

Editorial

Health promotion at worksites can effectively increase intake of fruit and vegetables

Bandoni and colleagues present an extensive intervention at twenty-nine worksites in Brazil, where they successfully increased the availability of fruit and vegetable by 49g per day. With a four stage ecological approach they developed a manual, involved the cafeteria managers in culinary workshops, distributed educational materials among employees, labelled the foods and put up posters to encourage healthy food habits.

A similar study from Denmark by Lassen and colleagues showed that it was possible to improve the diet of employees at blue-collar worksite during a six month participatory and empowerment-based intervention where they changed the nutritional environment in the cafeteria addressing both the individual and the environment levels. As in the Brazilian study the diet improved not only with regard to increased and significant intake of fruit and vegetables, but also a reduction in fat intake.

But how do you ensure that the effects of the interventions are sustained over time? Thorsen and colleagues offer one solution in their study, where empowering of the cafeteria managers and putting them in charge of monitoring the availability of fruit and vegetable, gave a sustained effect in a five-year follow-up. The average increase was 95g from baseline to the five-year follow-up resulting in mean intake on 208g fruit and vegetables per employees per meal per day.

The three studies are promising examples on how to use worksite intervention to improve availability of fruit and vegetables in the diets of employees.

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Positive changes in dietary behaviour among employees in blue-collar worksites: The Food at Work Study

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Worksites as a health promoting platform

The worksite arena has been shown to be an excellent platform to efficiently promote positive and sustainable health behaviour modifications, including healthy eating among employees¹⁻³. However, very few studies, especially European studies, have focused on promoting healthy eating in blue-collar worksites. The aim of the present Food at Work study^{4,5} was therefore to investigate opportunities and impacts of promoting healthy eating in blue-collar worksites using a participatory and empowerment research approach.

Food at Work - Study design

The Food at Work Study was conducted in Denmark in eight blue-collar worksites in a partnership with the General Workers' Union. Worksites were stratified by company type and the presence or absence of a canteen, and randomly allocated to either an intervention group (five worksites) or a minimum intervention control group (three worksites). Intervention worksites were offered different kinds of hand-out materials focusing on simple and positive healthy eating messages. Otherwise, the project groups at each worksite were themselves responsible for implementing nutrition related activities addressing both the individual and the environment levels.

Evaluation methods

Different evaluation methods were used:

1. Data on employees perspective collected through individual interviews among randomly selected employees following a structured questionnaire;
2. Changes in employees' dietary habits from baseline to end-point using four-day food diaries;
3. The canteen nutrition environment as identified by chemical analyses of nutrient content in individual meal selections using the duplicate plate method; and
4. Semi-structured interviews with 23 key actors (project group members, e.g. union and manager representatives and cafeteria managers) conducted individually at end-point.

Positive attitudes among employees

Results showed that employees at the blue-collar worksites generally had a positive attitude towards the worksite promoting healthy eating, and that the degree of the positive attitude was increased over the project period (n=200, p=0,013). At end-point

93% of the employees agreed to some or to a high extent that the worksite should take part in promoting healthy eating.

Favorable changes in employees' nutritional intake

In the intervention group (n=102) several significant positive effects in nutrient intake were observed among employees, including a significant median decrease in percentage of energy obtained from fat of 2.2 (P=0.002) and a median increase in fibre intake of 3 g per 10 MJ (P<0.001). These changes were all significantly different from those seen in the minimum intervention control group. In addition, a significant median increase in fruit and vegetables was seen in the intervention group of 95 g per 10 MJ (P=0.002). Most of the increase in fruit and vegetable intake was accounted for by an increase of fruit intake by 74 g per 10 MJ (P=0.009).

Healthier canteen meals

A favorable change in the nutritional composition of the canteen meals in the intervention worksites with canteens was demonstrated, showing a median fat reduction of 11 E% of the meals selected by the employees (P<0.001, n=144). The canteen managers decided to focus on the reduction of fat content in the meals during the intervention period, and no significant change in fruit and vegetable content was found over time.

Important role of the union representative

The interviews showed that the involvement of the key actors was of major importance as to how the project developed at the different worksites. The union representatives generally played a central role in running the project, especially at the worksites without canteens. At the same time these worksites were associated with greater employee awareness and greater participation in the project activities compared to worksites with canteens. At worksites with canteens the canteen manager had a tendency to take charge of the project.

