

Physical Activity and Mental Health Impact on General Health among Michigan Cancer Survivors



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Background

- An estimated 15 million cancer survivors currently live in the United States
 - This number is expected to jump to 20.3 million by 2026 (1)
- Improved understanding of the factors associated with general health is important for developing public health interventions that impact quality of life
 - In 2015, Michigan received a cancer survivorship-focused grant from the Centers for Disease Control and Prevention.
 - One key outcomes was improved understanding of factors that affect quality of life
- Controlled trials evaluating the effect of exercise among cancer survivors show improved measures of quality of life and mental health burden (MHB) (2,3)
 - Less is understood about the extent to which exercise and MHB interact to affect quality of life in a general population of cancer survivors

Study Question:

What is the association between any self-reported exercise, mental health burden, and good or better general health in Michigan's cancer survivor population?

Methods

Data Source: 2013 and 2015 data from the Michigan Behavioral Risk Factor Surveillance System (MiBRFSS).

Definitions:

Cancer Survivor: Any person who has been diagnosed with cancer from the point of diagnosis through the end of life

Any Exercise: Any self-reported physical activity or exercise performed outside of work in the last 30 days

High MHB: Self-reported 14 or more days of poor mental health in the last 30 days

Low MHB: Self-reported 13 days or fewer of poor mental health in the last 30 days

General health: Self-reported and dichotomized as "Good or better" and "Poor or Fair"

Statistical analysis

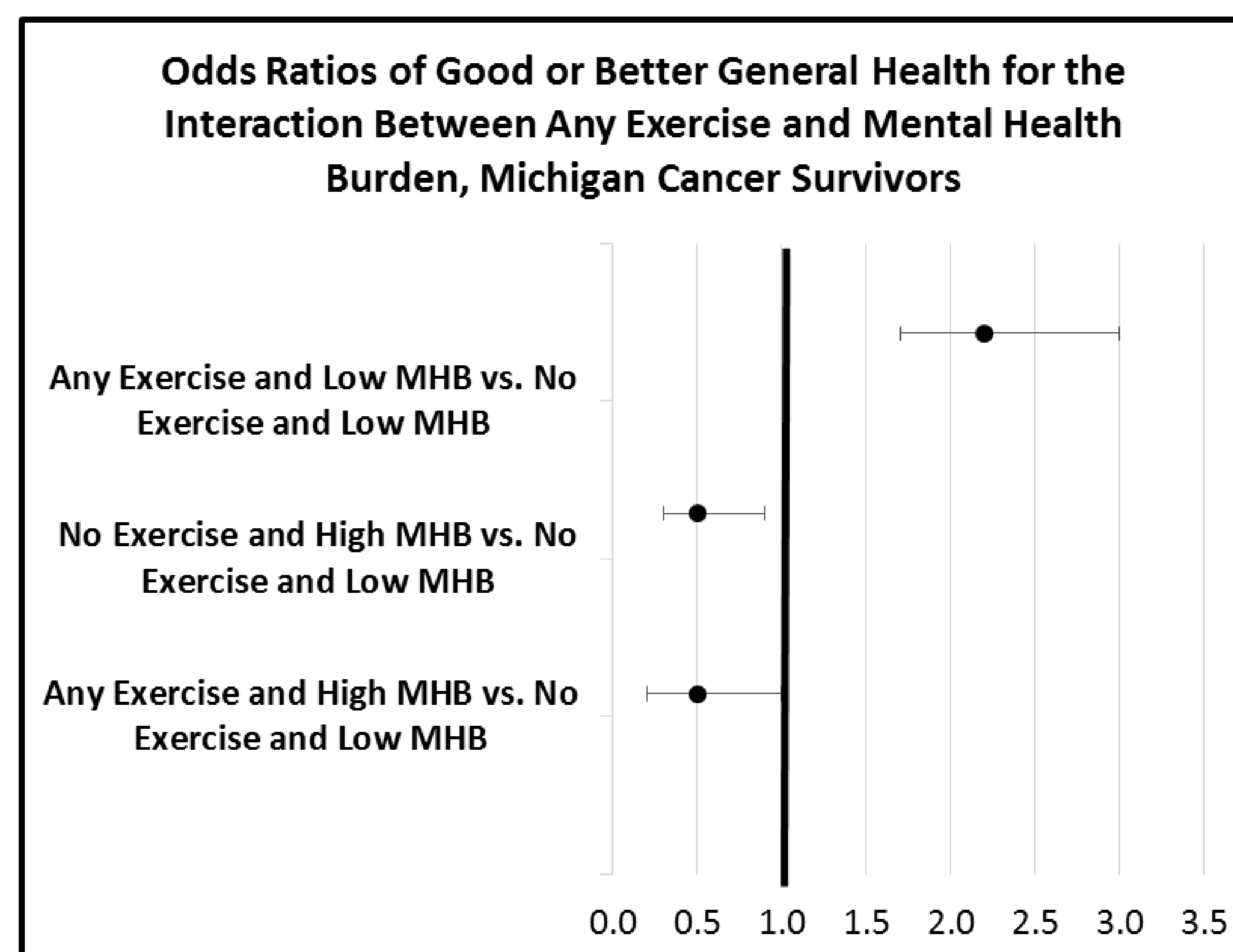
Logistic regression was used to model the log odds of reporting good or better general health with an interaction term for any exercise and MHB. Weights were applied to account for the complex survey design. The interaction term was used to estimate the effect of any exercise by different levels of MHB. The referent group was no exercise and low MHB. Backwards selection was used to eliminate variables with non-significant beta estimates (alpha = 0.05). Statistical analysis were performed using SAS callable SUDAAN 11.0.1 (RTI International, Durham, NC) and SAS 9.2 (SAS Institute Inc, Cary, NC).

