety</b>							
	$F(5, 328) = .17$						
	13.55, $p = .00$						
Constant			14.22	2.05	--	6.94	0.00
Physical Activity age 20-35			-0.66	0.78	-0.04	-0.85	0.40
Physical Activity currently			0.82	0.57	0.08	1.44	0.15
Healthy Diet			0.01	0.07	0.01	0.20	0.84
Sleep Disturbance			0.54	0.07	0.38	7.41	0.00
Biological Sex			-1.18	0.50	-0.12	-2.37	0.02

Older Adults Sample

Variable	ANOVA	R <sup>2</sup>	B	SE	Beta	t	Sig.
<b>Older Adults Sample</b>							
<b>Depression</b>							
	$F(5, 354) = .26$						
	24.42, $p = .00$						
Constant			8.00	3.41	--	2.34	0.02
Physical Activity age 20-35			0.76	1.10	0.03	0.69	0.49
Physical Activity currently			-1.36	0.80	-0.08	-1.70	0.09
Healthy Diet			-0.18	0.10	-0.09	-1.80	0.07
Sleep Disturbance			1.01	0.10	0.47	10.01	0.00
Biological Sex			-0.01	0.68	0.00	-0.01	0.99
<b>Anxiety</b>							
	$F(5, 354) = .15$						
	12.25, $p = .00$						
Constant			15.37	2.29	--	6.71	0.00
Physical Activity age 20-35			0.87	0.74	0.06	1.18	0.24
Physical Activity currently			-0.05	0.54	-0.04	-0.09	0.93
Healthy Diet			-0.10	0.07	-0.08	-1.45	0.15
Sleep Disturbance			0.48	0.07	0.36	7.15	0.00
Biological Sex			-0.41	0.46	-0.05	-0.91	0.37

Table 2

Multiple Regression Analysis Predicting Depression and Anxiety Among Females and Males

Variable	ANOVA	R <sup>2</sup>	B	SE	Beta	t	Sig.
<b>Female Sample</b>							
<b>Depression</b>							
	$F(4, 358) = .28$						
	32.11, $p = .00$						
Constant			12.10	3.09	--	3.92	0.00
Physical Activity age 20-35			-0.51	1.10	-0.02	-0.46	0.64
Physical Activity currently			-1.48	0.84	-0.09	-1.76	0.08
Healthy Diet			-0.21	0.10	-0.10	-2.12	0.04
Sleep Disturbance			1.026	.105	.448	9.786	.000
Age			-2.17	.71	-0.14	-3.05	0.00
<b>Anxiety</b>							
	$F(4, 358) = .13$						
	12.95, $p = .00$						
Constant			13.95	2.11	--	6.60	0.00
Physical Activity age 20-35			0.21	0.75	0.01	0.28	0.78
Physical Activity currently			0.22	0.58	0.02	0.37	0.71
Healthy Diet			0.02	0.07	0.01	0.25	0.80
Sleep Disturbance			.512	.072	0.35	7.14	0.00
Age			-1.97	0.49	-0.20	-4.03	0.00

