Gender differences in the effects of repeated taste exposure to the Mediterranean diet: a 6-month follow-up study

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ABSTRACT

Purpose: To determine whether an intervention based mainly on exposure to the Mediterranean diet (MedDiet), along with recommendations/tools for encouraging healthy eating, lead to different effects on dietary adherence and body weight management six months post-intervention in Canadian men and women.

Methods: Thirty-eight men and 32 premenopausal women (24-53 years) were exposed to the same 4-week experimental MedDiet during which all foods were provided to participants. Participants also received some recommendations/tools to adhere to a healthy way of eating, with no other contact until the 6-month follow-up visit.

Results: Compared to baseline, the Mediterranean score (MedScore) had increased at the end of the 6-month follow-up (time effect $P=0.003$), with no gender difference (gender-by-time interaction $P=0.97$). Although our intervention was not focused on body weight management, compared to baseline, BMI decreased during the intervention in both men and women (respectively $P<0.0001$ and $P=0.03$); however, only the female participants of this study managed to maintain the lower BMI, six months after the intervention ($P=0.03$ for women; gender-by-time interaction $P=0.04$).

Conclusions: Exposure to the MedDiet for a short duration promotes the adherence to this food pattern in both genders and helps in the management of body weight, especially in women.

INTRODUCTION

The beneficial effects of the traditional Mediterranean diet (MedDiet) on health have been intensively studied in past years. Now it is well recognized that this food pattern may reduce overall mortality (1) and counteract many metabolic disorders and diseases such as the metabolic syndrome (2), cardiovascular diseases (1, 3, 4), cancer (1), type 2 diabetes (5, 6) and some neurodegenerative diseases (1, 3). Despite its moderate fat content, the MedDiet has also been proposed as a useful strategy for body weight management (7). Accordingly, identifying effective strategies for increasing adherence to the MedDiet, and more precisely those that would successfully sustain these dietary changes over time, is of great interest.

Repeated taste exposure, where people are asked to taste a food repeatedly over a period of time, has been found to be an effective strategy for modifying food preference and acceptance (8-11), and thereby leads to a higher consumption of less familiar foods in the short-term (8, 9, 12). The success of this type of strategy has also been observed when exposure to healthy foods was used in combination with additional strategies, including education (13, 14). The efficacy of an exposure based-approach has been tested mostly with children. However, it has also been suggested as an effective approach in adults for increasing consumption of some components of the traditional MedDiet such as fruit, and particularly in those with a low consumption of these foods at baseline (12). Therefore, these results suggest that repeated taste exposure could be especially effective for increasing adherence to the MedDiet in non-Mediterranean populations, such as in North America, where MedDiet-related foods are less familiar due to the common consumption of a food pattern characterized by processed energy-dense foods (15).

One aspect that has been neglected in previous studies is whether men and women similarly benefit from nutritional interventions. In this regard, gender differences in

responsibilities for meal preparation and food shopping (16), food preferences and intakes (17), nutrition knowledge (18), interest in learning about health and nutrition (19), and eating behaviors (20-23) have been highlighted in the literature. These differences may influence the quality of diet and the degree of adherence to healthy dietary recommendations (24). In the context of the MedDiet, previous studies found evidence that some nutritional strategies concerning adherence and dietary intakes have a different impact according to gender; some favoring men (25, 26) whereas others impacting women more efficiently (27).

PURPOSE

The aim of the present study was to determine whether an intervention based mainly on exposure to the Mediterranean dietary pattern, along with a few tools to adhere to a healthy way of eating, lead to different effects on dietary adherence and body weight management in Canadian men and women six months after exposure. We hypothesized that women would show greater adherence to the MedDiet and, consequently, reduce their body weight more than men.

