



Development and Validation of Obesity Risk Measurement Scale



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ABSTRACT

Background/Purpose: The purposes of this study were to develop and calibrate the obesity risk measurement scale (ORMS) using the Rasch model, and to validate the scale through known group difference approach.

Method: Based on the literature review and consultation of content and measurement experts, the 21-item ORMS was generated. The ORMS consists of physical activity, meal, heredity, and psychology constructs. The scale was administered to 398 university students. Rasch measurement computer program, WINSTEPS, was used to analyze the data. Model data fit was determined by Infit and Outfit statistics (≥ 0.70 and ≤ 1.30). One-way ANOVA was used to establish the known group difference validity evidence of the ORMS. Alpha level was set at 0.05.

Analysis/Results: Nineteen of the 21 items had good model-data fit with acceptable fit statistics. The 2 items were eliminated from the final estimation. Overall, the 4 rating categories functioned well; threshold advanced with category. The item separation index (7.36) and separation reliability statistic (.98) provided evidence that the items had good variability with a high degree of confidence in replicating placement of the items from another sample. There was a statistically significant mean difference in person's logits score between categorized BMI group (<23 , ≥ 23), $F(1, 396) = 4.089$, $p < 0.05$. This result supports the known group difference validity evidence of the ORMS.

Conclusions: Results provided support for using the ORMS. The scale can be used to assess the risk of obesity of individuals and provide health information.

Keywords: Validity, Rasch model, Obesity, Measurement

Background/Purpose

Obesity has become a worldwide epidemic. The prevalence of obesity has also increased in Korea. There is a need to identify the risk of obesity for individuals to prevent health problems.

The purposes of this study were to develop and calibrate the obesity risk measurement scale (ORMS) using the Rasch model, and to validate the scale through known group difference approach.

Categorized BMI group (i.e., <23 , ≥ 23) is used to establish the known group difference validity evidence.

Method

The 21-item ORMS includes items from physical activity, meal, heredity, and psychology constructs.

Characteristics of study participants

	20 year	30 year	40 year	50 year	Total
Men	55	55	43	31	184
Women	63	51	51	49	214
Total	118	106	94	80	398

Convenience sampling was used in this study

Item goodness-of-fit (MNSQ 1.3, 0.7) is verified in Winsteps 3.62 program

One-way ANOVA (IV: BMI Category, DV: logit) is analyzed Spss 15.0 program

All Alpha level was set at 0.05

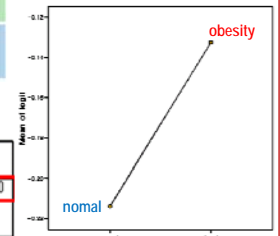
Analysis/Results

Goodness-of-fit

Physical activity	1	I don't like to walk	
	2	I like hiking or swimming	
	3	I don't like to play alone	
	4	I don't be active and behave on negative	→ infit & outfit = 1.37
	5	I like aerobic exercise	
Habit of meal	6	I don't skip 3 time to eat in a day	
	7	I eat irregularly	→ infit & outfit = 0.69
	8	I rarely eat breakfast	
Habit of snack	9	I have stable time to eat	
	10	I often eat snack before sleep	
	11	I can't sleep if I am hungry	
Gluttony	12	I eat something besides mealtime	
	13	I have strong appetite	
	14	I have to eat until feeling full	
Mentality	15	I often hear that I should stop eating more	
	16	I am a timid person	
	17	I always care other's eyes	
Heredity	18	I have to work perfectly	
	19	My family are almost overweight or obesity	
	20	My parents are obesity	
	21	My weight increases fast than eating	

Known group difference validity

logit	Sum of Squares	df	Mean Square	F	Sig.
Between Groups	.660	1	.660	14.089	.000
Within Groups	63.903	396	.161		
Total	64.563	397			



The Rasch analysis results showed that the 19-item ORMS had a good model-data fit.

Conclusion

Results provided support for using this ORMS. Visit our website, www.ezday.co.kr for more information.

Obesity RISK Measurement Scale

Physical Activity	I don't like to walk	◀ No	Yes ▶
	I like hiking or swimming	○ ○ ○ ○	
	I like to play alone	○ ○ ○ ○	
	I like aerobic exercise	○ ○ ○ ○	
Habit of Meal	I don't skip a meal	○ ○ ○ ○	
	I rarely eat breakfast	○ ○ ○ ○	
	I don't keep regular meal times	○ ○ ○ ○	
Habit of Snack	I often eat snack before I sleep	○ ○ ○ ○	
	I can't sleep if I am hungry	○ ○ ○ ○	
	I eat something besides mealtime	○ ○ ○ ○	
Gluttony	I have strong appetite	○ ○ ○ ○	
	I have to eat until I satisfy my appetite	○ ○ ○ ○	
	I often hear I should stop eating more	○ ○ ○ ○	
Mentality	I eat more when I have stress	○ ○ ○ ○	
	I have to work perfectly	○ ○ ○ ○	
	I'm aware of other peoples' attention	○ ○ ○ ○	
Heredity	My family are overweight of obese	○ ○ ○ ○	
	My parents are obese	○ ○ ○ ○	
	I put on weight than eating	○ ○ ○ ○	

