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UNIVERSITY FOOD CHOICES

Editorial

The three papers in this issue of the Ifava newsletter provide an interesting perspective on the dietary behaviour of university students and point to possible explanations and ways of improving health behaviours. The results in the first paper regarding a cohort of German students provide further evidence of the poor lifestyle habits already observed in European student surveys and national reports published in the last decade. Some points may be highlighted from this and the two following papers. Studies based on the university environment draw upon a short period of life; thus the number of studies is relatively limited. However, the results consistently demonstrate that university students are particularly vulnerable to poor health behaviours and should be taken seriously by public health authorities. It will be important to conduct studies on the impact of university-based interventions in terms of academic performance as well as health and dietary behaviours in later life. Furthermore, it will be essential to assess whether those traits identified amongst university students are transitory or persist beyond university life. Medical students appear to have comparatively (though slightly) better health behaviours, but whether these are linked to a stronger health consciousness or rather reflect other explanatory models deserves scrutiny. Clearly, food offered in university canteens is a part of the explanation of poor diets amongst students; improvement in the nutritional quality and price of the offered meals is a modest, but efficient way to lead to improvement. Finally, addressing the economic constraints of the student (and indeed the general) population, and making safe, healthy foods available and affordable to all must continue to be a priority, in part because disease prevention through good nutrition initiatives makes clear economic sense.

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Multiple health risk behaviours in German first year university students

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Individual behaviours such as tobacco consumption, physical inactivity, poor diet or excessive alcohol consumption are major risk factors for health-related morbidity and mortality in developed countries[1, 2]. These behaviours are frequently correlated and are indicators of a broader unhealthy lifestyle[3, 5]. The university constitutes an environmental change for young people in that they experience less parental control and are far more exposed to cigarettes and alcohol, for example. Thus, the university environment can play an important role in the development and manifestation of their health behaviours.

The objective of this study[6] was to assess 1) the prevalence of major health risk behaviours in German university students and 2) their readiness to change their behaviours.

A cohort of German first-year university students

A cohort of first-year university students (n=1262) was recruited in the schools of law, education and medicine in Marburg, Germany. They were questioned on their fruit and vegetable consumption, physical activity, as well as smoking and drinking habits. Additionally, they were asked about their readiness to change these behaviours (stages of change[7], specifically to eat at least five servings of fruits and vegetables a day, exercise strenuously 3x/week for a minimum of 20 minutes, quit smoking if currently smoking and quit binge drinking (> 4/5 drinks per occasion) if current binge drinkers. For example, to evaluate their readiness to increase their fruit and vegetable consumption to five or more servings per day they were asked if they planned to do so in the next 30 days (preparation stage) or 6 months (contemplation stage); if they already fulfilled the criterium, they were asked if they had done so for less than 6 months (action stage) or for more 6 months (maintenance stage). No intention to change defined the precontemplation stage.

Individual risk behaviours

• Only 3.8% of students reported eating the recommended five servings of fruits and vegetables per day. Education and law students had the lowest fruit and vegetable consumption compared to other students.

• Only 40% of the students performed strenuous physical activity three times a week for a minimum of 20 min.; 16% reported no physical activity at all. Law students had the lowest physical activity rates.

• More than 30% of all students were current smokers with smoking rates being the highest in education students and the lowest in medical students.

• Amongst all students, 9.1% were non-drinkers (no alcohol in the previous 30 days), and 62% reported binge drinking (at least one binge episode in 30 days). Law students had the highest binge drinking rate, whereas medical students had the lowest rate.

• Women ate more fruit and vegetables, spent less time exercising, and were less often smokers or drinkers than men.

Multiple risk behaviours

• When looking at potential risk factor combinations, only 2% of all students had none of the risk behaviours, 10.5% had one, 34.5% two, 34.8% three and 18.2% had all four risk behaviours. All behaviours were correlated and the highest correlation was observed between the number of cigarettes and the number of drinks consumed per week.

• Moreover, students generally reported being relatively unwilling to change their behaviours: only 6.5% were ready to change all their risk behaviours in the near future (preparation stage) and one-third were ready to change at least one of them.

• Smokers often showed multiple risk behaviours: they ate less than half as many fruits and vegetables compared to non-smokers, spent less time for physical activity and reported consuming more drinks than non-smokers.

• Overall, medical students showed fewer risk behaviours than the others. This result was expected because of the students' self-selection into a health profession.

