

Introduction of nutrient-optimised midday meals in a university setting

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Summary

By implementing the criteria of the DGE Quality Standard for the use in Business Dining, nutrient content of the midday meals offered in the canteen at the University of Education in Schwäbisch Gmünd was optimised. The fat and energy content were reduced by means of 19 ± 17 g fat/menu and 162 ± 144 kcal/menu, respectively. The introduction of the optimised menus was regarded favourably and about 50% of the university members (students and staff) do regularly eat in the canteen. Therefore nutrient-optimised meals provide an opportunity for nutrition-related environmental prevention.

Keywords: eating out of home, communal catering, DGE Quality Standard for the use in Business Dining, nutrient optimisation

(UESG) gradually introduced a health promoting offer¹ containing nutrient-optimised menus (◆ Figure 1). During the period 15.01.–17.04.2015, university members (students and staff) were surveyed (online/paper-pencil) with respect to the frequency in which they used the canteen and the optimised menu. They were also asked to evaluate the introduction of food and drinks with the STUDY&FIT Logo, using a seven-step Likert scale.

Introduction

In recent years, nutrition in Germany has gradually shifted from the domestic environment to eating out of home. At the moment, 19% of employees and 74% of university students take their midday meals in canteens or works cafeterias [1, 2]. This has been accompanied by unfavourable nutritional behaviour, as seen in the unfavourable choice of food and preparation of meals, as well as high prevalence of overweight [3, 4]. However, eating out of home does not inevitably lead to unfavourable nutrition. It is rather the

case that it offers a good opportunity for nutrition-related environmental prevention by presenting (nutrient-) optimised menus in accordance with the recommendations of the German Nutrition Society (DGE).

In this context, we shall examine the practical measures required in communal catering (cc) in order to comply with the instructions of the DGE Quality Standard for the use in Business Dining [5], with respect to the quality of nutrients. One particularly interesting point is the potential for changes in energy and nutrient content in nutrient-optimised rather than conventional menus. It is also investigated how potential canteen customers evaluate the introduction of optimised menus and make use of this offer.

Methods

Between May 2013 and July 2014, the canteen at the University of Education in Schwäbisch Gmünd

Results

In the first step of the optimisation process, specific menu components were selected. For 20 days, 7 main components, 4 starch side dishes and 3 desserts were then replaced with alternatives of better nutritional physiological properties. The other menu components were then optimised as follows:

- Food preparation and selection of milk and dairy products with less fat,
- Reduced serving sizes of components containing meat,
- Increase in the proportion of vegetables and of the serving size of starch side dishes,
- Qualitative optimisation, e.g. introduction of wholegrain variants
- ◆ Table 1 shows the changes in energy and nutrients during the optimisation process. The fat content was reduced by a mean of 19 ± 17 g fat/menu and the energy content by a mean of 162 ± 144 kcal/menu.

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¹ in accordance with [5], labelled with the STUDY&FIT Premium Logo of the DGE

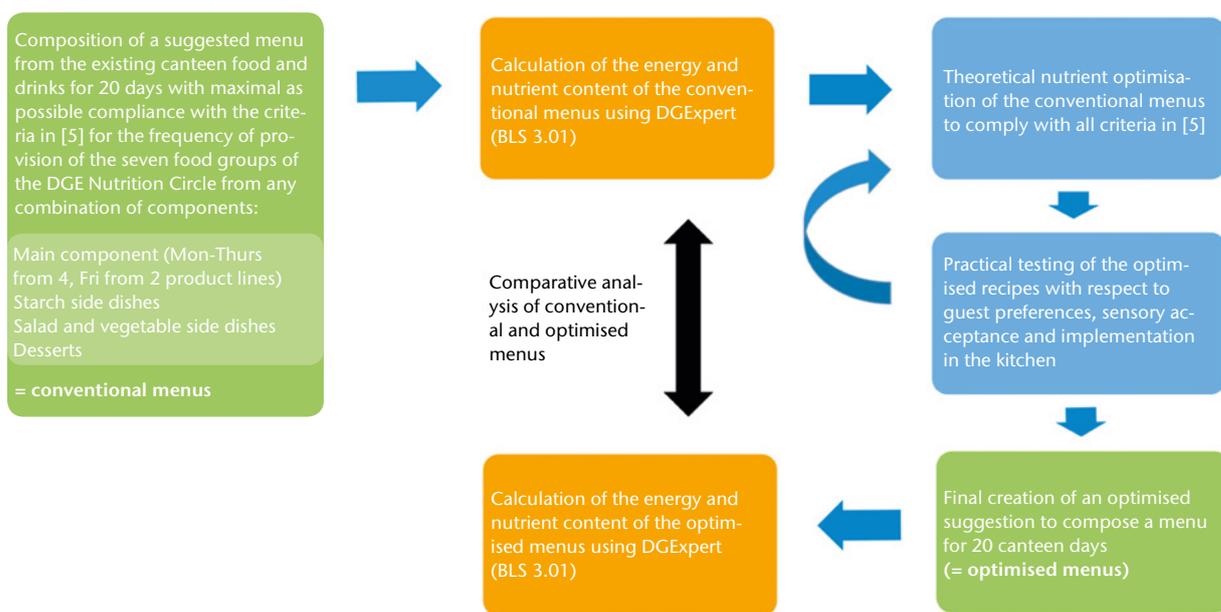


Fig 1: Process of nutrient optimisation

◆ Figure 2 shows the mean percentage compliance with the reference values [5] for the conventional and for the optimised menu. Both the optimised and the conventional menu complied with the reference values for dietary fibre and micro-nutrients, with iron as the only exception in conventional menus. On the other hand, the conventional

menu exceeded the reference value for energy content by a mean of $27 \pm 19\%$.

