Body Weight and General Health among Female Breast Cancer Survivors

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Background

- Increased body mass index (BMI) relates to higher breast cancer incidence.

- Obese women have a higher risk of all-cause and breast-cancer-specific mortality when compared to non-obese women with breast cancer (Chan et al., 2014; Engin, 2017).

- Being overweight is related to a higher risk of mortality among breast cancer patients (Chan et al., 2014).
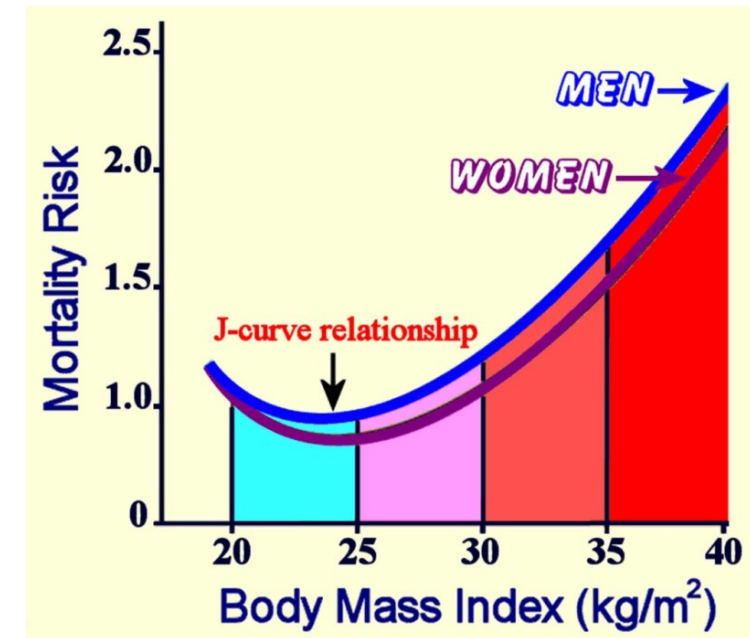
Background

- However, for long-term survivors, the relationship between BMI and overall perceived health or health-related quality of life is less clear.

- A recent study in China found that being overweight is related to better health-related quality of life, with normal weight and overweight survivors reporting better quality of life than obese survivors (Xia, Teng, Deng, Jiwei Wang, & Yu, 2018).

- This study sought to determine if this relationship is also evident in American breast cancer survivors.

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Research Questions and Design

- Is there a relationship between BMI and perceived general health among female cancer survivors?

- Design:
  - Descriptive-Correlational Design

Body Mass Index
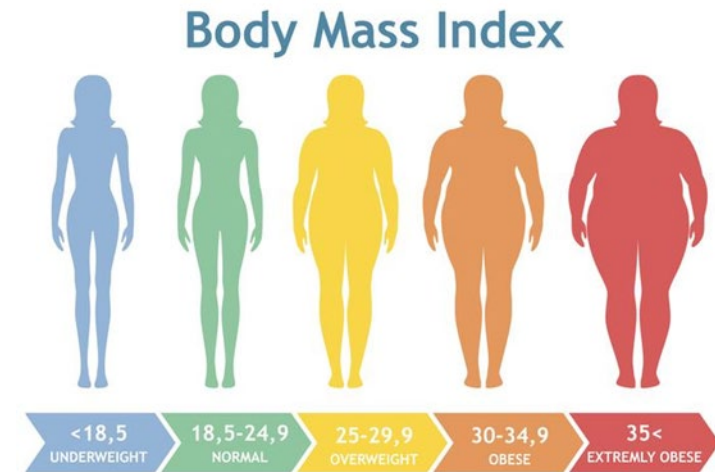
Data and Sample

- Data were obtained from the 2016 Behavioral Risk Factors Surveillance System (BRFSS), which included a nationally representative sample generated using the multi-stage random sampling methods.

- Ten states/territories administered the cancer survivorship module.

- Inclusion Criteria and Exclusion Criteria:
  - Adult women self-reported a history of breast cancer
  - Completed cancer treatment at the time of the survey.
  - Excluded women who were underweight (BMI < 18.5, n = 15).
  - The final sample included 1086 participants.

