International Journal of Food Sciences and Nutrition

ISSN: 0963-7486 (Print) 1465-3478 (Online) Journal homepage: http://www.tandfonline.com/loi/iijf20

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To cite this article: Marilena Vitale, Marta A. Bianchi, Valeria Rapetti, Josè M. Pepe, Angela Giacco, Rosalba Giacco & Gabriele Riccardi (2018) A nutritional intervention programme at a worksite canteen to promote a healthful lifestyle inspired by the traditional Mediterranean diet, International Journal of Food Sciences and Nutrition, 69:1, 117-124, DOI: 10.1080/09637486.2017.1336515

To link to this article: https://doi.org/10.1080/09637486.2017.1336515

INTERNATIONAL JOURNAL OF FOOD SCIENCES AND NUTRITION, 2018
VOL. 69, NO. 1, 117–124
https://doi.org/10.1080/09637486.2017.1336515

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STUDIES IN HUMANS

A nutritional intervention programme at a worksite canteen to promote a healthful lifestyle inspired by the traditional Mediterranean diet

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ABSTRACT

This study investigates the effectiveness and long-term impact on the composition of the habitual diet of a nutritional intervention programme – undertaken through panels, totems, and table mats or handout leaflets – based on the promotion at a worksite canteen of healthy food-choices resembling the traditional Mediterranean diet. A significantly higher choice of dishes based on wholegrain cereals, legumes, white meat and fish, and a lower choice of dishes based on refined cereals, red and processed meat, eggs and cheese was observed at the end of the intervention and after six months and three years of follow-ups. A significantly better adherence to the nutritional recommendations for saturated-fat, cholesterol, sugars and fibre was observed. This study reveals that a nutritional intervention programme promoting the traditional Mediterranean diet and utilising a minimally intensive approach is feasible and effective to modify in a beneficial way the dietary habits of a working population and keep these changes in the long-term.

ARTICLE HISTORY
Received 18 April 2017
Revised 23 May 2017
Accepted 26 May 2017

KEYWORDS
Mediterranean diet in workplaces; nutritional education programme; eating habits; healthy diet

Introduction

The traditional Mediterranean diet is a dietary pattern well known for its beneficial health effects. It has long been associated with a reduced risk of major chronic diseases, a better control of cardiometabolic risk factors, and a variety of other positive health outcomes. More in detail, data from intervention and observational studies have shown that a greater adherence to the traditional Mediterranean diet is notably associated with a lower incidence of cardiovascular diseases but also with a reduced risk of metabolic diseases, obesity, type 2 diabetes mellitus, cancer, and total mortality (Buckland et al. 2008; Sofi et al. 2010; Grosso et al. 2014a, 2014b; Schwingshackl & Hoffmann 2014). It is also associated with a reduced risk of Parkinson and Alzheimer's diseases, and mild cognitive impairment (Alcalay et al. 2012; Singh et al. 2014). In addition, there is strong evidence, also from intervention trials, of the contribution to cardiovascular disease prevention achieved by the adherence to the Mediterranean diet (Estruch et al. 2013; Martinez-Gonzalez & Bes-Rastrollo 2014; Grosso et al. 2015).

The traditional Mediterranean diet, described by Ancel Keys et al. (1986), has been utilised in Mediterranean countries since many years. It is characterised by a high intake of plant foods, like fruits, vegetables, nuts and legumes; a high intake of unrefined whole grains cereals, and fish; a moderate consumption of dairy products, and eggs; a low intake of meat, – particularly red and processed meat, refined cereals, and sweets; a frequent but moderate intake of wine (especially red wine) with meals; and the choice of olive oil, as the main source of fat (Willett et al. 1995; Trichopoulou & Lagiou 1997; Trichopoulou 2001).

Compared with other dietary patterns more frequent among western populations, the traditional Mediterranean diet tends to be: (1) higher in fibre and starch and lower in added sugar, (2) higher in monounsaturated and polyunsaturated fatty acids, and lower in saturated fat, and (3) rich in protein from vegetable sources.

Despite the growing scientific evidence on the favourable health effects of the Mediterranean diet, data from observational studies report a gradual shift

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Supplemental data for this article can be accessed here.

This article was originally published with errors. This version has been corrected. Please see Corrigendum (https://doi.org/10.1080/09637486.2017.1346897).

from a "traditional Mediterranean diet" to a "Western type of diet" in all Mediterranean countries, characterised by a high consumption of refined grains, sugars, red and processed meats. This shift has been also observed in the Italian population, as reported recently by nutritional surveys (Grosso et al. 2013; Bonaccio et al. 2012, 2014).