METHODS

Participants

Participants were recruited using the mailing lists of the Institute of Nutrition and Functional Foods (Laval University, Quebec, Canada) . Eligibility was determined on the basis of a slightly deteriorated lipid profile, as previously reported (28). Participants included in the present study are those in whom the adoption of healthy dietary habits is strongly recommended for prevention of cardiovascular diseases and for avoiding the need for lipid-lowering medication later in life (29). The current analyses are part of a study primarily designed to investigate differences between men and women in the lipid-lowering response to the MedDiet in a controlled dietary context (28). At screening, participants were also invited to a 6-month follow-up visit in order to assess whether there had been longer-term dietary or BMI/anthropometric changes, and if so, whether there were gender differences. Results presented in this paper are about this secondary aim. All procedures involving human participants were approved by the Laval University Ethics Committee (#2007-180; September 8, 2009).. All participants provided written informed consent prior the beginning of the intervention. Power analyses for repeated measures, and within-between interactions showed that a total sample size of n=58 is sufficient to detect significant differences in all outcomes measured with a small effect-size estimate (Cohen's d of 0.20 (30)), and with an α=0.05 and a power (1-β error probability) of 0.80 (G*Power Version 3.0.10, Franz Faul, Universität Kiel, Germany).

Study design

The study design is presented as Supplemental material (Figure S.1). Briefly, the intervention lasted 8 weeks. At the beginning of the intervention, participants had a consultation with a registered dietitian to receive personalized dietary recommendations based on Canada's Food Guide (31). The recommendations of Canada's Food Guide share many similarities with the MedDiet principles. Among others, both promote the consumption of vegetables, fruits and whole grain products. The objective of this 1-h consultation was to promote the adoption of healthy dietary habits. Four weeks later, both men and women were exposed to the same experimental MedDiet for four weeks. During this phase, all foods and drinks were provided following a 7-day cyclic menu (Supplementary Material, Table S.1) at 100% of an individual's estimated energy needs, as previously described (28). The experimental MedDiet was characterized by an abundance of plant-based foods, such as fruit, vegetables, whole grain cereals, nuts and legumes; olive oil as the main source of fat; moderate amounts of fish, poultry, dairy products and eggs; relatively low amounts of red meat and sweets and a moderate amount of red wine with meals. Participants were instructed to consume their entire meals. The compliance of participants was closely monitored with a daily checklist in which participants noted foods consumed and, if needed, the amount of foods not consumed. The overall compliance calculated from the food checklists was 97.9±3.6% in men and 97.6±3.2% in women. On weekdays, participants came to the Clinical Investigation Unit (CIU) to eat lunch under the supervision of at least one member of the research team. This daily visit to the CIU on weekdays ensured regular contact between the research team and participants. At the end of the feeding phase, a booklet including all MedDiet recipes of the 7-day cyclic menu was offered to participants. Moreover, an optional lecture on the MedDiet was also offered to participants. This lecture included a brief history of the traditional MedDiet, some evidence of the beneficial effects of the MedDiet on health

and practical tips to adhere to this food pattern (e. g. to consume nuts during meals but also as a snack, canned fish costs less than fresh fish, to use canned legumes as a source of protein for meals, etc.). Participants were contacted for a follow-up visit 24 weeks later (about six months post-intervention).

Dietary measurements

Dietary intakes were assessed using a quantitative food frequency questionnaire (FFQ). This FFQ had been previously validated in French Canadian men and women (32). The FFQ, which was administered by a registered dietitian, inquired about food habits over the last month. A Mediterranean score (MedScore; 0 to 44 points) derived from the FFQ was calculated to evaluate the adhesion to the MedDiet, as previously described by Goulet and colleagues (33). A MedScore of 44 would imply a food pattern that is perfectly concordant with the traditional MedDiet. Nutrient intakes obtained from the FFQ were assessed using the Nutrition Data System for Research software (NDS-R, version 4.03).

Anthropometric measurements

Body weight, height, and body mass index (BMI) were measured using standardized methods (34). Body weight was measured with a calibrated digital scale (BWB-800S Digital scale, Tanita, Japan) and height was measured at the nearest 0.1 cm using a stadiometer (Seca 222, Mechanical telescopic Stadiometer, Germany).

