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Original article

Effect of specific educational program on dietary change and weight loss in breast-cancer survivors

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SUMMARY

Aims: Consumption of Western foods with high dietary glycemic load is associated with breast cancer development, whereas adherence to Mediterranean diet has been linked to a reduced risk. Changing lifestyle can decrease risk of recurrences and mortality. Thus decreasing the weight, improving the diet and promoting lifestyle are among of the most important issues of public health. We evaluated the effects of a specific educational intervention conducted by dietitians, nutritionists physicians, oncologist and sport physician to promote lifestyle in breast cancer survivors.

Methods: We recruited 100 pts in breast cancer follow up. The intervention program consisted of four meetings once a week including lectures, training sessions and workshops lasting overall a month. Dietary recommendations were provided on the basis of WCRF/AICR guidelines and were modelled on Mediterranean diet. Sport physician recommended adapted physical activity, based on clinical experiences and scientific evidences.

Results: Significantly decrease of BMI and waist circumference was observed after 2 and 6 months. Adherence to Mediterranean diet was significantly improved, both in heightening typical Mediterranean foods, both in decreasing consumption of non typical foods. At baseline 63% of women was inactive, 37% was mild active and 0% active, while at the end inactive patients felt by half (30%) and mild active women almost doubled (67%).

Conclusions: We found this dietary intervention effective in reducing BMI and waist circumference, and enhancing healthy lifestyle in BC survivors. It has surely contributed to achieve these results besides the change in diet quality, mostly a marked reduction in sedentary habits.

1. Introduction

Breast cancer (BC) is the most common female cancer in Western Europe and North America; the risk of recurrences following treatment for early-stage disease is remarkable and it is influenced by many patient and tumor characteristics [1].

Increased incidence and mortality for breast cancer are associated with obesity. It negatively impacts disease-free survival, local recurrences and death if it is ascertained at diagnosis both during and after treatment [2–8].

Changing lifestyle can result in reduced risk of breast cancer recurrences and associated mortality [9–11].

Metabolic alterations such as elevated insulin and glucose serum level, insulin resistance and metabolic syndrome has been associated with also BC recurrences and worse outcomes for multifactorial reasons [12–15]. Besides obesity in cancer survivors seems to increase risk of chronic diseases such as heart failure, coronary artery disease, hypothyroidism, osteoporosis and second primary malignancies [16,17].

Thus decreasing the weight, improving the diet and promoting active lifestyle are among of the most important issues of public health actually [18,19]. Important scientific societies and researchers have stated the need to implement tools and policies required to reduce the impact of obesity on cancer risk and outcomes [3,20,33].

A number of dietary intervention trials have been conducted in breast cancer survivors to improve health outcomes and to promote changes in body weight [21–30].

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It prompts the question about which approaches are more effective, given the reduced adherence to healthy eating habits over time and the lack of physical activity in cancer survivors [20,31–33].

In this study we evaluated the effects of a specific educational interventions based on group meetings and individualized follow-up aimed to promote health in breast cancer survivors. It was based on Mediterranean diet pattern and it included promotion of physical exercise.

2. Subjects and methods

Data were derived from a dietary intervention study conducted in a sample of 100 women previously treated for non advanced breast cancer. Patients were recruited in a single centre, the Department of Clinical Nutrition of Hospital *Città della Salute* of Turin from September 2009 to March 2010 by physicians, surgeons and nurses involved in breast cancer follow up. Women have participated in the program on a voluntary basis; all of them completed the study. Exclusion criteria were: vital organ involvement (renal and/or heart failure, cirrhosis) and metastases, disease and age >70 y.

This study received ethic clearance by the Department of Medical Sciences and by the Breast Unit of the oncology network.

2.1. Patient characteristics

Age, anthropometrics data, sedentary habits before intervention, tumour and chemotherapy characteristics are summarized in Table 1. In Table 2 are summarized the blood test at the baseline.