Against this background, it is of interest to identify effective intervention methodologies that will enable individuals to successfully adopt the healthful Mediterranean dietary pattern within the framework of a global strategy for the prevention of major chronic non-communicable diseases.

However, it is important to underline that changing dietary habits at population levels is not an easy task, and effective lifestyle interventions require usually an intensive approach; therefore, they are very expensive in terms of economic resources and operator's time. Nowadays, workplaces could be considered a suitable setting to improve eating habits for several reasons: the time people spend at work (most adults spend approximately 60% of their waking hours at work), easy access to population groups that may be difficult to engage in different locations, and the opportunity to use peer network and employer incentives.

Therefore, the aims of this study were to evaluate the effectiveness and long-term impact on the composition of the habitual diet of a nutritional intervention programme based on the promotion at a worksite canteen of healthy food choices resembling the traditional Mediterranean diet.

Methods

Participants and evaluation of the eating habits

The nutritional intervention programme was performed at the worksite canteens of Barilla G & R. F.lli S.p.A., a food company with premises in Pedrignano (Parma, Italy).

Information on the study was sent to all company employees through the administration's profiling database and by displaying some specific leaflets in the worksite.

All the employees with access to the worksite canteens were invited to participate freely. The only exclusion criteria were being pregnant or having any medical condition that could influence nutrient absorption or restrict the intake of foods, i.e. inflammatory bowel disease (Crohn's disease and ulcerative colitis), coeliac disease, chronic pancreatitis, diabetes and cancer.

The study took place from May to September 2011. The industry managers, the local workers' union and the canteen contractor previously agreed to collaborate and approved the study design. Of the 1500 employees consuming regularly their main meal at the two worksite canteens, 738 employees, including both blue-collar and office workers, participated in the evaluation of the nutritional intervention programme.

At baseline (time 0), participants were invited to fill-in three consecutive self-administered 24-h recall questionnaires to evaluate their dietary habits. The 24-h recall aims to provide a complete record of all food and drinks consumed on the previous day between midnight and midnight. For each item of food or drink, participants were asked to provide additional details, in particular (1) the time at which the food or drink was consumed, (2) a full description of the food or drink, including brand name where available, (3) any foods likely to be eaten in combination e.g. milk in coffee, (4) recipes and other combinations of foods e.g. sandwiches, and (5) the quantity consumed, based on household measures, photographs of different portion sizes of foods or weights.

To evaluate the effects of the dietary education programme on participants' eating habits, the same three consecutive self-administered 24-h recall questionnaires were used at the end of the nutritional intervention programme (after three months – time 1) and after a follow-up period of six months (time 2). The Si.Mediterraneo software – containing the Italian Food Composition Tables (FCT) (Salvini et al. 1998; Carnovale & Marletta 2000) – was used to calculate daily energy and nutrient intake. All employees enrolled in the nutritional intervention programme completed the 24-h recall questionnaires.

In addition to the 24-h recall questionnaires, all dishes consumed by each of the employees in the worksite canteens during working-days (Monday to Friday) were recorded by the canteens' staff at times 0, 1 and 2. A specific software developed by us was used to convert all dishes into food consumption e.g. bread, pasta, legumes, vegetables, etc.

In order to evaluate the long-term impact of the intervention, this evaluation was repeated with the same procedure three years after the end of the intervention.

Nutritional intervention program

The nutritional intervention programme had the goal of improving the quality of the habitual diet through the implementation of the Mediterranean dietary pattern as a strategy for prevention of chronic disease. It was designed (a) to provide advice on healthy nutrition to the whole worksite population through panels,

totems, tablemats and handout leaflets exhibited in the canteens, and (b) to make available a larger variety of healthy foods typical of the Mediterranean tradition and promote their choice.

Information on the features of a healthy diet was provided by panels, totems, tablemats and handout leaflets which provided advice on the following six main topics relevant for the Mediterranean dietary pattern: (1) how to improve the consumption of wholegrain cereals; (2) the importance of fruit and vegetables consumption in the habitual diet; (3) the detrimental effects of excessive red and processed meat for health; (4) how to improve the consumption of fish and legumes, two main good sources of protein in the diet; (5) the importance of limiting the consumption of soft drinks and alcoholic beverages; and (6) extra-virgin olive oil as the main dressing fat.

The advice was made more incisive by focussing each week on one topic: panels, totems, tablemats and handout leaflets exhibited in the canteens were therefore changed weekly. In addition, during the nutritional intervention programme, weekly newsletters and monthly open-access seminars on each main topics were performed.