University: the right site for improvement of health risk behaviours

This study showed a high prevalence of health risk behaviours in a cohort of 1262 first-year university students in Germany, including low fruit and vegetable consumption, sedentary lifestyle, and smoking and drinking habits. These behaviours were correlated and smokers seemed to be at a relatively higher risk for poor health behaviours. Moreover, women showed a more favorable behaviour pattern except for physical activity, and medical students showed a slightly more favorable behaviour pattern than education and law students.

A university environment constitutes an environmental change for these students (less parental control, environmental exposure to cigarettes and alcohol, etc.) and should be the object of future studies. One-third of the students in the cohort reported being ready to change at least one of their behaviours; this indicates that there is an opportunity for stimulating change, and adequate interventions should be tailored to promote health in university settings.

These results need to be replicated in other universities to identify high-risk populations and to identify avenues for promoting effective programs for health promotion in student populations.

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Does the nutritional profile of food offered a canteen determine what is consumed? A case study in Belgian university canteen

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Out of home eating has increased considerably during the last decade and has taken an important place in the habitual diet. Through higher energy densities or larger portion sizes frequent out of home eating is believed to be associated with higher energy intakes[1, 2]. The catering sector is increasingly being recognized as a stakeholder to promote healthy diets and lifestyles[3]. School canteens can contribute to an obesogenic environment[4], but can also represent an opportunity to improve students' diet[5]. We evaluated the nutritional profile of the lunches available and compared it to that of the lunches consumed by university canteen customers[6]. The main findings are summarized here.

Methodology

This study was conducted in Ghent University in 2004. Canteen customers could choose from at least four protein components, including a fish and vegetarian option. The vegetable choices included two cooked vegetable portions and two types of salad. The starch component offered standard five choices: rice, cooked potato, mashed potato, fried potatoes and croquettes. Every fifth canteen visitor that took a hot lunch was invited to participate. A picture of the tray provided qualitative composition of food choices. Leftovers were weighed and the quantity of each food component served minus its leftovers was used to estimate the amount of food consumed. We used the technical files of the producers and Belgian food composition tables for nutritional information.

We simulated what meal combinations were theoretically available by multiplying the number of sauces and protein, carbohydrate, vegetable choices on a particular day. In total 4365 theoretical meals were obtained. The nutritional quality of the meal offered was appraised using a scoring system. One point was given if the meal complied with one of the following recommendations: the meal supplies
1) less than 2000mg of sodium per day;
2) less than 35% of the energy from fat;
3) more than 200g of vegetables.

Meals available to customers

Compared to the Belgian recommendations, the theoretical meal combinations supplied too much protein, fat and insufficient carbohydrates. On average, 64% of the meal combinations available contained more than 35% energy from fat, 18% of the combinations supplied more then 2000mg sodium and 86 % of the meals contain less than 200g of vegetables. The number of meal combinations which are in line with all 3 recommendations was marginal. Most theoretical meal combinations comply with none or only one of the 3 nutritional recommendations.

Meals consumed

Data was collected for 330 meals consumed. Very few meals contained fruits and some meals contained no vegetables apart from those in the soup. Protein and fat were supplied excessively: 50% and 51% of the meals consumed had contents of protein and fat higher than the advised total content. On average 60% of the meals consumed provided more then 35% energy from fat, 17% of the meals consumed contained more than 2000mg sodium per day and 13% of meals consumed contained 200g or more of fruit or vegetables. Only 5% of the meals had a profile that complied with all recommendations. Those meal choices were mainly the vegetarian options or meal components with a large vegetable component.

Conclusions

The macronutrient characteristics of the meals chosen were largely in concordance with the theoretical meal combinations. The portion size of fruits and vegetables was the criterion most difficult to comply with in the meals consumed but in the theoretical meal combinations this was the energy supplied by fat.

The vegetable portion in half of the lunches consumed was largely too small to comply with the recommendations for a hot lunch and few customers purchased extra portions. Fruits were not included in the menu and had to be purchased separately. One of the key recommendations resulting from our study is to explore the effect of providing extra fruits and vegetables in the canteen, which has proven to be a successful intervention in Denmark[5].

Labeling based on nutrient profiling is believed to be a promising way to introduce informed choice to consumers, thereby triggering healthy choices of food items. We show how the profiling can also be used as an evaluation instrument in canteens. Our findings pave the way for a nutrient profile system in our setting, in particular to promote the choice of vegetables and starch component.

Our data show how the profile of the meals chosen follows clearly that of the meals provided. Only 5% of the meals available complied with our optimal nutritional profile, which makes it quite improbable to make an optimal choice in absence of any guidance. In our canteen, healthy food choices require additional efforts by the customer. Too many meal choices are simply too rich in fat and sodium and contain insufficient vegetables and fruits. In our setting, most customers finished their plates and simply ate what was offered. Our findings highlight the need to introduce changes in the meals offered before working on customer's choice in our setting. Energy supply from macronutrients needs to be more balanced and portion sizes of fruits and vegetables in the canteen should increase. In our context, these modifications may bring us a long way in promoting a genuine healthy diet.