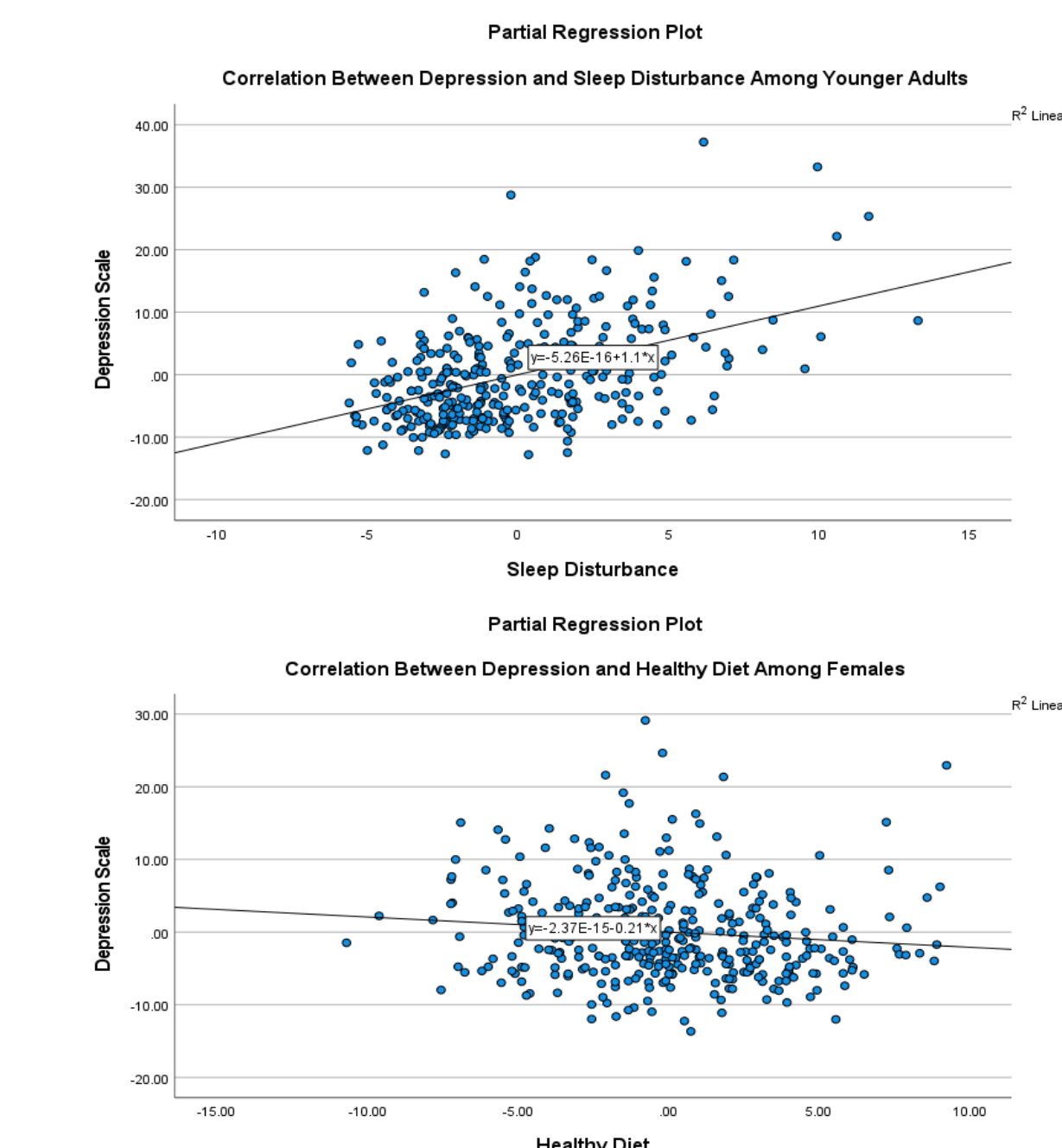
Male Sample

Variable	ANOVA	R <sup>2</sup>	B	SE	Beta	t	Sig.
<b>Male Sample</b>							
<b>Depression</b>							
	$F(4, 326) = .23$						
	24.78, $p = .00$						
Constant			6.62	3.49	--	1.90	0.06
Physical Activity age 20-35			-0.40	1.29	-0.02	-0.31	0.76
Physical Activity currently			-0.60	0.87	-0.04	-0.69	0.49
Healthy Diet			-0.10	0.11	-0.05	-0.92	0.36
Sleep Disturbance			1.07	0.11	0.46	9.46	0.00
Age			-0.95	0.74	-0.06	-1.29	0.20
<b>Anxiety</b>							
	$F(4, 326) = .17$						
	16.22, $p = .00$						
Constant			16.25	2.09	--	7.79	0.00
Physical Activity age 20-35			-0.11	0.77	-0.01	-0.15	0.89
Physical Activity currently			0.65	0.52	0.07	1.25	0.21
Healthy Diet			-0.11	0.07	-0.08	-1.62	0.11
Sleep Disturbance			0.51	0.07	0.38	7.54	0.00
Age			-0.89	0.44	-0.10	-2.01	0.05

### Results

#### Multiple Regression Analysis

- Sleep problems positively predicted depression and anxiety across all study groups (older adults, younger adults, males, and females).
- A significant, negative relationship was found between diet and depression in the female group.



### Conclusions

#### Discussion of Findings

- The more sleep disturbances a person experienced throughout the night, the more depressive and anxious symptoms they would experience.
- The negative correlation between diet and depressive symptoms in the female group suggests that the healthier diet a female participant maintained, the less depressive symptoms she experienced.
- Significant results were not found in the relationship between physical activity and mental health.

#### Limitations and Strengths

- The majority of participants surveyed did not have clinically significant levels of depression and anxiety possibly affecting statistically insignificant correlations between physical activity and mental health.
- The study sample is not representative of the larger U.S. population due to consisting of a high percentage of Caucasian participants.
- The strengths of the study are that data was taken from a large sample size and the wide range of data that was collected.

#### Implications and Future Research

- For mental health providers to assess the health behaviors of their clients and potentially add the improvement of health behaviors to client's treatment plans when appropriate to improve mental health.
- Future research may focus on a study population with clinically significant depression and anxiety to further analyze the effects that health behaviors have on mental health.

### References (selected)

- Anxiety and Depression Association of America (ADAA). (2019). *Medication*. <https://adaa.org/finding-help/treatment/medication>
- Dinas, P. C., Koutedakis, Y., & Flouris, A. D. (2011). Effects of exercise and physical activity on depression. *Irish Journal of Medical Science*, 180(2), 319-325. doi: 10.1007/s11845-010-0633-9
- McKercher, C., Patton, G. C., Schmidt, M. D., Venn, A. J., Dwyer, T., & Sanderson, K. (2013). Physical activity and depression symptom profiles in young men and women with major depression. *Psychosomatic Medicine*, 75(4), 366-374. doi: 10.1097/PSY.0b013e31828c4d53
- Goodwin, R. D. (2003). Association between physical activity and mental disorders among adults in the United States. *Preventive medicine*, 36(6), 698-703. [https://doi.org/10.1016/S0091-7435\(03\)00042-2](https://doi.org/10.1016/S0091-7435(03)00042-2)