The second important step of this nutritional intervention programme was the availability and promotion of healthy food choices. To this aim, nutritional training sessions were organised with the canteens' staff involved in food preparation. During the nutritional training, practical tools were identified for improving the nutritional quality of dishes, reducing energy intakes and changing food composition, in particular by increasing their fibre content and reducing saturated fat. The two 2-h nutritional training sessions were led by an expert nutritionist with specific experience in food preparation. The nutritionist addressed a variety of topics relevant for the Mediterranean diet, including nutritional recommendations for healthy eating (Tuomilehto et al. 2001; The Diabetes Prevention Program Research Group 2002; Perk et al. 2012; Stone et al. 2014; Italian Society on Human Nutrition 2014), portion control, dietary variety, and detailed advice on how to improve the recipes of the dishes habitually served in the canteens. In this specific context, a list of all recipes was carefully analysed by a team of nutritionists, and specific advice was given on how to improve their healthfulness. In addition, new recipes of dishes resembling the traditional Mediterranean diet were included. Daily weight control of randomly selected dishes, and the supervision of food preparation by a nutritionist, ensured that the Mediterranean menus were in line with the guidelines throughout the duration of the intervention.

In order to encourage the consumption of more healthful dishes, the nutrient composition of each food was provided on the menu (e.g. energy, fibre and saturated fatty acids content) and a specific logo representing the Mediterranean pyramid was used to identify the recommended ones. The dietary reference intakes and the specific features of the Mediterranean diet were used to define "healthy" dishes (Tuomilehto et al. 2001; The Diabetes Prevention Program Research Group 2002; Perk et al. 2012; Stone et al. 2014; Italian Society on Human Nutrition 2014). Table S1 summarises these aspects.

All materials and nutritional advice were developed by staff of the master course on human nutrition of "Federico II" University of Naples, Italy.

Outcomes

Based on the goal of this nutritional intervention programme, the primary outcome was the change in the nutritional quality of the habitual diet in the employees who had their meals at the worksite canteens. As listed above, the evaluation of the eating habits was made using two different approaches: (1) the 24-h recall questionnaire – which included the meals consumed in the canteens and at home in volunteers available to provide this information, and (2) the recording of all dishes consumed by the employees in the worksite canteens during working-days, which included only the meals consumed in the canteens.

Statistical analysis

Data are expressed as mean ± standard deviation (M ± SD) or proportion (%), as appropriate. Data from 24-h recalls reporting an energy intake below 800 Kcal/day or exceeding 4000 Kcal/day were excluded from the analysis.

The percentage of dishes consumed for lunch in the company canteens by the employees was calculated as:

$$[(\text{number of dishes}/\text{number of total trays recorded}) * 100].$$

Comparisons between proportions of dishes consumed by the employees in the canteens at different times were performed by the χ^2 test. The same analysis was used for the evaluation of the proportion of employees not meeting the recommended intakes at different times. For organisational reasons, 24-h recalls were not repeated at three years of follow-up.

A $p < .05$ (two tails) was considered statistically significant. All statistical evaluations were performed according to standard methods using the Statistical

Table 1. Nutrient composition of the diet and adherence to the nutritional recommendations of the employees: baseline data (time 0).

	Total population (*N* 738)	Recommendations (LARN[24])	Not adherence (%)
Energy (Kcal/day)	2133 ± 695	–	–
Proteins (% of total energy)	15.6 ± 3.8	15–20%	17.7
Fat (% of total energy)	31.8 ± 8.1	<35%	36.3
SFA (% of total energy)	10.2 ± 3.4	<10%	46.6
Cholesterol (mg/day)	269 ± 190	<300 mg	33.0
Carbohydrates (% of total energy)	52.7 ± 9.5	45–60%	40.4
Sugars (% of total energy)	17.0 ± 6.6	<15%	60.2
Fiber (g/1000 Kcal/day)	10.4 ± 4.3	12.6–16.7 g/1000 Kcal	83.5
			M ± SD and %

SFA: saturated fatty acids.

Package for Social Sciences software version 20.0 (SPSS/PC; SPSS, Chicago, IL, USA).

Results

A total of 738 employees with mean age of 39.4 ± 4.6 years participated in the evaluation of the nutritional intervention programme. Of these, 362 were plant workers and 376 office workers. As expected, a significant difference was observed in the percentage of male and female among plant workers (68.7% vs 31.3% respectively, $p < .05$).