Measurements

- General health was measured by perceived health status (poor, fair, good, very good, and excellent). We recoded it into <u>two categories, poor/fair versus good to excellent</u>.
- Weight was classified into five categories:
  - Normal (BMI 18.5-24.9)
  - Overweight (BMI 25-29.9)
  - Class I obesity (BMI 30-34.9)
  - Class II obesity (BMI 35-39.9)
  - Class III (extreme) obesity (BMI > = 40; National Institute of Health, 2018).
- Sociodemographic variables included age, race/ethnicity, income, marital status and education.
- Clinical variables included length of diagnosis and comorbidities
- Behavioral variable includes whether the participant had exercised within the past 30 days.

Data Analysis

- SPSS 25
- To account for the complex sample design, we used weighted analysis.
- Descriptive statistics.
- Bi-variate correlation analyses.
- Logistic regressions.
- Alpha set at 0.05

Demographic Variables

	Poor/Fair Health	Good to Excellent Health	P Value
Age in years			0.132
• 18-49 (n=96; 8.8%)	29.2%	70.8%	
• 50-64 (n=361; 33.3%)	19.7%	80.3%	
• 65+ (n=628; 57.9%)	22.3%	77.7%	
Race/Ethnicity			<0.001
• White (n=937; 87.2%)	19.5%	80.5%	
• Black (n=101; 9.4%)	33.7%	66.3%)	
• Other (n=37; 3.2%)	37.8%	62.2%	
Education			<0.001
• High school or blow (n=430; 39.7%)	32.8%	67.2%	
• More than high school (n=655; 60.3%)	15.0%	85.0%	
Married			<0.01
• Married or having a partner (n=430; 39.8)	19.4%	80.6%	
• Not married (n=651; 60.2%)	26.3%	73.7%	
Income More than 35K			<0.001
• <35K (n=362; 40.3%)	34.5%	65.5%	
• ≥35K (n=536; 59.7%)	14.0%	86.0%	

Length of Diagnosis of Breast Caner and Poor/Fair Health
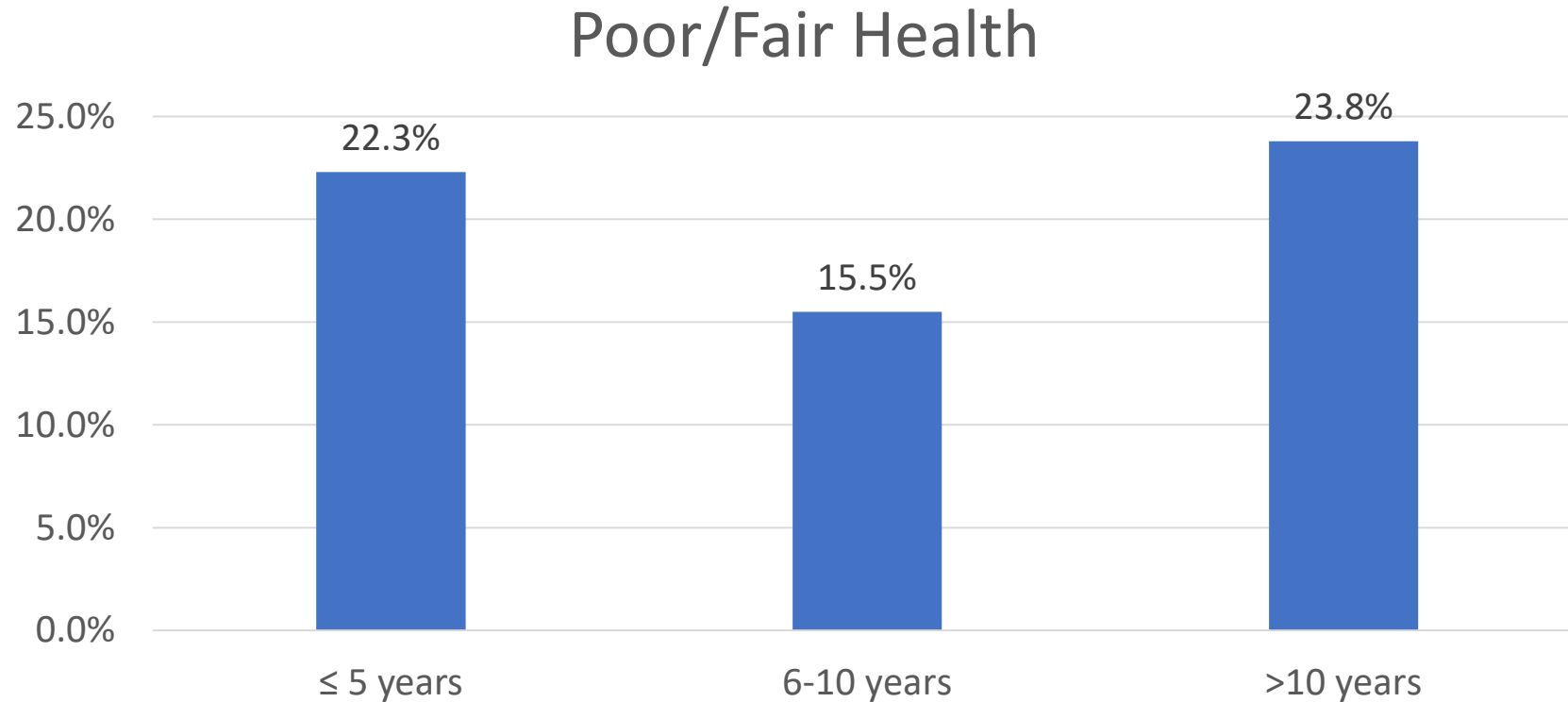
Poor/Fair Health

