Association of Body Shape Index with body compositionand risk of mortality in the United States

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Background/Aims: BMIdoes not differentiate fat from lean mass, nor does it consider the distribution of adipose tissue. To overcome this, the z-score of the log-transformed A Body Shape Index (LBSIZ) was recently introduced as a measure of obesity using waist circumference, height, and weight. We aimed to investigate the association of LBSIZ with body composition such as fat and muscle, and mortality.

Methods: We used data from the National Health and Nutrition Examination Survey 1999 to 2006. Mortality data were obtained by linking the primary database to death certificate data found in the National Death Index with mortality follow-up through December 31, 2015. A multipleCox regression analysis was performed to evaluate the hazard ratio (HR) of all-cause and cardiovascular disease mortalitywith adjustment for age, sex, race, hypertension, diabetes, and hyperlipidemia.

Results: 11,780 adults ($\geq$20 years) were included in this study. Waist circumference (WC) and BMIshowed a positive association with total fat percentage (p <0.001)and appendicular muscle mass index (ASMI) (p <0.001), while LBSIZ and showed a positive association with total fat percentage(p <0.001) and negative association with ASMI(p <0.001). In the multiple Cox regression analysis, LBSIZ but not BMI or WC showed a significant hazard ratio of all-cause mortality (HR, 1.20; 95% CI 1.14-1.25) and CVD mortality (HR, 1.22; 95% CI 1.10-1.34)

Conclusions: LBSIZ is strongly associated with all cause and CVD mortality and can predict risk of death better than BMI and WC in the general population.

상관계수⁰

		ASMI	Total Percent Fat	Muscle_Fat_ratio	Body Mass Index (kg/m**2)	Waist Circumference (cm)	LBSIZ_2자리
ASMI	Pearson 상관계수	1	-.297**	.270**	.585**	.550**	-.117**
	유의확률 (양쪽)		.000	.000	.000	.000	.000
	N	12354	12354	12354	12344	12289	11780
Total Percent Fat	Pearson 상관계수	-.297**	1	-.937**	.557**	.403**	.082**
	유의확률 (양쪽)	.000		.000	.000	.000	.000
	N	12354	12450	12450	12344	12345	11780
Muscle_Fat_ratio	Pearson 상관계수	.270**	-.937**	1	-.507**	-.414**	-.152**
	유의확률 (양쪽)	.000	.000		.000	.000	.000
	N	12354	12450	12450	12344	12345	11780
Body Mass Index (kg/m**2)	Pearson 상관계수	.585**	.557**	-.507**	1	.892**	-.018**
	유의확률 (양쪽)	.000	.000	.000		.000	.000
	N	12344	12344	12344	40749	39117	36156
Waist Circumference (cm)	Pearson 상관계수	.550**	.403**	-.414**	.892**	1	.370**
	유의확률 (양쪽)	.000	.000	.000	.000		.000
	N	12289	12345	12345	39117	39310	36156
LBSIZ_2자리	Pearson 상관계수	-.117**	.082**	-.152**	-.018**	.370**	1
	유의확률 (양쪽)	.000	.000	.000	.000	.000	
	N	11780	11780	11780	36156	36156	36156