The energy and nutrient composition of the habitual diet is given in Table 1, along with the nutritional recommendations for a healthy diet of the Italian Society on Human Nutrition (SINU) (2014) and the proportion of the employees not meeting the recommended intake. At baseline, the least attended recommendation was the one on fibre intake, with 83.5% of the employees not meeting the recommended intake, followed by sugars and saturated fat intake with 60.2% and 46.6% of the employees not meeting the recommended intakes, respectively. On the contrary, the adherence to the nutritional recommendations was satisfactory for proteins and fair for fat and carbohydrates (Table 1). Non-significant differences in the adherence to the nutritional recommendations were observed between male and female, and plant and office workers (data not shown).

In terms of dishes consumed at lunch in the canteens by all employees, data from trays recorded by the canteen's staff at baseline showed a reasonable consumption of vegetables and fruit (more than one dish of vegetables or fruit per tray recorded), and soft drinks, and many inadequate food choices, such as (1) higher consumption of refined cereals than wholegrain cereals, (2) a low intake of legumes, (3) and a preference for red and processed meat, dairy products and eggs rather than fish (Table 2).

The changes in the proportion of the employees not meeting the recommended intakes as defined by the nutritional recommendations were evaluated at time 1 and time 2 compared to baseline (Figure 1). A significantly better adherence to the nutritional recommendations for saturated fat, cholesterol, sugars and fibre intakes was observed at the end of the nutritional intervention programme (after three months – time 1) and after a follow-up period of six months (time 2) ($p < .05$ vs baseline, χ^2 test). More in detail, the proportion of employees not meeting the recommended intake was (1) for saturated fat, lower by 12.5% and 10.4% at time 1 and time 2, respectively, compared to baseline, (2) for cholesterol, lower by 11.8% and 9.3%, (3) for sugars, lower by 15.9% and 21.3%, (4) and for fibre, higher by 33.6% and 36.0%. Non-significant differences were observed in the proportion of the employees not meeting the recommended intakes for proteins, fat, and carbohydrates.

Figure 2 shows the changes in food choices made by the employees in the canteen at the end of the nutritional intervention programme (after three months – time 1), after a follow-up period of six months (time 2) and after three years from the intervention (time 3). Several meaningful improvements were observed. Compared to baseline (time 0), data

Table 2. Specific dishes consumed at lunch in the company canteen by the employees: baseline data (time 0).

	Time 0	
Total trays recorded (n)	4225	
Main ingredients of dishes	Number of dishes	%[a]
Wholegrain cereals		
Bread	835	19.8
Pasta	401	9.5
Refined cereals		
Bread	2540	60.1
Pasta	2376	56.2
Legumes	427	10.1
Vegetables	2104	49.8
Fresh fruit	3807	90.1
White meat	498	11.8
Red meat	860	20.4
Fish	699	16.5
Eggs, cheese and cold cuts	1739	41.2
Soft drink	189	4.5

[a]Calculated as: (number of dishes/number of total trays recorded) * 100.

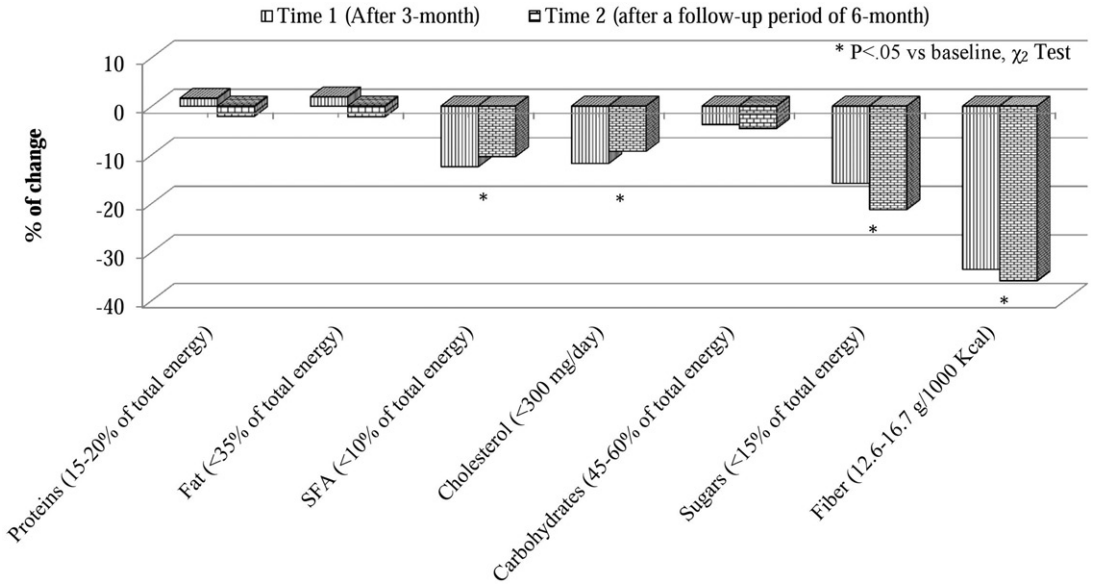

Figure 1. Percentage change §in the proportion of the employees that not meeting the recommended intake as defined by the nutritional recommendations at the end of the nutritional intervention programme (after three-month – time 1) and after a follow-up period of six months (time 2) compared to base line: data from 24-h recalls. §Calculated as: (% of adherence at time 1, 2, or 3)(% of adherence at baseline).