Mean age at inclusion was 55.5 years (SD 9.3). Approximately one third was overweight (35%) and about one third was obese (35%). Mean BMI at inclusion was 28.7 and mean body weight differs significantly with weight before disease (71.8 kg vs 67.4, $p < 0.001$). Mean waist circumference at inclusion was above the cut-off used in diagnostic criteria for metabolic syndrome (95.3 cm, SD 13.1). Majority of patients was sedentary with insignificant time spent in physical activity (mean hour nil, SD 0.8) at baseline.

The patients had already been subjected to surgical treatment in the previous year and they had completed any chemotherapy treatments from 6 months, 76% received hormonal therapy at the baseline.

2.1.1. Intervention program

The intervention program consisted of four meetings once a week of two hours including lectures, training sessions and workshops lasting overall a month (Table 3).

The recruitment of patients and the organization of the course was done by a nurse leader who is in charge of all the practical management of the course. It was not mandatory, but it was offered to all patients referred to the Breast Unit; those who could not attend they couldn't come for transport or labor problems.

The groups were composed of about 30 people and team members did not change during the entire duration of the course. In the first lesson the team leader explained the goal of the intervention and planning meetings. The oncologist illustrated the scientific rationale of the correlation between diet and cancer and explained the evidence on the importance of a healthy lifestyle for cancer survivors.

In the second lesson the nutritionist and dietitian explained that the main goal of the dietary advices is to promote reduction in energy intake. They provided information about the dietary changes, the correct choice of food pairings, portion control, the caloric density of the food and how to manage the feeling of hunger. They illustrated how to understand nutritional labels, select seasonal and traditional foods, increase use and variety of typical Mediterranean foods, and avoid or reduce non-Mediterranean foods (soft drinks, red meats, refined carbohydrates). Dietary recommendations were provided on the basis of WCRF/AICR guidelines and were modelled on Mediterranean diet. Information about food composition and contents in microelements were also given, focusing especially on antioxidants.

The third lesson is entirely conducted by the sports physician who talked about the benefits of physical activity, the timing and type of physical exercise that should be done and how to maintain it over time. Sport physician illustrated also harmful consequences of a sedentary lifestyle, based on clinical experiences and scientific evidences. In summary, our team has recommended at least 3 h per week of brisk physical activity, stressing two essential criteria: gradualness and constancy.

The last lesson was devoted to changes in the food strategies within the family, breaks and resumption of diet and how to behave during the lunches and social occasions.

Table 1
The overall content of the educational intervention.

Lesson	Topic
1	Identifying goals of course, overview lifestyle and cancer
2	Overview nutritional values, how to reduce energy density of diet
3	Physical activity, scientific update about exercise
4	Refine meal plan, portion control, interruptions and holidays

Table 2
Blood test at baseline of study population. All values are expressed as mean ± SD.

n. 100	Mean ± SD at the baseline
Serum glucose	5.28 ± 0.05
Total cholesterol	5.4 ± 0.1
LDL-c	3.3 ± 0.1
HDL-c	0.5 ± 0.05
Triglycerides	1.1 ± 0.06

Abbreviations: LDL-low-density lipoprotein cholesterol, HDL-c high-density cholesterol.

Table 3
Characteristics of study population. All values are expressed as mean ± SD.

n. 100	Mean ± SD at the baseline
Age years	55.5 ± 9.3
Stage (%)	
0 (TisN0)	15
I (T1N0)	32
II (T1N1, T2N*, T3N0)	40
III (T3N*)	13
Chemotherapy regimes (%)	
No chemotherapy	66
AC or EC	18
CMF	6
FEC	20
Radiation therapy % Yes/No	99.4/0.6%
Body Weight Kg	71.8 ± 15
Weight before disease kg	67.4 ± 12.4 $p < 0.001$
BMI	28.7 ± 5.9
BMI 25–29.9, n, %	35-35%
BMI 30–40, n, %	30-30%
BMI >40, n, %	5-5%
BMI before disease	26.5 ± 4.8
Waist circumference cm	95.3 ± 13.1
Endocrine therapy n %	YES 76%
	NO 24%
Phisical activity/hours per week	0.4 ± 0.8

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