Body Weight and Poor/Fair Health
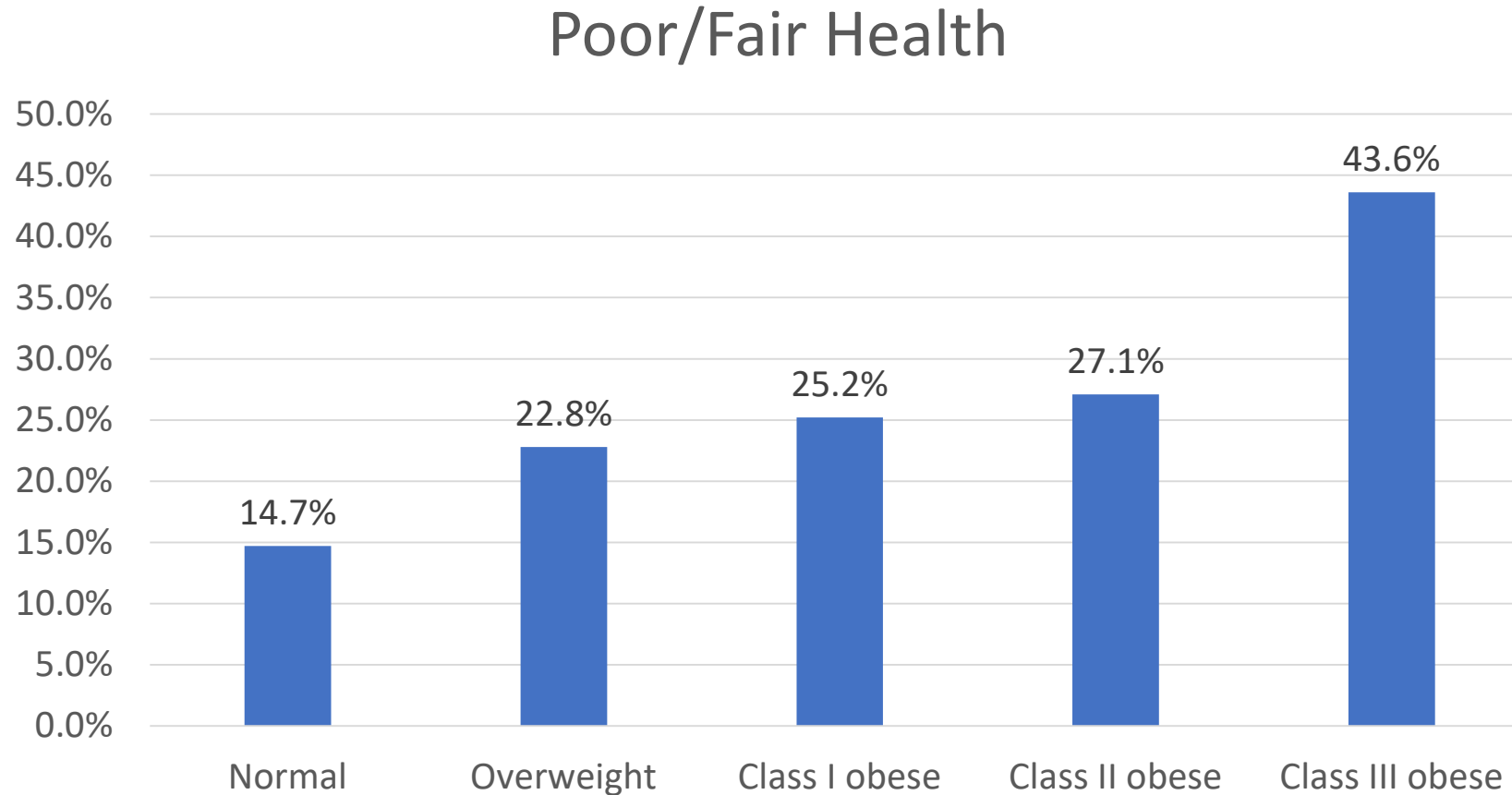
Poor/Fair Health

