

# Diabetes and Weight Loss: a Pilot Study

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## INTRODUCTION:

Many people with type 2 diabetes are obese. Research provides strong evidence linking obesity to diabetes. Drug therapy remains the most commonly used intervention by the medical community to treat diabetes. However, it does not get to the root of the problem. Neither is it the optimal approach to the reduction of CV risk factors or quality of life. On the other hand, research studies found lifestyle changes and small amount of weight loss can prevent the development of diabetes or reduce its complication.

## PURPOSE/METHOD

The primary objective of this study is to examine the efficacy of body weight reduction through lifestyle intervention on patients with diabetes. Patients with diabetes or elevated blood sugar were referred to the lifestyle clinic at the hospital where they would be enrolled in a 10-week weight loss program. The non-drug therapy consists of providing calorie-controlled healthy meals daily, weekly exercise classes and educational classes focusing on motivation and behavioral change.

## RESULTS

A total of 8 patients enrolled in the program, with diabetes history ranging from newly diagnosed to 30 years. Everyone lost weight, with average weight loss of 8kg (9%). For every 1% drop in body weight there is a corresponding 2% drop on fasting blood glucose. The fasting blood glucose was lowered in every participant, with an average reduction of 18.6%. Notably, the reduction is comparable to the effect achieved by some of the most commonly used glucose lowering medications, (sulfonylureas or metformin). All the participants improved their CV risk factors: reduction in blood pressure, triglycerides and waist circumference. One patient with 15 years of diabetes successfully weaned off insulin injection. Another one got off her diabetes medication completely.



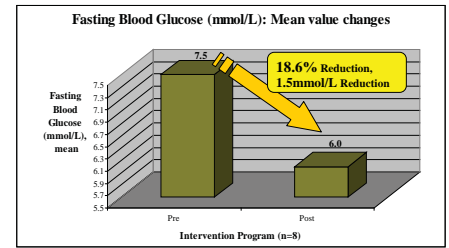
## CONCLUSION

This is the first structured lifestyle intervention with dietary restriction provided for diabetic outpatients in a hospital setting. Reducing body weight through diet and exercise appears to be effective in managing diabetes and many of its CV risk factors. Our case studies provide an argument that lifestyle intervention is a more "potent" alternative therapy to drugs as it does not only reduce the severity of the disease, reduce risk factors for its co-morbidities and in some cases, reverse it.

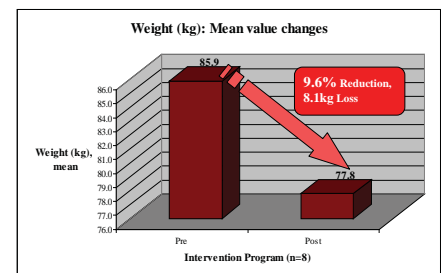
## COMMENTS

The success of the program, though the number of cases is small, shows that weight loss through lifestyle modification is effective in managing DM2. It also shows that lifestyle intervention can be done in a hospital setting where traditional acute care meets holistic care. Malaysia has one of the highest diabetes prevalence in the world, and the highest obesity rate in South East Asia. Our finding is pertinent at a time where the nation has seen a concurrent explosion both in DM2 (from 6% to 20%) and obesity (from 15% to 40%) incidences in the past 2 decades.

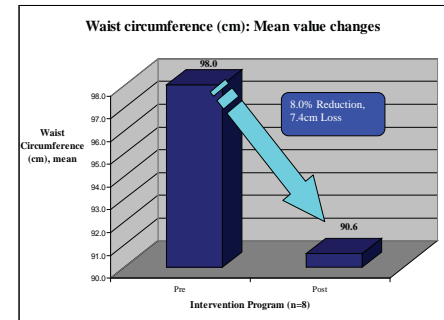
Graph 1: Fasting Blood Glucose Level for Weight-A-Way participants before and after the program.



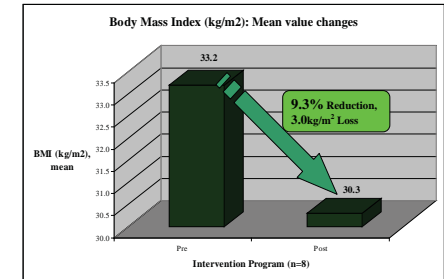
Graph 2a: Weight Changes for Weight-A-Way Participants before and after the program (n=8).