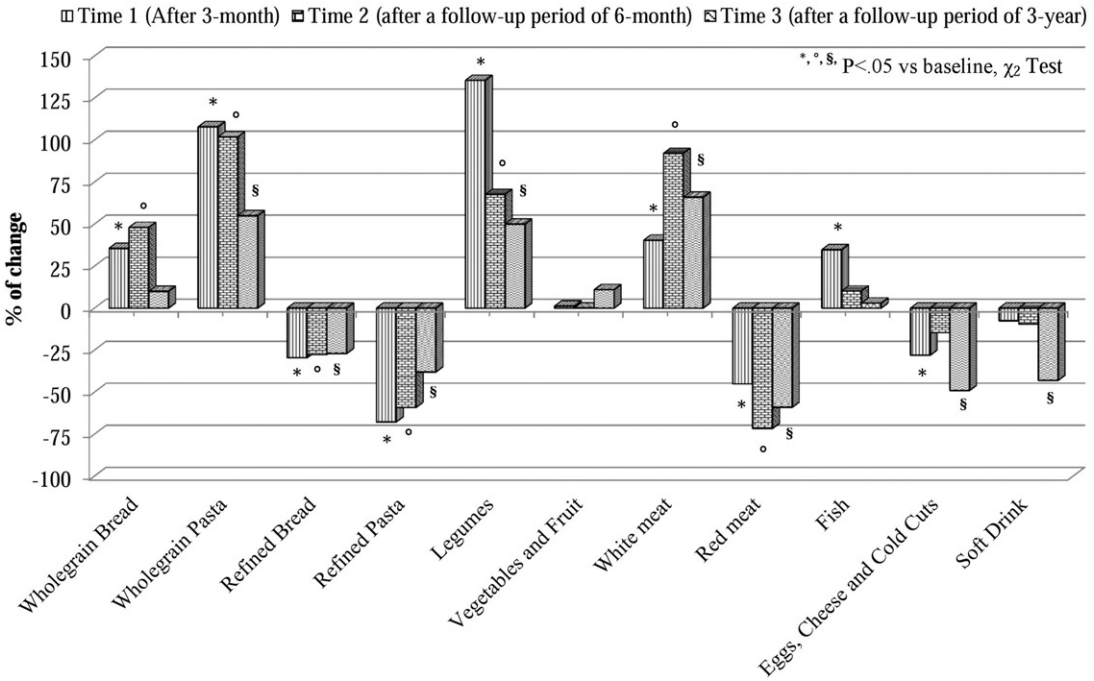

Figure 2. Changes §in the food choices made by the employees in the canteen at the end of the nutritional intervention programme (after three months – time 1), and after a follow-up period of 6 months (time 2) and three-year (time 3): data from trays recorded by the canteen's staff. §Calculated as: [(number of dishes at time 1, 2 or 3 -number of dishes at baseline)/number of dishes at baseline] _ 100.

from trays recorded by the canteen's staff at time 1 showed a significantly higher choice of dishes based on wholegrain bread and pasta, legumes, white meat and fish, and a significantly lower choice of dishes based on refined bread and pasta, red and processed meat, and eggs and cheese ($p < .05$ vs baseline, χ^2 test). Non-significant differences were observed for vegetables and fruit consumption, and soft drink intake. The same findings were observed at time 2 compared to time 0 (Figure 2). In order to evaluate whether the several meaningful improvements were observed also in the long-term, a follow-up after

three years from the end of the nutritional intervention programme (time 3) was performed. In particular, compared to baseline (time 0), data from trays recorded by the canteen's staff at time 3 showed a trend to mitigate the improvement of the most healthful food choices; however, for many foods there was still a significant difference from baseline considering that some healthful behaviours were maintained after a few years from the intervention. More in detail, a significantly higher consumption of dishes based on wholegrain pasta, legumes, vegetables and fruit, and white meat, and a significantly lower intake of dishes based on refined bread and pasta, red and processed meat, and eggs and cheese were observed ($p < .05$ vs baseline, χ^2 test). Non-significant differences were observed for wholegrain bread, fish, and soft drink intakes.