Statistical analyses

Statistical analyses were carried out using the SAS statistical package version 9.4 (SAS Institute Inc., Cary, NC, USA). A $P \leq 0.05$ (two-sided) was considered significant. Gender differences in characteristics at baseline (i.e. at the beginning of the intervention, before the first visit about Canada's Food Guide) were assessed by the Student's t-test for unpaired data

for continuous variables and by chi-square test (five or more participants per cell) and Fisher's exact test (at least one cell with less than five participants) analyses for categorical variables.

For analyses related to body weight and BMI, we used data collected at baseline (i.e. at the beginning of the intervention, before the first visit about Canada's Food Guide), immediately after the intervention (i.e. after the exposure to the MedDiet) and at the end of the 6-month follow-up. For nutrient and dietary intakes, since it was irrelevant to measure these variables at the end of the feeding intervention since all participants consumed exactly the same diet at this time point, analyses included only data collected at baseline (i.e. at the beginning of the intervention, before the first consultation visit about the Canada's Food Guide) and at the end of the 6-month follow-up. MIXED procedures for repeated measurements were used to assess the main effects of time, gender and their interaction on dietary intakes as well as on changes in body weight and BMI. When a significant main effect was noted, the SLICE statement (for dietary intakes) and the least-square mean statistic (for anthropometric changes) generated by the MIXED model analysis were used to determine the significance of change in outcome variables in men and women taken separately. An advantage of MIXED procedure is it handles the presence of dropouts. Therefore, all available data at every time were used in these analyses. Under-reporters were identified using the method of Goldberg (reported energy intake at baseline below 1·30*basal metabolic rate) (35). Associations between variables were assessed by Pearson's correlation analyses.

RESULTS

Thirty-eight men and 32 premenopausal women, aged 24 to 53 years, took part to the study. Seven participants (four men and three women; 10% of the total sample) were lost to follow-up. The remaining 63 participants were representative of the original cohort with respect to age, body weight, BMI, MedScore, and other demographic characteristics (data not shown).

The baseline characteristics of male and female participants are shown in Table 1. Men generally had a higher body weight and a higher annual household income, were more likely to live with a spouse and children, and were less involved in the preparation of meals than women. Other characteristics such as mean age and BMI as well as education level did not differ between sexes.

Dietary intakes

At the 6-month follow-up, total energy intake and the percentage of energy intake from saturated fatty acids (SFA) were found to have decreased compared to baseline; however, this was statistically significant only in men (P=0.0005 and P=0.002 for men and P=0.28 and P=0.06 for women respectively; Table 2). Moreover, increases in the monounsaturated fatty acid (MUFA) to SFA ratio and in the percentage of energy intake from alcohol were reported by both men and women (P=0.002 and P=0.04 for men and P=0.009 and P=0.03 for women respectively; Table 2). There was no gender difference in nutrient changes, as suggested by nonsignificant gender-by-time interactions (P≥0.10; Table 2).

At the 6-month follow-up, the MedScore had increased compared to baseline, with no gender difference (P=0.02 for men and P=0.04 for women) (Table 3). Baseline MedScore

was negatively associated with change in MedScore (i.e. baseline to follow-up) in both men and women (r=-0.51, P=0.002 in men and r=-0.72, P<0.0001 in women), meaning that participants with a lower MedScore at baseline increased their score more in response to the intervention.

With regard to MedScore components, a gender difference was found for the consumption of poultry and trends for gender differences were noted for the intakes of fruit and dairy products (Table 3). More precisely, while men tended to consume more poultry at the end of the follow-up than at baseline (P=0.08), women reported no change (P=0.11). Moreover, an increase in fruit consumption and a decrease in dairy product intake were noted in men (respectively P=0.008 and P=0.0002) whereas no change was observed in women (respectively P=0.99 and P=0.29).

