

Editorial

The challenge of modifying food environment...

For tackling the so-called obesity epidemic, it is now well recognized that only focusing on consumer education has a limited efficiency if the food environment does not allow consumers to comply easily with the recommendations. However, modifying the food environment is a complex task, due to the multiplicity of factors, of sociocultural, economical and regulatory constraints. There is no single and simple solutions which could be applied everywhere. The papers of this issue illustrate this complexity and suggest some possibilities. The first challenge is to adapt recommendations to a specific dietary context: optimizing individual actual diets by linear programming appears to be a promising tool for establishing realistic food based dietary guidelines for a specific population. But their implementation through, for example, regulation of food advertising or the posting of pertinent information for consumers in restaurants is controversial. The design of such actions requires the protracted involvement of many stakeholders originating from various disciplines and fields of expertise. The novelty and complexity of problems we are now facing require new imaginative solutions. It would be interesting in the future to compare, for example, the efficiency (and difficulties) of regulatory actions, like in New York city, and the French experience of the voluntary charters of nutritional improvement contracted between the government and food producers and retailers....

Ambroise Martin
Nutrition Professor
Medical school, Lyon, France

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New York, old game !

— Marie-Laure Frelut —

Saint-Vincent de Paul hospital, Paris - France

Once upon a time there was a rich city. Rich and poor people lived in skyscrapers and spoke as many different languages as was known on the earth. Its name was New (and it was) York (because of an ancestor's claim). However something became wrong. A third of the population became very fat and started to die from it. Doctors started to claim that something had to be done and some politicians agreed. That's where a paper by Thomas A. Farley¹ starts and describes a two year struggle, started in 2006, to innovate food regulation. The New York City Health Department tried to launch an original programme, based on epidemiological evidence and preventing unaware overeating.

Show the calorie contents of food

The idea was very simple: show in fast food chain restaurants, the calorie contents of food. No more, no less. The intent was to put an easy to read label near the food items so that the customer could get the information before they made a choice. This goal was chosen by the New York City Health department because 10% of such food chains account for a third of all restaurant traffic and consumer surveys show that these restaurants markedly underestimate the calorie content of the servings.

An amazing struggle occurred: the food industry tried to:

- a) demonstrate that calorie content was a claim, while it's only a fact,
- b) show that this measure was in opposition with the United States constitution since it was violating the First amendment on freedom of speech. This amendment does not only allow people to say what they want, but also to say things they do not want to say!

Lawsuits took place at the initiative of the New York State Restaurant Association. Other states were encouraged to take protective measures against labelling. Many scientific societies supported the NYC Health department, except the president elect of the...Obesity Society!

At the end of the day, some information became mandatory!

The authors draw lessons from the fight of New York against fast food industry:

- The first one is that obesity is a Public Health concern that must be tackled by an appointed body as should any chronic disease.
- The second lesson is that a voluntary basis for action is unlikely to be effective.
- The third lesson is that many public health disciplines are needed for success.
- The fourth lesson is that local action can prove powerful!

Impact of the food labelling

A first look at the effect of the intervention, reported by Elbel et al.² evaluated the impact of implementation of food labelling. Fourteen fast foods "interventions" in New York were compared to four controls in Newark. Deprived areas were selected in both cases. An analysis was conducted on 55% of 1,156 recipients. Mean calorie selection was not influenced by the labelling. However, 27.7% of customers who saw labelling said the information influenced their choice. The authors comment on the limited number of fast food restaurants which participated and to the difficulty of influencing people of low socio-economical status who carry the heaviest burden (in all meanings of the word). They conclude that responsiveness of a fourth of the surveyed group is not enough, but encouraging.

Three years later, in 2009, the First Lady herself started taking part in the fight and trying to help schools and the youth of the whole country to get rid of junk foods! Data now shows that the epidemic of obesity is levelling off. Action at local level is necessary but should be backed by the clear message that preventing obesity is a national and global challenge and responsibility.