Conclusion

The study emphasizes the potential of engaging unions in worksite health promotion and demonstrates that moderate positive changes in dietary patterns can be achieved among employees in blue-collar worksites. Over time, this type of dietary change program has the potential for considerable access into communities and thereby contributing to a larger public health goal of reducing incidences of dietary related diseases and promoting healthy eating.

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Impact of an intervention on the availability and consumption of fruits and vegetables in the workplace

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The workplace is considered a good setting for interventions aimed at promoting healthy diet, like the consumption of fruits and vegetable. The Worker Food Program (WFP) is a Brazilian policy that encourages companies to offer subsidized meals to their employees. This paper describes the impact of an intervention on the availability and consumption of fruits and vegetables in a workplace cafeterias registered in the WFP in the city of São Paulo, Brazil.

INTERVENTION TO PROMOTE FRUITS AND VEGETABLES

The intervention was based on an ecological model for health promotion and was performed in four consecutive stages, with the participation of managers of cafeterias companies.

The first stage of the intervention consisted of a manual provided to the managers, containing information about the importance of a balanced diet to the workers wellbeing and performance and the key role of fruits and vegetables on health.

In the second stage, culinary workshops were run for cafeteria workers and those responsible for preparing companies meals (cooks and kitchen assistants). During the sessions, suggestions for recipes that incorporated fruits and vegetables were presented, along with guidance on the presentation and arrangement of meals.

In the third stage, educational materials were distributed at the workplace cafeteria with messages encouraging fruit and vegetable consumption. In addition, labeling information was provided at the point of choice (where the workers chose their food) to indicate healthy options.

The last stage involved an educational approach, using posters to summarize the main points of the previous stages and promote fruit and vegetable consumption.

To assess the impact of the intervention, the main outcome measure was the change in availability of fruits and vegetables served to each customer at lunch. An assessment was also made of the availability of energy, protein, carbohydrates, fat and fibre in the meals served to workers. Additionally, the study evaluated the consumption of fruits and vegetables at the workplace, asking about the amount of portions consumed at lunch. Data collection occurred at two points: at baseline and after the intervention (six months), and by involving a sample of twenty nine companies separated into two groups (intervention n=15 and control n=14).

INCREASED AVAILABILITY AND CONSUMPTION OF FRUITS AND VEGETABLES AFTER INTERVENTION

After the intervention the study found an average increase in the availability of fruits and vegetables of 49g in the intervention group, an increase of approximately 15%, whereas the results for the control group remained practically equal to baseline levels. During the follow-up period, the intervention group also reduced total fat and increased fibre consumption.

After the intervention, there was an increase in the consumption of fruits and vegetables by workers in the intervention group (from 104.85 to 123.03g), while no significant modification was observed in the control group. The multivariate analysis, determined by linear regression models, showed that there was an increase of 13.21g in the consumption of fruits and vegetables in the intervention group.

Results of this study, published recently in the Public Health Nutrition, show that the intervention increased the offer and consumption of fruits and mainly vegetables in the meals served by the companies, demonstrating that simple interventions like these are feasible and effective in the promotion of fruit and vegetable intake at the workplace.



Food / Nutrient	Baseline		After intervention	
	Intervention Group Mean (SD)	Control Group Mean (SD)	Intervention Group Mean (SD)	Control Group Mean (SD)
Fruits (g)	90.31 (48.91)	51.49 (46.19)	88.89 (45.88)	69.39 (44.12)
Vegetables (g)	163.61 (43.09)	145.52 (32.56)	196.87 (66.37)	128.02 (29.64)
F&V (g)	242.08 (59.41)	196.91 (68.77)	285.76 (81.42)	197.41 (57.82)
Energy (kcal)	1390.21 (312.86)	1337.44 (289.65)	1374.72 (281.25)	1423.99 (360.18)
Protein (%)	17.73 (3.69)	17.75 (3.47)	18.10 (3.03)	19.21 (4.47)
Carbohydrate (%)	46.88 (5.43)	51.07 (7.05)	52.61 (10.95)	55.31 (9.41)
Fat (%)	35.39 (5.48)	31.19 (5.29)	30.29 (5.85)	33.07 (10.94)
Fiber (g)	13.69 (2.94)	12.33 (2.54)	15.64 (4.14)	13.48 (2.18)

Distribution of fruits, vegetables, energy and nutrients offered for lunch at baseline and after the intervention, according to study group

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Long term sustainability of a worksite canteen intervention of serving more F&V

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Sustainability of an intervention

The sustainability of interventions is found to be a central challenge in public health promotion not only related to the worksite setting, but in health promotion in general. Many health interventions fail to consider the interventions as complex systems that interact dynamically with the key stakeholders, the setting and the broader community. Therefore the aim of the present study was to analyze the five years sustainability of a worksite canteen intervention of serving more fruit and vegetables (F&V)^{1,2}.