Intakes of olive oil and fish/seafood increased while intakes of refined grain products, eggs, and red/processed meat were decreased at follow-up compared to baseline (Table 3). When male and female participants were considered separately, men increased their intakes of fish/seafood and decreased their consumption of refined grain products, eggs and red/processed meat (respectively P=0.03, P=0.04, P=0.004 and P=0.006). In women, significant increases in intakes of olive oil and fish/seafood were noted (respectively P=0.008 and P=0.002). For all these variables, no significant gender difference was found (Table 3).

Similar results were obtained after the exclusion of participants considered as being under-reporters (results not shown).

Body weight management

Figure 1 presents BMI at baseline, after the 8-week intervention, and at the end of 6-month follow-up. The effect of the intervention on BMI was different for male and female

participants (P for gender-by-time interaction=0.04). BMI in men decreased during the intervention (P<0.0001), however returned towards baseline values by the follow-up visit (P=0.48). On the other hand, in women, a decrease was noted during the intervention (P=0.03), which remained by the follow-up visit (P=0.03). Similar results were observed for body weight (body weight loss of 0.4% and 1.6% in men and women, respectively, between the baseline and the follow-up visit).

DISCUSSION

Results from the present study showed for the first time that an intervention based mainly on exposure to the MedDiet, along with dietary recommendations/tools to adhere to a healthy way of eating, is an effective strategy for both men and women in order to increase their adherence to this healthy food pattern six months after exposure. However, when dietary changes were observed in more detail, our results showed that men and women did not report exactly the same dietary changes; men reported changes in more dietary food groups than women. On the other hand, results from this study propose that this type of intervention, which has no focus on body weight management, leads to a small but significant body weight loss in women.

Because the MedDiet is now recognized as having a protective effect against several major chronic diseases (1), many nutritional strategies have been tested in order to increase the adherence to the MedDiet in non-Mediterranean cohorts. Among these, researchers have designed interventions using individual counseling with a registered dietician, group sessions and/or behavioral counseling, strategies that have been sometimes used in combination with some other tools (e.g. recipes, written recommendations, newsletters, practical tips, etc.) (26, 33, 36-39). However, interventions based mainly on exposure to the MedDiet have been ignored in the past, despite the fact that it has been found to be an effective strategy for modifying food preference and acceptance, and for increasing consumption of some particular MedDiet food groups (8-12). A large variability in the effectiveness of approaches aimed at increasing the adherence to the MedDiet has been observed in previous studies, and one factor that has been shown to influence the response to nutritional strategies is gender (i.e. men vs. women). In fact, it has been demonstrated that some strategies aimed at improving dietary habits may have different impacts in men and in women (25-27). Results

from the present study are therefore relevant since they indicate for the first time that an intervention based mainly on exposure to the MedDiet may be effective for increasing adherence, irrespective of gender, as suggested by the increase in the MedScore in both men and women at the 6-month follow-up visit compared to baseline. These results are relevant, considering that an increase in MedDiet adherence, even in the absence of weight loss, leads to many health benefits (28, 40-42). Nonetheless, when examining food intakes more closely, different dietary changes were noted in men and women.

Although the recommendations provided by dietitians were focused on dietary intakes and not directly on body weight management, BMI in both men and women decreased during the intervention. More precisely, additional analyses showed that this decrease in BMI occurred during the MedDiet feeding intervention, which was designed to provide 100% of individuals estimated energy needs. This decrease in BMI despite our efforts to maintain a stable body weight during the MedDiet feeding intervention underlines the high satiating capacity of the MedDiet due, in part, to its high fiber content and low energy density. However, only female participants in our study maintained this decrease in BMI after six months. This is an intriguing result considering that men but not women reduced significantly their energy intake during follow-up compared to baseline. However, even if similar results were obtained after the exclusion of under-reporters, we cannot exclude the possibility of misreported energy intake in this study. Since no particular recommendation was made related to physical activity participation, it is unlikely that men and women have changed their energy expenditure related to physical activity differently. However, since we did not measure physical activity participation at follow-up, we can not verify this assumption. It would have been highly relevant to perform a longer follow-up, considering that most people usually regain weight within the first few years after an intervention (43).