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Association of Health Information Sources with Health Behaviors

— Nicole Redmond —

Brigham and Women's Hospital, Boston

Health communication strategies using mass media (e.g., television, print, and internet) have been associated with health beliefs and behaviors^{1,2}. In addition, social ties such as friends/family or community organizations may also be sources of health information, and have been associated with health beliefs and possibly behaviors³⁻⁶. The primary goal of this study was to explore the associations of various sources of health information with health behaviors in a nationally representative sample of United States adults⁷.

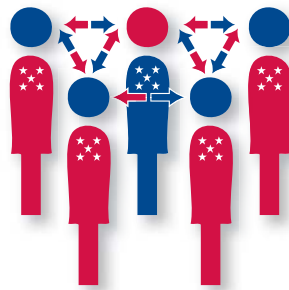
The Health Information National Trends Surveys (HINTS)

The HINTS are biennial, cross-sectional surveys designed to assess use of cancer related health information, general health status, cancer screening practices, and lifestyle behaviors⁸. The 2005 HINTS queried respondents' use of health information sources within the past twelve months including interpersonal sources (community organizations, and friends and family), and mass media sources (internet, print, and television). "Users" were participants who reported "yes" to using a particular source of health information with any frequency. Those answering "don't know" or "refused" as well as missing responses were classified as "non-users".

Respondents were also asked about various lifestyle behaviors (appropriate fruit and vegetable intake, regular exercise, and smoking cessation) and cancer screening (routine mammography, Pap smears, and colon cancer screening). Respondents reporting the lifestyle behavior or age and gender appropriate cancer screening were classified as "meeting recommendations" and all other participants were classified as not achieving recommendations.

To evaluate whether exposure to a particular health information source was

associated with a specific health behavior outcome, separate logistic regression models were fit for each behavior and adjusted for the other information sources, accounting for the possibility of a subject using multiple sources, as well as sociodemographic and clinical characteristics. Additionally, the cumulative impact of multiple information sources on meeting recommendations for health behaviors was explored.



Sources of health information

Friends and family were the most frequent sources of health information and community organizations the least frequent. Only about 11% of the survey respondents met recommendations for diet, 58% met recommendations for exercise, and 78% were non-smokers. Among eligible respondents, 93% reported receiving a screening Pap smear, 84% reported receiving a mammogram, and 49% reported receiving colonoscopy or sigmoidoscopy.

HINTS 2005 respondents who reported community organizations as information sources had 44% increased odds of meeting recommendations for fruit and vegetable intake. Use of print media, community organizations, or friends and family were also associated with 21%, 91%, and 38% increased odds,

respectively, of being a non-smoker. None of the health information sources were associated with meeting recommendations for exercise. Among eligible respondents, television and internet users had 61% and 42% increased odds, respectively, of reporting ever receiving a mammography. None of the health information sources were associated with increased odds of reporting ever receiving a Pap smear. All health information sources, except television, were associated with 41-57% increased odds of reporting colonoscopy or sigmoidoscopy screening.

There were no significant increases in odds of meeting dietary or exercise recommendations with the cumulative use of social networks or mass media. Increased number of social networks used for health information was associated with increased odds of being a non-smoker or obtaining a colonoscopy/sigmoidoscopy. Use of more mass media sources increased the odds of obtaining mammography and colonoscopy/sigmoidoscopy.

Use of Social Networks may enhance adoption of health behaviors

In these nationally-representative surveys, use of print media and interpersonal sources such as friends and family and community organizations were associated with self-reported health behaviors. Additionally, these data show that increasing the number and/or classes of health information used often increases the odds of reporting recommended health behaviors. Hence, efforts should focus on using multiple health communication modalities, including better use of social networks, to disseminate health recommendations (e.g., identifying leaders of community organizations to help formulate and disseminate health information).

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Individual diet modeling translates nutrient recommendations into realistic and individual-specific food choices

— Matthieu Maillot, Nicole Darmon —

INSERM, Marseille II University, France

Dietary guidelines called into question

Dietary guidelines have been developed to facilitate the attainment of nutrient recommendations at population level¹⁻³, but they do not take into account food preferences and other individual specificities which may impair their effectiveness⁴. In addition, dietary guidelines almost ignore the complexity of the food supply. They do not provide recommendations for real foods, but refer to categories of foods, which are not well-defined and do not account for complex food products such as mixed dishes and snacks. The dietary choices needed to fulfill nutrient-based recommendations at the individual level deserve further exploration. Our objective was to specify the dietary changes needed to achieve a full set of nutrient-based recommendations for each individual in a French adult population, while accounting for individual food consumption patterns.

