
Research Article

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Health coaching experience in Minerbio (Italy): Global impact on weight, BMI, waist circumference and blood pressure

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Abstract

In the last decade, growing evidence have shown the cardioprotective role of the Mediterranean diet. Health coaching has a pivotal role in primary care, helping patients to self-education concerning diet and physical activity.

Our study is a one-year health coaching pilot study with the aim to instruct patients' lifestyle to a Mediterranean diet and exercises to reduce cardiovascular disease risks, diabetes, and metabolic diseases risks.

Introduction

Research has consistently shown that the Mediterranean diet is effective in reducing the risk of cardiovascular diseases and overall mortality [1,2]. Despite this evidence, Mediterranean diet underutilization is common. A study of nearly 26,000 women found that those who followed this Mediterranean diet had 25% less risk of developing cardiovascular disease over 12 years [3]. The study examined a range of underlying mechanisms that might account for this reduction, and found that changes in inflammation, blood glucose concentration, and body mass index were the biggest drivers. The PREDIMED study, a primary prevention trial including thousands of people with diabetes or other risk factors for heart disease, found that a Mediterranean diet supplemented with extra virgin olive oil or nuts and without any fat and calorie restrictions reduced the rates of death from stroke by around 30%. Risk of type 2 diabetes was also reduced in the PREDIMED trial [4].

Additionally, short-term results from a multi-component program indicate that the progressive epidemic of childhood obesity may be effectively modified by a school-based intensive intervention. Data from this study, proposed as a playful activity to children in a school district, indicate that the intervention was able to modify the time trend of progressive increase in BMI which is commonly observed in childhood [5].

Moreover, lifestyle changes aiming at healthy diet and routine physical activity are needed for the prevention and treatment of type 2 diabetes, as well as in other metabolic disorders. Marchesini et al. followed 100 subjects with diabetes or obesity enrolled in a dance program and showed that dance may be an effective strategy to implement physical activity in motivated subjects with type 2 diabetes or obesity [6].

Several studies have demonstrated that a major portion of all chronic diseases could be prevented by diet, physical activity, and weight control. Health coaching has a pivotal role in pri-

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mary care, helping patients to self-education. “Health coaching can be defined as helping patients gain the knowledge, skills, tools and confidence to become active participants in their care so that they can reach their self-identified health goals” [7]. A study from the University of Michigan enrolling 82 subjects, showed that a 12-week program consisting of telephone coaching with in-person visits at the beginning and end of the program targeting improvements in diet, physical activity, and/or sleep habits is a cost-effective method for improving the health of patient populations [8].

Rationale

We designed a year health coaching program which consists in dedicated physicians (called coaches) who strictly follow patients in their diet and lifestyle (physical exercises, alcohol and smoking behavior) over a one-year period. The overall goal of the program is to instruct patients’ lifestyle to a Mediterranean diet and exercises to reduce cardiovascular disease risks, diabetes, and metabolic diseases’ risks.

Material and methods

Study population

Patients’ characteristics are summarized in (Table 1).

The sample consists of 62 subjects, 21 male (33.9%) and 41 female (66.1%), with an average age of 52 years (19–77); the average height of the patients was 169 centimeters (150–185). Mean weight was 75.4 Kg (43-112), with a BMI of 26.2 Kg/m² (17.2-38.6), a waist circumference of 93.4 cm (61-130) and mean blood pressure values of 120/80 mmHg at the enrollment visit. Patients were classified in relation to BMI (Table 1). Twenty-seven patients had normal weight (45.8%), 18 were overweight (30.5%) and 13 obese (22%). Of the 13 obese patients, 5 were classified as class II obesity. In relation to the abdominal circumference guidelines, 45% of patients show high risk values (13 males and 15 females).

Patients were followed by a dedicated physician termed COACH. A pedometer was given to each patient and an application phone kit with instructions related to the Mediterranean diet and lifestyle such as alcohol and smoking consumption were also dedicated to each patient.

Patients received 2 outpatients assesment (time 0 and month 12) during the one-year study with arteriosus pressure, weight and waist circumference determination. During the first visit comorbidities and medications were also registered. Each week patients received one contact from the coach (by web or phone). Weight, exercises done during the week, pedometer evaluation, behavior were registered during these visits from the coach.

Table 1: Baseline characteristics of the study population (# 62).