Because this intervention based on exposure was highly controlled, it may be difficult to reproduce in the general population. However, the nature of this intervention permitted highly controlled exposure (i.e. same diet and exposure in both men and women) and exposure of the entire MedDiet to participants, not only some of the components. Moreover, this approach allowed participants to taste the same foods and meals repeatedly over four weeks. Further studies are needed to investigate whether a lower level of exposure to the MedDiet (e.g. in the context of work/school) has beneficial effects on dietary intakes and body weight management, and the influence of the gender on these effects.

This study has some limitations. First, dietary intakes were self-reported which cannot exclude the risk of misreporting. Moreover, dietary intakes were evaluated with a FFQ. However, this FFQ was validated for men and women from the metropolitan Quebec City area (32). Another limitation is the dropout rate, 10% in total. We acknowledge that our results cannot be extrapolated to the whole population because men and women participated voluntarily to this intervention and had an interest towards the MedDiet. Finally, the participation to the optional lecture after the exposition to the MedDiet may have influenced dietary intakes at the follow-up. Unfortunately, the number of men and women who participated to this lecture has not been systematically noted.

RELEVANCE TO PRACTICE

Results from the present study showed that being exposed to the MedDiet for a short duration, along with some dietary recommendations/tools, promote the adherence to this food pattern in both genders up to six months after exposure. Moreover, our results suggest that exposure to the MedDiet may help in the management of body weight, especially in women. These results, along with those of previous studies, highlight that effective nutritional strategies to improve diet quality and body weight management may be different in men and

women, which underlines the urgent need to address gender issues in further studies. We believe that this research effort will provide new and useful clinical insights to effectively impact men and women and maximize the health benefits that both genders can obtain from adopting healthy dietary habits.

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Table 1. Baseline characteristics of male and female study participants.

	Men (n=38)		Women (n=32)		Gender difference
	Mean	SEM	Mean	SEM	P-value [a]
Age, years	42.6	1.2	41.2	1.3	0.42
Body weight, kg [b]	91.5	2.2	78.0	2.6	<0.0001
BMI, kg/m^2 [b]	29.0	0.5	29.6	1.0	0.88
Annual household income, n (%), CAN$					
≤ 39 999	3 (7.9)		10 (31.3)		0.03
40 000 - 79 999	13 (34.2)		11 (34.4)		
≥ 80 000	22 (57.9)		11 (34.4)		
Education level, n (%)					
High school graduate or less	5 (13.2)		4 (12.5)		1.00
College graduate	11 (28.9)		9 (28.1)		
University graduate	22 (57.9)		19 (59.4)		
Household context, n (%)					
Living with a spouse and children	22 (57.9)		12 (37.5)		0.04
Living only with a spouse	8 (21.1)		6 (18.8)		
Living only with children	0 (0)		5 (15.6)		
Living with individual(s) who is(are) not a spouse or children	1 (2.6)		0 (0)		
Living alone	7 (18.4)		9 (28.1)		
Involvement in the preparation of meals (lunch and dinner) per week, n (%)					
≤ 3 times	8 (21.1)		2 (6.3)		0.009
4-9 times	20 (52.6)		10 (31.3)		
10-14 times	10 (26.3)		20 (62.5)		

[a] Differences between men and women were assessed by Student's t-test for continuous variables and by chi-square test (five or more participants per cell) and Fisher's exact test (at least one cell with less than five participants) for categorical variables

[b] Analysis was performed on transformed values

Table 2. Nutrient intakes at baseline and at the 6-month follow-up in men and women.