Discussion

This nutritional intervention programme aimed at improving the quality of the habitual diet through the implementation of food choices resembling the traditional Mediterranean dietary pattern. The programme was offered at no cost to all employees of the Barilla company who had access to the worksite canteens. The results show beneficial effects on the quality of the habitual diet and on the adherence to the nutritional recommendations followed by the employees also after a follow-up period of six months. In addition, the results after three-year of follow-up documented the consistency of some of these behaviours also after a long follow-up.

A wealth of data is available in the literature regarding potential strategies to improve the quality of the habitual diet through nutritional intervention programmes promoted at worksites (Muto & Yamauchi 2001; Aldana et al. 2005; Engbers et al. 2006; Méndez-Hernández et al. 2008; Groeneveld et al. 2010; Lowe et al. 2010; Ni Mhurchu et al. 2010; Morgan et al. 2011; Chand et al. 2012; Kirkpatrick et al. 2013). However, the majority of these studies are based on the promotion of specific food choices (e.g. increasing the consumption of vegetables and fruit, or decreasing the intake of red and processed meat, etc.) or nutrient recommendations (e.g. increasing the intake of fibre, or decreasing the intake of saturated fat, etc.). Conversely, our intervention was multifactorial and was based on the promotion of a dietary pattern rather than single foods. For example, data from the North Carolina "Heart Smart" study and Arkansas "Healthy Employee Lifestyle Program" performed in US public sector employers showed an increased consumption of fruit and vegetables among state employees after a wellness programme, with no other users in the overall diet (Stokes et al. 2006). A meta-analyses of nutritional intervention programmes at worksites has shown an improvement in healthy eating habits with increased fruit and vegetable intakes by one-half serving/day (Perez et al. 2009; Geaney et al. 2013). In line with our research, a cross-sectional study conducted in Finland on a population of employees eating lunch at the worksite canteen showed healthier food choices after a programme based on the promotion and availability of multiple healthy dishes; also in this case, the programme aimed at following specific national nutritional recommendations (Raulio et al. 2010).

An important finding of our nutritional intervention is the significantly better adherence to the nutritional recommendations for saturated fat, cholesterol, sugars and fibre intake at the end of the nutritional intervention programme. The results were confirmed after a follow-up period of six months. These findings are of high relevance if we consider that the 24-h recall questionnaire includes all foods and beverages consumed during the day, and not only the dishes consumed at the worksite canteens. Therefore, this study suggests that the nutritional intervention programme in worksite canteens has been able to improve not only food choices at work but also the nutritional quality of the habitual diet in a more comprehensive way.

In addition, it is important to underline that in contrast to the relatively few data available from previous worksite interventions on the adherence to the nutritional recommendations, in this study we have demonstrated changes in food choices that are remarkable, and suggest that worksites have the potential to become effective dissemination points for nutritional education programmes to improve the quality of the habitual diet.

The present study was done as a pilot with the purpose of evaluating the feasibility of an intervention based on the promotion of the Mediterranean diet and measuring its impact on the eating habits of the workers. The positive experience obtained in our study indicates the Mediterranean dietary pattern as a useful model for achieving changes in the eating habits of the employees towards a healthier diet, encourages further activities in this framework.

The main strengths of our study are (1) the low-cost of the nutritional intervention programme in terms of economic funds and operators' time, (2) the use of few, clear, simple and appropriate advices based on the Mediterranean diet, aimed at improving the

quality of the habitual diet and the adherence to nutritional recommendations, (3) the availability of healthy dishes at worksite canteens (healthy dishes were clearly labelled as such), and (4) the evaluation of the effects of this nutritional intervention programme also in the long-term, after three-year of follow-up, which shows how dietary habit changes last over the years.

The limitations of our study were (1) the absence of a control group, and (2) the absence of information on body weight and other cardiovascular risk factors.

In conclusion, this pilot study performed in a workplace shows that a nutritional intervention programme promoting foods that are key components of the traditional Mediterranean Diet and utilising a minimally intensive approach (without group meetings or personalised counselling) is feasible and effective to modify, in a beneficial way, the dietary habits of a working population also in the long-term.

Acknowledgements

The participation of the Barilla employees in the study is gratefully acknowledged.

Disclosure statement

Marta A. Bianchi and Valeria Rapetti are Barilla employees involved in the nutritional activities performed in the company.

Funding

The project was supported by institutional funds from the University of Naples Federico II and Barilla Company.