Sex	
Male	21 (33.87%)
Female	41 (66.13%)
Age (N.61), mean (range)	48 (43–58.5) years
Height (N.59), mean (range)	169 (150–185) cm
Weight (N.62), means (range)	75.4 (43–112) kg
BMI (N.59), mean (range)*	26.23 (17.22–38.57) Kg/m ²
underweight n (%)	1 (1.7%)
normoweight, n (%)	27 (45.8%)
overweight, n (%)	18 (30.5%)
obese n (%)	13 (22%)
class I	8 (61.5%)
class II	5 (38.5%)
Waist circumference (N.60), mean (range)	93.4 (61-130) cm
male	105 (91–130) cm
female	86.7 (61–114) cm
Waist circumference and risk**	
male	
normal	38.1% (95.4 cm)
high risk	61.9% (111 cm)
female	
normal	62.5% (78.1 cm)
high risk	37.5% (101.1 cm)
Blood pressure	120/80 mmHg
≤120/80, n (%)	34 (59.6%)
120-130/80, n (%)	15 (26.3%)
>130/80, n (%)	8 (14%)

* BMI: underweight if <18.5, normal weight if 18.5–24.9, overweight if 25–29.9, obesity if > 30 (class I obesity if 30–34.9, class II obesity > 35; ** the Guidelines define waist circumference values > 102 cm for males, > 88 cm for females at high risk.

Statistics

Samples followed a normal distribution. Categorical variables are reported as number (n) e percentage (%), while continuous variables such as mean and range (minimum value – maximum value). For the comparison between continuous variables the Paired t-test was used. The statistical analysis was conducted with StatView for Windows. Values of P < 0.05 were statistically significant.

Results

100% of the patients concluded the study. The characteristics of the entire population at the end of the program are summarized in Table 2. The average weight was 72.8 Kg (41–110), with a BMI of 25.2 Kg/m² (16.4–37.8), the waist circumference was 89 (60–127), while the mean blood pressure values were 118/74 mmHg.

Patients were classified in relation to BMI (Table 2). 35 patients had normal weight at the end of the program (59.3%), 12 were overweight (20.3%) and 10 obese (16.9%) of which 3 within class II obesity.

27.9% of patients show high values risk according to the abdominal circumference guidelines (4 males and 13 females).

(Table 3) summarizes the global effects of the coaching program on the entire population: reduction in weight, BMI and waist circumference were statistically significant at the end of the course compared to initial values. Blood pressure is also reduced, especially diastolic.

As shown in (Figure 1), there was an increase in normal weight patients (from 46% to 59%), with a reduction in overweight patients (from 30% to 20%) but above all with a reduction in the share of obese people (from 22% to 17%).

As shown in (Figure 2), there is a reduction in waist circumference, regarding "high risk" values, especially in the male population, from 62% at the beginning of the program to 19% at the end.

(Figure 3) shows an increase in patients with normal blood pressure (from 60% to 69%) with a significant reduction in patients with high blood pressure (from 14% to 7%).

Table 2: Characteristics of the study population at month 12 (# 62).

Weight (N.62), mean (range)	72.8 (41–110) kg
BMI (N.59), mean (range)*	25.21 (16.42–37.83) Kg/m ²
underweight, n (%)	2 (3.4%)
Normo weight, n (%)	35 (59.3%)
overweight, n (%)	12 (20.3%)
obese, n (%)	10 (16.9%)
class I	7 (70%)
Class II	3 (30%)
Waist circumference (N.61), mean (range)	89.0 (60-127) cm
Male (N.21), mean (range)	100.4 (88–127) cm
Female (N.40), mean (range)	83 (60–109) cm
Waist circumference and risk **	
male (N.21)	
normal (N.17)	81% (96.8 cm)
High risk (N.4)	19% (115.5 cm)
Female (N.40)	
Normal (N.27)	67.5% (76.2 cm)
High risk (N.13)	32.5% (97.3 cm)
Blood pressure	118/74 mmHg
≤120/80, n (%)	40 (69.0%)
120-130/80, n (%)	14 (24.1%)
>130/80, n (%)	4 (6.9%)

* BMI: underweight if <18.5, normal weight if 18.5–24.9, overweight if 25–29.9, obesity if > 30 (class I obesity if 30–34.9, class II obesity > 35; ** the Guidelines define waist circumference values > 102 cm for males, > 88 cm for females at high risk.

Table 3: Coach program global modifications.