Bivariate Associations

	Poor/Fair Health	Good to Excellent Health	P Value
length Diagnosed with Breast Cancer			0.048
• ≤ 5 years (n=327; 31.4%)	22.3%	77.7%	
• 6-10 years (n=207; 19.9%)	15.5%	84.5%	
• >10 years (n=505; 48.7%)	23.8%	76.2%	
Body Weight			<0.001
• Normal weight (n=348; 32.1%)	14.7%	85.3%	
• Overweight (n=386; 35.5%)	22.8%	77.2%)	
• Class I obese (n=226; 20.9%)	25.2%	74.8%	
• Class II obese (n=70; 6.5%)	27.1%	72.9%	
• Class III obese (n=55; 5.0%)	43.6%	56.4%	

Bivariate Associations

	Poor/Fair Health	Good to Excellent Health	P Value
Number of Comorbidities			<0.001
• 0 (n=326; 30.6%)	9.2%	90.8%	
• 1 (n=409; 38.5%)	20.8%	72.9%	
• 2 (n=208; 19.6%)	26.9%	73.1%	
• 3+ (n=120; 11.3%)	48.3%	51.7%	
Had exercised within the past 30 days			<0.001
• Yes (n=766; 70.6%)	14.4%	85.6%	
• No (n=320; 29.4%)	40.6%	59.4%)	

Comorbidities included CVDs, current asthma, arthritis, depressive disorder, diabetes

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Number of Comorbidities and Poor/Fair Health