Variables	Men				Women				Time effect	Gender x time interaction
	Baseline (n=38)		Follow-up (n=34)		Baseline (n=32)		Follow-up (n=29)		*P-value*	*P-value*
	Mean	SEM	Mean	SEM	Mean	SEM	Mean	SEM		
Energy intake (kJ) [a]	13 646	573	11 848 ***	412	10 284	624	9 704	447	0.002	0.10
% Energy from carbohydrates	44.9	1.1	44.4	1.1	47.1	1.1	46.8	1.2	0.67	0.93
Total dietary fibers (g/d)	32.3	1.6	31.5	1.7	27.2	1.8	27.3	1.8	0.78	0.72
% Energy from proteins	16.8	0.4	17.0	0.5	17.9	0.5	17.8	0.5	0.90	0.59
% Energy from lipids	35.2	1.0	34.2	1.0	33.2	1.0	32.8	1.1	0.39	0.67
SFA	11.1	0.4	9.9 **	0.4	11.3	0.4	10.5 †	0.4	0.0006	0.40
MUFA	15.0	0.6	15.2	0.6	13.8	0.6	14.2	0.6	0.53	0.75
PUFA	6.4	0.3	6.5	0.2	5.3	0.3	5.4	0.2	0.63	0.91
MUFA / SFA ratio [b]	1.41	0.06	1.58 **	0.06	1.25	0.07	1.37 **	0.07	<0.0001	0.82
% Energy from alcohol [b]	3.1	0.4	4.4 *	0.5	1.8	0.5	2.6 *	0.5	0.004	0.86

[a] 1 kcal = 4.184 kJ

[b] Analysis was performed on transformed values

Significantly different within the same gender (follow-up vs baseline), *** P<0.001, ** P<0.01, * P<0.05, † P<0.10

Table 3. Serving of key foods of the Mediterranean food pattern consumed at baseline and at the 6-month follow-up in men and women.

Variables [a]	Men				Women				Time effect	Gender x time Interaction
	Baseline (n=38)		Follow-up (n=34)		Baseline (n=32)		Follow-up (n=29)		*P-value*	*P-value*
	Mean	SEM	Mean	SEM	Mean	SEM	Mean	SEM		
Mediterranean score (arbitrary units)	23.9	0.8	26.1 *	0.8	23.7	0.8	25.9 *	0.9	0.003	0.97
Whole grain products (portions/d) [b]	3.2	0.4	3.2	0.3	2.8	0.4	3.1	0.3	0.33	0.74
Refined grain products (portions/d) [b]	3.1	0.3	2.2 *	0.3	2.5	0.4	2.2 †	0.4	0.008	0.93
Fruits (portions/d)	2.1	0.3	3.1 **	0.3	3.0	0.3	3.0	0.4	0.07	0.07
Vegetables (portions/d) [b]	3.8	0.4	4.3	0.4	4.1	0.4	4.3	0.4	0.34	0.90
Legumes, nuts and seeds (portions/d) [b]	1.4	0.2	1.2	0.1	0.8	0.2	0.8	0.1	0.99	0.79
Olive oil (ml/d) [b]	10.6	2.4	14.3 †	2.4	7.0	2.6	11.5 **	2.6	0.002	0.42
Dairy products (portions/d) [b]	3.3	0.2	2.3 ***	0.2	2.7	0.2	2.4	0.3	0.0009	0.06
Fish and seafood (portions/week) [b]	4.8	0.5	6.8 *	0.6	3.1	0.6	4.8 **	0.6	0.0002	0.37
Poultry (portions/week) [b]	4.1	0.6	5.1 †	0.6	5.5	0.6	4.2	0.6	0.99	0.02
Eggs (portions/week) [b]	3.1	0.5	2.0 **	0.3	2.6	0.5	2.2	0.3	0.01	0.15
Sweets (portions/week) [b]	9.9	1.2	7.6	1.3	8.6	1.3	6.2	1.4	0.10	0.98
Red/processed meat (portions/week) [b]	10.6	1.1	7.5 **	0.8	8.4	1.2	6.4	0.8	0.004	0.39
Wine (ml/d) [b]	85.7	13.4	101.2	14.0	44.1	14.6	74.8	15.2	0.07	0.66