References

Alcalay RN, Gu Y, Mejia-Santana H, Cote L, Marder KS, Scarmeas N. 2012. The association between Mediterranean diet adherence and Parkinson's disease. Mov Disord. 27:771–774.

Aldana SG, Greenlaw RL, Diehl HA, Salberg A, Merrill RM, Ohmine S. 2005. The effects of a worksite chronic disease prevention program. J Occup Environ Med. 47:558–564.

Bonaccio M, Bonanni AE, Di Castelnuovo A, De Lucia F, Donati MB, de Gaetano G, Iacoviello L. 2012. Low income is associated with poor adherence to a Mediterranean diet and a higher prevalence of obesity: cross-sectional results from the Moli-sani study. BMJ Open. 19:2.

Bonaccio M, Di Castelnuovo A, Bonanni A, Costanzo S, De Lucia F, Persichillo M, Zito F, Donati MB, de Gaetano G, Iacoviello L, et al. 2014. Decline of the Mediterranean diet at a time of economic crisis. Results from the Moli-sani study. Nutr Metab Cardiovasc Dis. 24:853–860.

Buckland G, Bach A, Serra-Majem L. 2008. Obesity and the Mediterranean diet: a systematic review of observational and intervention studies. Obes Rev. 9:582–593.

Carnovale E, Marletta L. editors. 2000. Tabella di composizione degli alimenti. INRAN. Available from: http://nut.entecra.it/646/tabelle_di_composizione_degli_alimenti.html

Chand A, Eyles H, Ni MC. 2012. Availability and accessibility of healthier options and nutrition information at New Zealand fast food restaurants. Appetite. 58:227–233.

Engbers LH, van Poppel MN, Chin A Paw M, van Mechelen W. 2006. The effects of a controlled worksite environmental intervention on determinants of dietary behavior and self-reported fruit, vegetable and fat intake. BMC Public Health. 6:253.

Estruch R, Ros E, Salas-Salvadó J, Covas MI, Corella D, Arós F, Gómez-Gracia E, Ruiz-Gutiérrez V, Fiol M, Lapetra J, et al. 2013. Primary prevention of cardiovascular disease with a Mediterranean diet. N Engl J Med. 368:1279–1290.

Geaney F, Kelly C, Greiner BA, Harrington JM, Perry IJ, Beirne P. 2013. The effectiveness of workplace dietary modification interventions: a systematic review. Prev Med. 57:438–447.

Groeneveld IF, Proper KI, van der Beek AJ, Hildebrandt VH, van Mechelen W. 2010. Lifestyle-focused interventions at the workplace to reduce the risk of cardiovascular disease – a systematic review. Scand J Work Environ Health. 36:202–215.

Grosso G, Marventano S, Giogianni G, Raciti T, Galvano F, Mistretta A. 2013. Mediterranean diet adherence rates in Sicily, southern Italy. Public Health Nutrition. 14:1–9.

Grosso G, Marventano S, Yang J, Micek A, Pajak A, Scalfi L, Galvano F, Kales SN. 2015. A Comprehensive meta-analysis on evidence of Mediterranean diet and cardiovascular disease: are individual components equal? Crit Rev Food Sci Nutr. 57:3218–3232.

Grosso G, Mistretta A, Frigiola A, Gruttadauria S, Biondi A, Basile F, Vitaglione P, D'Orazio N, Galvano F. 2014a. Mediterranean diet and cardiovascular risk factors: a systematic review. Crit Rev Food Sci Nutr. 54:593–610.

Grosso G, Mistretta A, Marventano S, Purrello A, Vitaglione P, Calabrese G, Drago F, Galvano F. 2014b. Beneficial effects of the Mediterranean diet on metabolic syndrome. Curr Pharm Des. 20:5039–5044.

Italian Society on Human Nutrition (SINU). 2014. LARN – Livelli di Assunzione di Riferimento di Nutrienti ed energia per la popolazione italiana. IV Revisione.

Keys A, Menotti A, Karvonen MJ, Aravanis C, Blackburn H, Buzina R, Djordjevic BS, Dontas AS, Fidanza F, Keys MH, et al. 1986. The diet and 15-year death rate in the seven countries study. Am J Epidemiol. 124:903–915.

Kirkpatrick SI, Reedy J, Kahle LL, Harris JL, Ohri-Vachaspati P, Krebs-Smith SM. 2013. Fast-food menu offerings vary in dietary quality, but are consistently poor. Public Health Nutrition. 17:924–931.

Lowe MR, Tappe KA, Butryn ML, Annunziato RA, Coletta MC, Ochner CN, Rolls BJ. 2010. An intervention study targeting energy and nutrient intake in worksite cafeterias. Eating Behav. 11:144–151.

