Nutrition Education and Exercise Program to Prevent the Risk Factors of Developing Metabolic Disease

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Background and objective

Obesity has a high risk of developing metabolism disease and related complications. Therefore, reduce obesity are the most important issue in public health. This study aims to understand the changes in biochemical analysis, body composition and blood pressure of the participants after this lifestyle intervention. Also, we observed the correlation between changes in body weight and body fat to make sure that it is a healthy plan for weight management.

Methods/intervention

This study was conducted by Taiwan Adventist Hospital, the participants recruited from 2019 to 2020 (n=51). Each participant participated in an 8-week lifestyle intervention, including weight loss knowledge courses, nutrition education, exercise classes, and diet modification by dietitian. They were also required to exercise for at least 150 minutes and 3-day food records per week.

The body biochemical data were collected at the beginning and end of the course. Body composition were evaluated by the Body Composition Analyzer. Statistics software was by SPSS Statistics 26.

Results

From the results of Table 1, after 8 weeks of course, we revealed that waist circumference reduced 4.5 cm, body weight was reduced by 2.1 kg, body fat percentage decreased by 1.1%, body fat mass decreased by 1.6 kg, fat removal mass decreased by 0.5 kg, muscle mass decreased by 0.5 kg, and body water percentage increased by 0.7%, systolic blood pressure decreased by 4.4 mmHg, and diastolic blood pressure decreased by 2.5 mmHg.

In Fig. 1, changes in body weight and body fat mass after the lifestyle interventions showed a linear relationship (R^2 = 0.875, p<0.001).

Conclusions/lessons learned

In this study, we found that after an 8-week nutrition education and exercise program, the waist circumference, body weight, body fat percentage, body fat mass, and blood pressure all decreased significantly. Furthermore, we revealed that every 1 kg of weight loss can reduce about 0.7 kg of body fat, we speculated the exercises. This result can be used as a reference goal for medical workers successfully in performing to help people getting healthy weight control in the future.

Table 1: Changes of the participants in baseline and after the lifestyle intervention (8 weeks)

		Baseline	8 weeks	Change	p value
Biochemical analysis	Waist circumference, cm	129.0±16.4	124.6±18.7	-4.5±14.7	0.035*
	Hip circumference, cm	77.8±10.9	76.2±13.5	-1.6±10.8	0.294
	Weight, kg	72.1±14.5	70.0±13.7	-2.1±2.3	<0.001**
Body composition	Body fat percentage, %	38.1±7.0	37.0±7.2	-1.1±1.3	<0.001**
	Body fat mass, kg	27.9±9.0	26.3±8.7	-1.6±1.7	<0.001**
	Fat removal mass, kg	44.2±9.0	43.7±8.5	-0.5±.0.9	<0.001**
	Muscle mass, kg	41.7±8.6	41.2±8.1	-0.5±0.8	<0.001**
	body water percentage, %	45.0±3.9	45.6±4.0	0.7±1.5	0.002*
Blood pressure	Systolic blood pressure, mmHg	90.2±11.0	85.8±11.5	-4.4±5.8	<0.001**
	Diastolic blood pressure, mmHg	104.9±9.0	102.4±8.4	-2.5±3.8	<0.001**

The p value for 2 groups difference (ANOVA).
Values are presented as mean ± SD.

Figure 1. Relation between weight change and body fat mass change after lifestyle intervention