[a]Serving size for whole and refined grains products = 125 ml (rice, pasta, bulgur, couscous), one bread piece or 30 g cereal; Serving size for fruits and vegetables = 125 ml; Serving size for legumes = 175 ml and for nuts and seeds = 30 g; Serving size for dairy products (mostly low fat cheese and yogurt) = 50 g cheese, 175 g yogurt and 250 ml milk; Serving size for fish, seafood, poultry and red meat = 75 g; Serving size for egg = 1 egg; Serving size for sweets = 45 g of chocolate, 1 piece of cake, pie or other pastries, 2 cookies, 125 ml of ice cream or frozen yogurt and 1 candy.

[b] Analysis was performed on transformed values

Significantly different within the same gender (follow-up vs. baseline), *** P<0.001, ** P<0.01, * P<0.05, † P<0.10

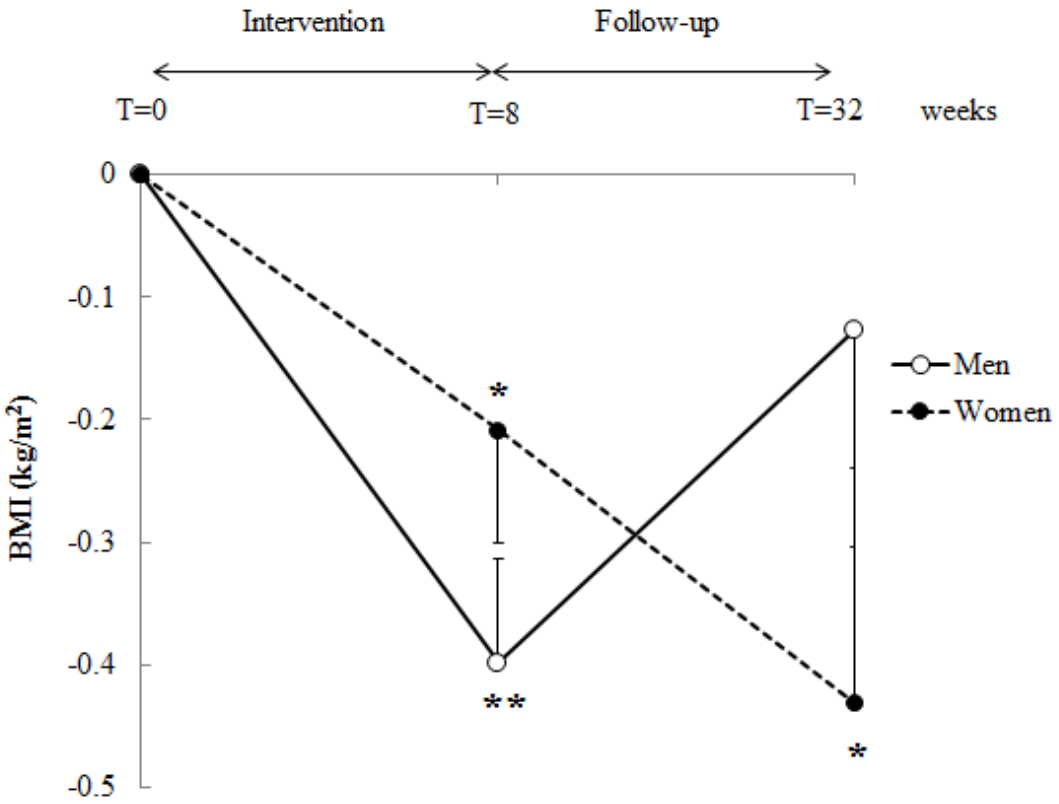

Figure 1. Changes in BMI during the intervention (from baseline to the end of the experimental MedDiet) and 6-month follow-up in men and women. Mean value was different from that at baseline within the same gender, ** P<0.0001, * P=0.03 by MIXED procedures. P for gender by time interaction effect=0.04.