7% of the students ($n = 201$; 82% female; 23.5 ± 4.2 years) and 19% of the staff ($n = 49$; 69% female; 43.2 ± 10.9 years) took part in the subsequent survey.

The fact that the canteen provides food and drinks with the

STUDY&-FIT Logo was regarded positively by 92% of the students and 87% of the staff. About half of the students and just over three quarters of the staff reported that they regularly had their midday meal at the canteen – i.e. at least once a week. The regular canteen users consumed a weekly mean of 2.0 ± 1.0 (students) or 2.8 ± 1.2 (staff) midday meals at the canteen. On average they reported that they chose the optimised suggested menu in $36 \pm 35\%$ (students) or $30 \pm 28\%$ (staff) of the cases.

Discussion

Both in private households and in cc, hot midday meals often contain too much fat and not enough vegetables [6–8]. In the present study, conventional menus contained too much energy and fat and not enough carbohydrates as well.

With this initial situation, the orientation towards the criteria of the DGE Quality Standard for the use in Business Dining [5] proved to be successful. After bearing in mind practical considerations (e.g. costs and customer preferences), the im-

	Energy and nutrient content per menu arithmetic mean \pm standard deviation	
	Conventional menu	Optimised menu
Energy [kcal]	906 \pm 134	744 \pm 82
Protein [g]	38.5 \pm 11.7	35.3 \pm 9.5
Protein [% of Energy]	17.3 \pm 4.3	19.3 \pm 4.1
Fat [g]	43.1 \pm 15.2	23.8 \pm 5.8
Fat [% of Energy]	41.7 \pm 10.5	28.5 \pm 6.2
Carbohydrate [g]	89.2 \pm 18.6	94.6 \pm 13.7
Carbohydrate [% of Energy]	41.5 \pm 9.7	52.2 \pm 7.0
Dietary fibre [g]	10.4 \pm 3.5	13.3 \pm 4.5
Vitamin E [mg]	7.5 \pm 4.4	5.6 \pm 2.2
Vitamin B ₁ [mg]	0.5 \pm 0.3	0.6 \pm 0.3
Folate [μ g]	114 \pm 39	135 \pm 53
Vitamin C [mg]	72.4 \pm 54.6	88.2 \pm 60.8
Calcium [mg]	387 \pm 332	344 \pm 197
Magnesium [mg]	116 \pm 28	141 \pm 40
Iron [mg]	4.6 \pm 1.8	5.5 \pm 2.0

Tab. 1: Mean energy and nutrient content of conventional and optimised menu

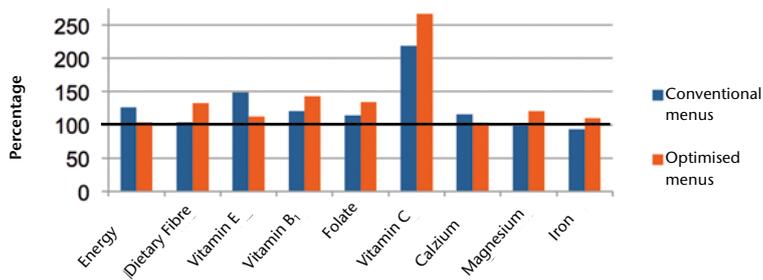


Fig. 2: Mean percentage compliance with the reference values for energy, dietary fibre and micronutrients in [5] in conventional and optimised menus

plementation of these criteria in the canteen at the UESG led to a marked improvement in the nutrient profile of the conventional menu.

The optimised menu's nutrient density was mostly increased and energy density decreased; this presented the opportunity of favourably influencing the canteen users' choice of dishes and the resulting nutrient intake.

However, the extent of this effect is highly dependent on the acceptance and use of the nutrient-optimised food and drinks. In the current study, the students and staff appreciated the introduction of optimised food and drinks. Moreover, the majority of university members belongs to potential users of the optimised food and drinks, as they regularly visited the canteen.

Considering an offer of 2 or 4 main components a day, the selection of the optimised menus corresponds to the random choice, approximately. The demand could possibly be raised by target-group-specific communication with the guests. It is however unclear to what extent the guests base their choice of menu components on the nutrient-optimised suggested menu.

Conclusion

Aside from the direct influence of the optimised menus on energy and nutrient intake, it is also possible that "new" consumption patterns may be transferred to other areas of life (other situations of eating out of home or meals at home). On the other hand, there may be transfer within the canteen of healthy food selection and meal preparation (e.g. using lower fat dairy products, more vegetables and less meat) to non-optimised components.

Conflict of Interest

As a member of the staff of the German Nutrition Society, Melanie Schneider was involved in the creation of the "DGE Quality Standard for the use in Hospitality Foodservice" and the "DGE Quality Standard for the use in Food-service in Convalescence Clinics".

The other authors declare that there is no conflict of interest.

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