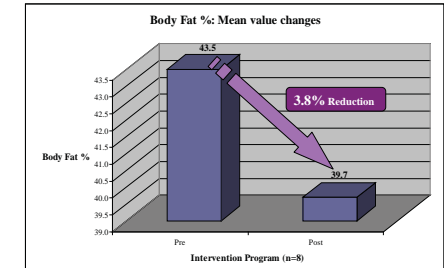
Graph 2b: Waist Circumference Changes for Weight-A-Way Participants before and after the program (n=8).



Graph 2c: Body Mass Index Changes for Weight-A-Way Participants before and after the program (n=8).



Graph 2d: Body Fat Percentage Changes for Weight-A-Way Participants before and after the program (n=8).



## Results

Table 1. Demographic and medical parameters of all participants.

Characteristic	Total (n= 8)
Mean age	56.25 ± 7.9
Age group	2(25%)
	50-59
	3 (37.5%)
	60-69
	3 (37.5%)
Gender	2 (25%)
	Female
	6(75%)
Race	5 (62.5%)
	Chinese
	2 (25%)
	Indian
	1 (12.5%)
	Caucasian
Duration of diabetes	2 (25%)
	<1 year
	1 (12.5%)
	6-10 years
	1 (12.5%)
	>10 years
	4 (50%)

Table 2. Anthropometric measurement for all Weight-A-Way participants

Participant (n=8)	Demographic Data		Anthropometric Measurement															
			Weight				Waist Circumference				Body Mass Index				Body Fat			
			Before	After	Loss	%	Before	After	Reduction	%	Before	After	Reduction	%	Before	After	Reduction	
1	47	Male	80.0	75.2	4.8	6.0	99.0	93.0	6.0	6.1	30.7	28.7	2.0	6.4	34.4	30.3	4.1	
2	49	Male	98.1	85.9	12.2	12.4	101.0	97.0	4.0	4.0	34.4	30.0	4.4	12.8	35.8	30.2	5.6	
3	51	Female	65.6	56.7	8.9	13.5	96.0	87.0	9.0	9.4	32.2	27.8	4.4	13.6	54.0	42.8	11.2	
4	53	Female	77.3	69.9	7.4	9.6	89.0	79.0	10.0	11.2	29.1	25.3	3.8	13.1	35.4	34.1	1.3	
5	58	Female	74.0	64.5	9.5	12.8	84.0	75.0	9.0	10.7	30.0	26.2	3.8	12.7	43.5	41.1	2.4	
6	60	Female	111.0	103.1	7.9	7.1	125.0	118.0	7.0	7.9	45.0	44.6	0.4	0.9	53.0	52.1	0.9	
7	61	Female	93.0	85.3	7.7	8.3	90.0	86.0	4.0	4.4	32.6	29.4	3.2	9.8	43.1	39.4	3.7	
8	71	Female	88.4	82.1	6.3	7.1	100.0	90.0	10.0	10.0	31.7	30.0	1.7	5.4	48.7	47.3	1.4	
Mean			85.9	77.8	8.1	9.6	98.0	90.6	7.4	8.0	33.2	30.3	3.0	9.3	43.5	39.7	3.8	

Table 3: Fasting blood glucose changes and weight loss for all Weight-A-Way participants

Participant (n=8)	Demographic Data		Weight				Fasting Blood Glucose				History of DM
			Before	After	Loss	%	Before	After	Reduction	%	
			kg	kg	kg	%	mmol/L	mmol/L	mmol/L	%	
1	47	Male	80.0	75.2	4.8	6.0	8.9	6.3	2.6	29.2	6
2	49	Male	98.1	85.9	12.2	12.4	5.7	5.0	0.7	12.3	N/A*
3	51	Female	65.6	56.7	8.9	13.5	9.0	4.3	4.7	52.2	15**
4	53	Female	77.3	69.9	7.4	9.6	10.2	9.6	0.6	5.9	18
5	58	Female	74.0	64.5	9.5	12.8	5.9	4.7	1.2	20.3	<1*
6	60	Female	111.0	103.1	7.9	7.1	6.7	6.2	0.5	7.5	10
7	61	Female	93.0	85.3	7.7	8.3	5.6	5.2	0.4	7.1	3**
8	71	Female	88.4	82.1	6.3	7.1	7.8	6.7	1.1	14.1	30
Mean			85.9	77.8	8.1	9.6	7.5	6.0	1.5	18.6	

N/A: Not applicable  
\* Patients did not take any Oral Hypoglycemic Agent (OHA) prior to intervention.  
\*\* Patients who stopped OHA after intervention.