Results

Distribution of General Health, Any Exercise, and Mental Health Burden among Michigan Cancer Survivors, MiBRFSS 2013 and 2015	Percent	95% Confidence Interval
General Health		
Good or Better	71.1	(69.0, 73.1)
Any Exercise in the Last 30 days		
Yes	71.1	(69.0, 73.0)
No	28.9	(27.0, 31.0)
Mental Health Burden (MHB)		
Low (0-13 days poor mental health)	87.3	(85.7, 88.8)
High (14-30 days poor mental health)	12.7	(11.2, 14.3)

Odds Ratios for Adjusted Model of Self-Reported General Health among Michigan Cancer Survivors, MiBRFSS 2013 and 2015	Odds Ratio	95% Confidence Interval
Intercept		
	17.1	(10.2, 28.7)
Interaction Term		
No Exercise and Low MHB	1.0	Reference
Exercise and Low MHB	2.2	(1.7, 3.0)
No Exercise and High MHB	0.5	(0.3, 0.9)
Exercise and High MHB	0.5	(0.2, 1.0)

Model was adjusted for age, race/ethnicity, household income, educational attainment, smoking status, and disability or limitation status. Variables removed in backward selection include gender, body mass index, marital status, and the number of diagnosed chronic diseases.



Abbreviations: MHB, Mental Health Burden. MiBRFSS: Michigan Behavioral Risk Factor Surveillance System. Data from Michigan Behavioral Risk Factor Surveillance System, 2013-2015. Michigan Department of Health and Human Services. Division of Lifecourse Epidemiology and Genomics.

Discussion

Discussion

In this analysis

- The relationship between exercise and general health in Michigan cancer survivors differed by MHB
- Odds of reporting good or better general health was 2.2 times higher for survivors who reported any exercise and low MHB compared to survivors who reported no exercise and low MHB
- Odds of reporting good or better general health was lower for survivors reporting any exercise and high MHB compared to survivors who reported no exercise and low MHB
 - This was not statistically different from the reference

Limitations

- MiBRFSS is an annual, cross-sectional survey of Michigan residents
- Cancer survivors who respond must be healthy enough to participate, resulting in the potential for the most severe cases to be underrepresented
- The measures for exercise, MHB, and general health were crude measures, and more refined measures may produce different results
- The MiBRFSS records only self-reported outcomes, which may lead to underestimation of negatively-perceived behaviors and over-reporting of positively perceived behaviors

Conclusion and Public Health Significance

Conclusion

The effect of exercise on quality of life among cancer survivors may be modified by MHB. Further work is necessary to fully understand the relationship between the three variables. Exercise interventions tested in clinical trials may show a reduced impact when delivered to the general population.

Public Health Significance

The design and delivery of exercise interventions to cancer survivors should consider MHB as a factor that may contribute to success or failure of the program. Addressing MHB as part of the program may also be important.

References

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