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The importance of education and cost incentives on individual food choices at the Harvard School of Public Health (HSHP) cafeteria

Summary by Lila Bouberbachene

— Karin B. Michels, Barry R. Bloom, Paul Riccardi, Bernard A. Rosner, and Walter C. Willett —

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The frequency of regularly consuming meals prepared outside of the home is increasing. As these meals have been found to be of lesser nutritional quality, it is important to understand eating behavior and the determinants of food choices at the point-of-purchase.

Individual food choices are influenced by a number of factors, including taste, availability, convenience, cost, health consciousness, and body-weight considerations. In this study, the authors explored whether reducing the price of foods considered healthy in combination with the distribution of educational material about diet and health would increase the purchase of health-promoting foods and decrease the purchase of foods considered less healthy and whether such behavior can be maintained beyond the intervention.

Description of the intervention and its assessment

Michels et al. conducted a study of consumer choice in the HSPH cafeteria, which serves the community of faculty, staff, and students and attracts customers from other Harvard University institutions. The cafeteria offers a variety of foods and they identified a list of healthy foods (salad bar, stir-fried dishes, Saluté entrée, whole-grain pizza, yogurt, and fruit) and less healthy foods (regular entrée, regular pizza, hamburger, hot dogs, French fries, cookies, cakes, and desserts).

The intervention (named Nutrition Awareness weeks) consisted of
a) reducing the price for the healthy foods and dishes by 20%, which was financed by the Dean's office. It was announced in the school newsletter and advertised within the cafeteria;
b) distributing educational material that included general information on healthy nutrition and lifestyle;
c) free blood pressure reading during the first two days of the promotion (to raise awareness).

During three consecutive five-week periods, the following assessments were made:

• First period: baseline assessment. The servings purchased for the food items included in the project were counted.

• Second period: intervention. The identified healthy foods and dishes were subsidized by 20%.

• Third period: follow-up. The price returned to their initial levels.

What kinds of modifications were observed in the purchases?

The total caloric content and the number of servings of the purchases did not change significantly, but increased slightly during the intervention and follow-up periods compared with the baseline.

The modifications of the sales of the individual food items and meals were as follows:

• The consumption of stir-fried dishes increased 27% during the reduced-price period and the increase remained at 25% after prices returned to their original levels.

• The use of the salad bar increased by 15% during the reduced-price period and climbed to 53% after the Nutritional Awareness weeks were over.

• The consumption of regular entrées, French fries and hamburgers/cheeseburgers declined by 43%, 20%, and 58% respectively during the promotion, and the reduction remained at 41%, 14% and 12% respectively thereafter.

• There was, however, a 56% increase in the consumption of cakes and desserts during the nutrition promotion period; this increase remained at 59%, thereafter.

Overall, during the intervention period, the consumption of healthy foods increased by a significant 6%, and the consumption of less-healthy foods declined by 2%. After the prices returned to their original levels, the consumption of healthy foods increased further to a statistically significant 17% and a 2% decline in the consumption of less healthy foods persisted.

Subsidizing and promoting healthful meals result in an increase of consumption of these types of foods and a decline of the unhealthy ones

A promotional campaign with a reduction in price was associated with a modest overall increase in the consumption of health-promoting foods and meals and a slight overall decrease in the consumption of less-healthy foods and meals. Moreover, the increase in the consumption of healthy food items increased further after the end of the cost-saving period and promotion.

Hence, Michels et al. observed an increase in the consumption of raw and cooked vegetables and a decrease in dishes rich in saturated fats. Increased consumption of healthy foods was maintained beyond the period of a reduced pricing structure. It is possible that consumers became more conscious of their choices as a consequence of the educational campaign, that the financial incentive made them try and appreciate healthier foods, and that their new-found habits were maintained beyond the subsidized period.

Consumption of cakes and desserts increased during and after the promotion. Indeed, the caloric intake and the number of servings purchased remained largely the same. It is possible that consumers respond to changes in food prices and income by adjusting their food choices to maximize their satisfaction.

In conclusion, this study indicates that subsidizing healthful meals and educating consumers about the importance of a healthy diet can result in a modest increase in the selection of healthy foods and meals that can be maintained beyond the time periods of subsidy and promotion. It underlined the importance of nutritional education for the promotion of healthy diets as tasty and inexpensive and confirmed that cost incentives are important determinants of food choices.