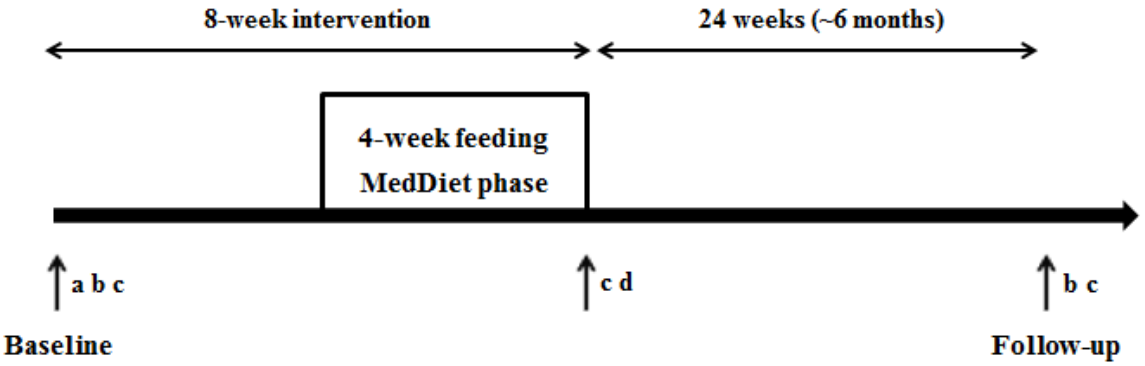

Figure S.1. Study design. (a) Information about the recommendations of Canada's Food Guide and personalized recommendations to follow these dietary principles were provided to participants. (b) Nutrient and dietary intakes were assessed. (c) Anthropometric measurements were performed. (d) A booklet including all Mediterranean diet (MedDiet) recipes of the 7-day cyclic menu and a lecture on the MedDiet were offered to participants.

Table S.1: The 7-day cyclic menu used during the controlled Mediterranean diet intervention

Meals	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday	Sunday
Breakfast	MÜSLIX Cereal	Whole grain bread	Bran muffin	MÜSLIX Cereal	Bran muffin with raisins	Whole grain bread	Whole grain bread
	Plain Yogurt	Cottage cheese	Plain Yogurt	Plain Yogurt	Plain Yogurt	Cottage cheese	Omelet
	Cantaloupe	Oranges	Strawberries and mango	Dates	Raspberries and blueberries	Honeydew melon	Grapefruit
	Almonds	Almonds	Pistachios	Almonds		Marmalade and margarine	Jalsberg cheese
Lunch	Shrimp rice	Moussaka	Lemon chicken	Cod with grilled tomatoes	Frittata	White Kidney bean soup	Mushroom and Almond chicken
	Greek Salad	Green salad and vinaigrette	Leek soup	Asparagus and orange salad	Couscous salad	Quinoa salad	Artichoke salad
		Wheat Baguette	Peppers, zucchini and brown rice	Vegetable couscous	Vegetable soup and bread	Whole grain bread	Green beans and brown rice
	Red grapes	Dried Fruits	Fruit Salad	Almond cake	Green grapes	Fruit Salad	Honeydew melon
Dinner	Chicken cacciatore and broccoli	Trout and green beans	Greek Tilapia grilled peppers	Pasta Primavera	Tuna pasta	Chicken with vegetables	Chick pea and vegetable couscous
	Butternut squash soup	Vegetable salad	Spinach salad	White Kidney bean salad	Broccoli and cauliflower salad	Cheese and nut salad	Tomato and pepper soup
	Potatoes	Mushroom Risotto	Bulgur				
	Fruit Salad	Honeydew melon	Green grapes	Oranges	Dates	Cantaloupe	Baklava
Red wine with each dinner of the week							