

The Relationship of A Body Shape Index and Body Mass Index with Health-related Quality of Life among African Americans: A Study from Fit Body and Soul

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INTRODUCTION

- Type 2 Diabetes is more prevalent among African Americans (13%) than Non-Hispanic Whites (7%).
- Fit Body and Soul (FBAS) is a cluster randomized controlled community trial to test the efficacy of the faith-based adaptation of Group Lifestyle Balance, a modification of the Diabetes Prevention Program, with overweight and obese non-diabetics in 20 Southeastern African-American churches.¹
- Both body mass index (BMI) and waist circumference (WC) are associated with developing Type 2 Diabetes.
- A new measure of obesity that includes WC as well as the measures for calculating BMI (height and weight) is A Body Shape Index (ABSI).²

AIMS

- This study aimed to determine if these two measures of obesity (ABSI and BMI) were associated with health-related quality of life in this sample of overweight and obese African-American congregants seeking weight reduction.
- Specifically, this study aimed to determine if health-related quality of life explained the variation in ABSI or BMI.

METHODS

- Baseline data from 601 participants in the Fit Body and Soul study
- Measures
 - Demographics:
Age, gender, education, marital status, employment
 - Health-related Quality of Life:
SF-12 Physical Component Summary
SF-12 Mental Component Summary
EQ-5D Health Status
 - Obesity:
A Body Shape Index (ABSI)
Body Mass Index (BMI)

$$ABSI = \frac{\text{Waist circumference in meters}}{BMI^{2/3} \times \text{Height in meters}^{1/2}}$$

- Separate hierarchical multiple regression analyses were conducted with ABSI and BMI as dependent variables and the demographic characteristics, SF-12 Physical Component Summary, Mental Component Summary, and EQ-5D Health Status as independent variables.

REFERENCES

- Williams, L., Sattin, R., Dias, J., Garvin, J., Marion, L., Joshua, T., Kriska, A., Kramer, K., Echouffo-Tcheugui, J., Freeman, A. & Narayan, V. (2013). Design of a cluster-randomized controlled trial of a diabetes prevention program within African-American churches: The Fit Body and Soul Study. *Contemporary Clinical Trials*, 34(2), 336–347. <http://dx.doi.org/10.1016/j.cct.2013.01.002>
- Krakauer, N.Y. & Krakauer, J.C. (2012). A new body shape index predicts mortality hazard independently of body mass index. *PLoS ONE*, 7(7), e39504. <http://dx.doi.org/10.1371/journal.pone.0039504>

RESULTS

Table 1. Baseline Characteristics (n = 601)

Demographics	Mean ± SD	Frequency (%)
Age (years)	46 ± 11	
Female		84
College graduates		51
Married		52
Employed		80
Health-related Quality of Life		
SF-12		
Physical Component Summary	48.90 ± 8.38	
Mental Component Summary	52.19 ± 8.73	
EQ-5D		
Health Status	78.55 ± 15.38	
Obesity		
A Body Shape Index (ABSI)	0.0774 ± 0.0047	
Body Mass Index (BMI)	35.7 ± 7.2	

ABSI and SF- 12

Neither SF-12 Physical nor Mental Component Summary scores significantly added to the variance in ABSI after controlling for demographic variables.

Table 2. Regression for BMI and SF-12

Variable	B	Std Error	t	p
Age	-0.108	0.027	-4.039	<.001
Female	1.237	0.768	1.610	.108
College Grad	-0.525	0.580	-0.904	.366
Employed	-0.105	0.734	-0.143	.886
Married	-1.317	0.582	-2.261	.024
SF-12 Physical Component Summary	-0.224	0.035	-6.337	<.001

Model	R ²	Adj R ²	R ² Change	F Change	df	p
Demographics	.038	.030	.038	4.710	5	<.001
Demographics + SF-12 Physical Component Summary	.100	.091	.061	40.161	1	<.001

The SF-12 Mental Component Summary did not significantly add to the variance in BMI after controlling for demographic variables.

ABSI and EQ-5D

EQ-5D Health Status did not significantly add to the variance in ABSI after controlling for demographic variables.

RESULTS (continued)

Table 3. Regression for BMI and EQ-5D

Variable	B	Std Error	t	p
Age	-0.071	0.027	-2.599	.010
Female	1.304	0.787	1.656	.098
College Grad	-0.774	0.593	-1.306	.192
Employed	-1.090	0.737	-1.479	.140
Married	-0.979	0.596	-1.642	.101
EQ-5D Health Status	-0.060	0.019	-3.130	.002

Model	R ²	Adj R ²	R ² Change	F Change	df	p
Demographics	.038	.030	.038	4.710	5	<.001
Demographics + EQ-5D Health Status	.054	.045	.016	9.795	1	.002

CONCLUSIONS

- Health-related quality of life measures did not explain variation in ABSI.
- SF-12 Physical Component Summary explained 6% and EQ-5D Health Status explained < 2% of the variation in BMI beyond the contribution of demographics.
- While statistically significant in this large sample, the findings may not be clinically significant with such small changes in R².
- Our findings may not hold true with a different sample. The participants in this study were employed, educated, nested in faith-based communities, and seeking weight reduction.
- Future studies should examine the following.
 - Samples with different demographics
 - Changes in ABSI following weight reduction interventions for improvement in health-related quality of life

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- "Fit Body and Soul using the Group Lifestyle Balance Program" is an adaptation of the Group Lifestyle Balance Program materials by the University of Pittsburgh found at www.diabetesprevention.pitt.edu.
- Please contact Dr. Garvin for further information at bgarvin@gru.edu.