Characteristic	Time 0	12 months	Variation	P
Weight, kg, mean (range)	75.4 (43–112)	72.8 (41–110) kg	-3.3%	0.0006
BMI, Kg/m ² , mean (range)*	26.23 (17.22–38.57)	25.21 (16.42–37.83) Kg/m ²	-3.4%	0.0004
Waist circumference, cm, mean (range)	93.4 (61-130)	89.0 (60-127) cm	-4.1%	<0.0001
Arterious pressure	120/80 mmHg	118/74 mmHg		
sistolic, mmHg, mean (range)	120.1 (80–149)	117.8 (80–143)	-1.5%	0.056
diastolic, mmHg, mean (range)	76.10 (46–94)	73.7 (48–96)	-2.4%	0.019

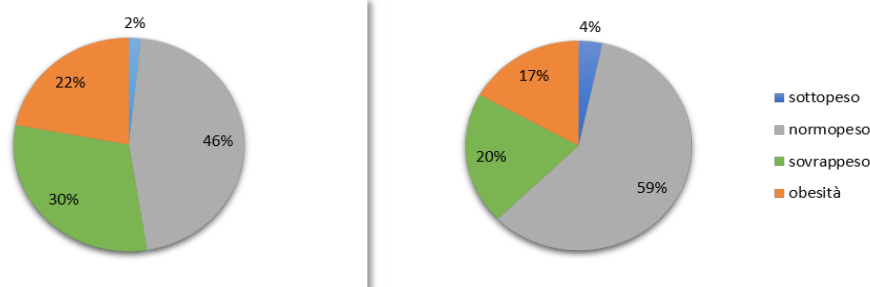


Figure 1: BMI variations at time 0 (left) and month 12 (right).

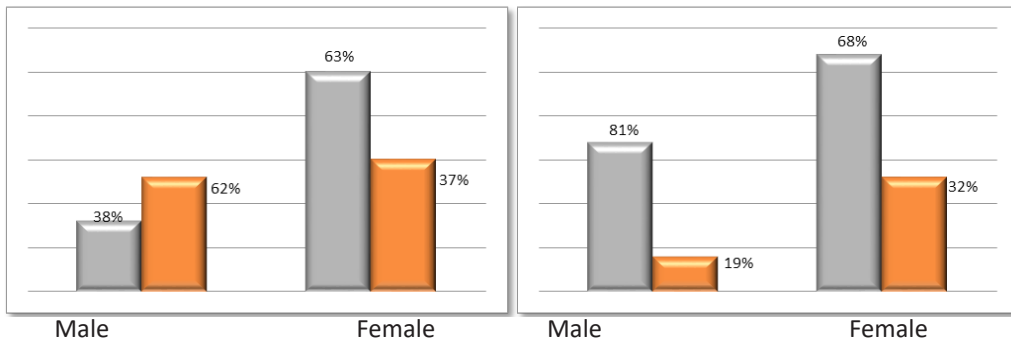


Figure 2: Waist circumference waist circumference at time 0 (left) and month 12 (right). Normal value in green and the high value in red.

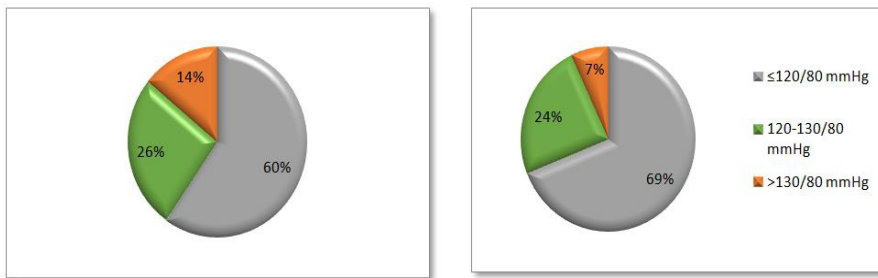


Figure 3: Blood pressure at time 0 (left) and month 12 (right).

Conclusion

100% of the patients concluded the study. In this pilot study, 80% of the patients registered a significant ($p < 0.05$) reduction of the weight, 78% increased physical activity and 90% reported a better behavior measured with quality-of-life scores. Half of the patients stopped smoking and alcohol consumption and the remaining decreased number of daily cigarettes and alcohol consumption.

30% of the subject enrolled in the program were older than 70 years and didn't experience any femoral fracture over the one-year program.

Overall, all the patients experienced a significant decrease of the waist circumference and a trend to a reduction in the blood pressure which have been shown to correlate with decrease in cardiovascular and metabolic risk.

This preliminary study shows that a dedicated health program with specialized physician (coach) who follow strictly patients' diet and physical activity is a tool of primary prevention with low costs and high effectiveness over the time.

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