Poor/Fair Health
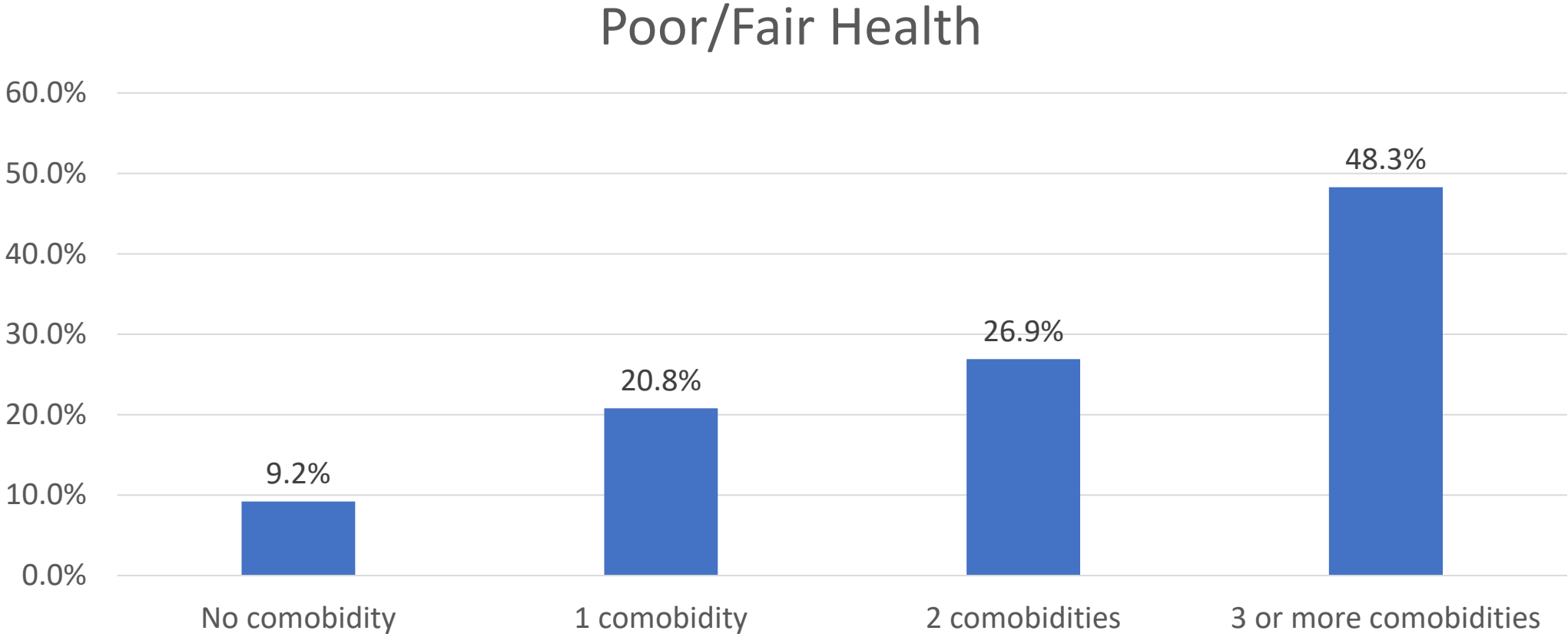
Multivariate Results

	OR	95% CI	p
Age			**.006**
• Age 18-49	ref		
• Age 50-64	.446	.238 - .835	.012
• Age ≥65	.372	.202-.687	.002
Race/ethnicity			0.352
• White	ref		
• Black	1.422	.795-2.543	.236
• Other	1.521	.645-3.587	.338
Education	.487	.326-.728	**<.001**
Married or Partnered	1.153	.735-1.807	.535
Income >=35K	.606	.377-.975	**.039**
Length Diagnosed with Breast Cancer			.105
Body Weight			0.465
• Normal weight	ref		
• Overweight	1.526	.917-2.539	.104
• Class I obese	1.503	.861-2.624	.151
• Class II obese	1.306	.602-2.831	.499
• Class III obese	1.797	.814-3.969	.147
Number of Comorbidities			**<.001**
• 0	ref		
• 1	2.249	1.300-3.891	.004
• 2	3.927	2.124-7.26	<.001
• 3	5.807	3.002-11.232	<.001
Had exercised within the past 30 days	2.562	1.722-3.813	**<.001**

Summary of Results

- Body weight was significantly related to general health in bivariate analysis

- Body weight remained significant after controlling for participants' age, race/ethnicity, education, income, length of diagnosis for breast cancer, and number of comorbidities

- However, it became non-significant when adding "doing any physical activity or exercise in the past 30 days" to the model.

- In the logistic regression model, significant predictors for perceived fair/poor health included age, education, income, number of comorbidities, and doing any physical activity or exercise in the past 30 days.

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Discussion

- The BRFSS data did not show a positive correlation between overweight and general health when compared to normal weight

- However, women in the overweight group did report better health than those who were obese.

- Physical activity or exercise in the past 30 days accounted for most of the variance in the correlation between BMI and general health.

- Lifestyle and medical interventions should be developed to target breast cancer survivors who are extremely obese to improve their general health conditions.