Study design

The F&V consumption (g/meal/day per customer) from five worksite canteens were measured five years after the intervention started and compared to the F&V consumption at baseline, end-point, and four months after the intervention ended (one year follow-up).

The intervention used a participatory and empowering approach, self-monitoring and networking among the canteen staff, management and a consultant. The method focused on providing ideas for increased F&V for lunch, making environmental changes in the canteens by giving access to tasteful and healthy food choices and reducing availability of unhealthy options. The worksites served from 50 to 500 meals a day.

Sustainability of the F&V worksite intervention

The figure below shows the average F&V consumption per customer over time for each of the five worksites. The figure also shows the differences in F&V consumption at the baseline, the end-point and the one year follow-up compared to the five year follow-up. Overall, a net average increase of 95g F&V per customer per day was achieved from baseline to the five year follow-up measurements for the five worksites.

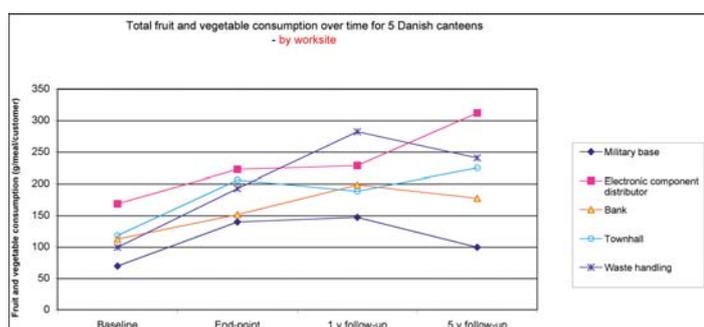


Figure. Average F&V consumption at the five different worksites measured before the intervention (baseline), after the intervention (end-point), at one year follow-up and at five year follow-up.

At the military base an insignificant increase of 18g per customer per day compared to the baseline was seen ($p=0.28$) at the five year follow-up measurements. The other four worksites all increased the F&V consumption significantly from baseline to the five year follow-up measurements ($p<0.001$). One of these four worksites further increased significantly ($p<0.001$) its F&V consumption from both the end-point and the one year follow-up to the five year follow-up measurements (the electronic component distributor).

Barriers and enhances towards changes

Organizations may vary in the extent to which the pre-existing structures and processes are able to facilitate organizational change to promote health³. Therefore it is crucial to identify and address barriers to and enhance facilitators of organizational and environmental changes within worksites⁴.

In order to find the success factors related to sustaining an F&V intervention and to understand why some healthy eating interventions are sustained better than others we carried out 21 semi-structured interviews at the five worksites⁵. The analysis of these semi-structured interviews provides insight into the co-shaping of the intervention and the organization in which the intervention takes place⁶. A number of themes showed to be important; contracting out the food service may challenge the sustainability but may also be a way of ensuring the necessary competences for a more F&V intensive food supply. Structural changes of the worksite, like re-structuring, may also challenge the sustainability if this implies frequent changes of worksite employees and new employees question the F&V intensive food supply. The engagement of the canteen manager and the ability to develop strategies for integration of more F&V in the food supply and good cooperation with the F&V suppliers also play a crucial role.

Tailored intervention in partnership with local stakeholders

The results of this study indicate that a worksite intervention needs to be tailored to the needs of the particular worksite environment in which it is implemented. Furthermore this tailoring needs to be done in close partnership with the local stakeholders. The results also indicate that worksite canteens are important change agents – intermediaries for developing intervention components. Healthier eating interventions are shaped and controlled by the involved local actors' ideas of health and nutrition and also by their concepts of how these ideas interrelate with the worksite's working conditions and working performance.

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