Martinez-Gonzalez MA, Bes-Rastrollo M. 2014. Dietary patterns, Mediterranean diet, and cardiovascular disease. Curr Opin Lipidol. 25:20–26.

Méndez-Hernández P, Flores Y, Siani C, Lamure M, Dosamantes-Carrasco LD, Halley-Castillo E, Huitrón G, Talavera JO, Gallegos-Carrillo K, Salmerón J. 2008. Evaluation of a workplace health program to reduce cornary risk factors. Clin Govenace Int J. 13:95–105.

Morgan PJ, Collins CE, Plotnikoff RC, Cook AT, Berthon B, Mitchell S, Callister R. 2011. Efficacy of a workplace-based weight loss program for overweight male shift workers: The Workplace POWER (Preventing Obesity Without Eating like a Rabbit) randomized controlled trial. Prev Med. 52:317–325.

Muto T, Yamauchi K. 2001. Evaluation of a multicomponent workplace health promotion program conducted in Japan for improving employees' cardiovascular disease risk factors. Prev Med. 33:571–577.

Ni Mhurchu C, Aston LM, Jebb SA. 2010. Effects of worksite health promotion interventions on employee diets: a systematic review. BMC Public Health. 10:62.

Perez AP, Phillips MM, Cornell CE, Mays G, Adams B. 2009. Promoting dietary change among state health employees in Arkansas through a worksite wellness program: the Healthy Employee Lifestyle Program (HELP). Prev Chronic Dis. 6:A123.

Perk J, de Backer G, Gohlke H, Graham I, Reiner Z, Verschuren M, Albus C, Benlian P, Boysen G, Cifkova R, et al. 2012. European Guidelines on cardiovascular disease prevention in clinical practice. Eur Heart J. 33:1635–1701.

Raulio S, Roos E, Prattala R. 2010. School and workplace meals promote healthy food habits. Public Health Nutr. 13:987–992.

Salvini S, Parpinel M, Gnagnarella P. editors. 1998. Banca dati di composizione degli alimenti per studi epidemiologici in Italia. Istituto Europeo di Oncologia. Available from: http://www.bda-ieo.it/

Schwingshackl L, Hoffmann G. 2014. Adherence to Mediterranean diet and risk of cancer: a systematic review and meta-analysis of observational studies. Int J Cancer. 135:1884–1897.

Singh B, Parsaik AK, Mielke MM, Erwin PJ, Knopman DS, Petersen RC, Roberts RO. 2014. Association of Mediterranean diet with mild cognitive impairment and Alzheimer's disease: a systematic review and meta-analysis. J Alzheimers Dis. 39:271–282.

Sofi F, Abbate R, Gensini GF, Casini A. 2010. Accruing evidence on benefits of adherence to the Mediterranean diet on health: an updated systematic review and meta-analysis. Am J Clin Nutr. 92:1189–1196.

Stokes GC, Henley NS, Herget C. 2006. Creating a culture of wellness in workplaces. N C Med J. 67:445–448.

Stone NJ, Robinson JG, Lichtenstein AH, Bairey Merz CN, Blum CB, Eckel RH, Goldberg AC, Gordon D, Levy D, Lloyd-Jones DM, et al. 2014. ACC/AHA guideline on the treatment of blood cholesterol to reduce atherosclerotic cardiovascular risk in adults: a report of the American college of cardiology/American heart association task force on practice guidelines. J Am Coll Cardiol. 63:2889–2934.

The Diabetes Prevention Program Research Group. 2002. Reduction in the incidence of type 2 diabetes with lifestyle intervention or metformin. N Engl J Med. 346:393–403.

Trichopoulou A, Lagiou P. 1997. Healthy traditional Mediterranean diet: an expression of culture, history, and lifestyle. Nutr Rev. 55:383–389.

Trichopoulou A. 2001. Mediterranean diet: the past and the present. Nutr Metab Cardiovasc Dis. 11:1–4.

Tuomilehto J, Lindstrom J, Eriksson JG, Valle TT, Hamalainen H, Ilanne-Parikka P, Keinanen-Kiukaanniemi S, Laakso M, Louheranta A, Rastas M, et al. 2001. Prevention of type 2 diabetes mellitus by changes in lifestyle among subjects with impaired glucose tolerance. N Engl J Med. 344:1343–1350.

Willett WC, Sacks F, Trichopoulou A, Drescher G, Ferro-Luzzi A, Helsing E, Trichopoulos D. 1995. Mediterranean diet pyramid: a cultural model for healthy eating. Am J Clin Nutr. 61:1402S–1406S.