A new approach to identify nutritionally adequate food choices: individual diet modeling

Using the French dietary survey INCA1 "Enquête Individuelle et Nationale sur les Consommations Alimentaires" conducted in 1999⁵, individual diet (ID) models were developed to design a nutritionally adequate diet for each of the 1,171 French adults. The dietary data were 7-d food records. Starting from each individual weekly food intake (observed diets), an isocaloric diet was modeled by linear programming^{6,7} to simultaneously meet the recommendations for 32 nutrients while deviating the least from the observed food intake. The WHO recommendations⁸ were used for total carbohydrates, free sugars and saturated fatty acids; the Nordic Nutrient Recommendations⁹ were used for the limit of sodium and the French recommendations¹⁰ were used as a target for all others nutrients (proteins, total fats, polyunsaturated, fibers, vitamins, minerals and cholesterol). To ensure the least deviation from the observed diets, ID models preferentially chose foods declared as consumed by each individual during the survey, i.e. repertoire-foods, and minimized the decrease in the quantity of those foods. When necessary, non-repertoire-foods were also introduced, preferentially selecting the most frequently consumed foods by the French population.

Many different ways to reach nutrient needs

A new individual diet meeting all the nutrient recommendations was obtained for each individual in the population. The isocaloric modeled diets invariably had a greater weight than their corresponding observed diets meaning that people have to consume diets of lower energy density. The amount of foods selected in the modeled diets varied from individual to individual, and this variability followed that found in observed diets (Figure 1). This means that nutrient needs can be fulfilled in many different ways, depending on initial individual food patterns.

The priority dietary changes need to be focused on fruits, vegetables, nuts and fatty fish

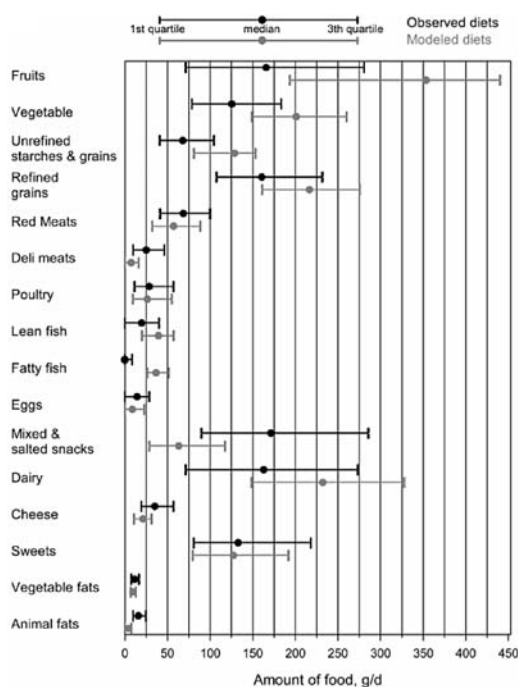
Refined grains, unrefined starches, fresh dairy products (milk and

yogurts), lean fish, and fatty fish were almost always increased to reach nutrient recommendations (Figure 1). In contrast, poultry, eggs, and vegetable fats were seldom modified by the optimization process. Decreases were observed for animal fats (from 15 to 5 g/d), mixed dishes (from 165 to 60 g/d), deli meats (from 25 to 8 g/d) while the amount of sweets decreased for 50% of individuals and increased for 50% of individuals.

The highest increase in modeled diets compared with observed diets was observed for fruits (median from 170 to 350g/d) and for vegetables (median from 125 to 200g/d) (Figure 1).

Walnuts and fatty fish (mainly salmon) were the only foods which were systematically added when they were not present in the observed diets, and their median amounts in modeled diets were 15 and 37 g/d, respectively.

Figure 1. Distribution (first quartile, median, and third quartile) of the daily amount (in g/d) of each food group in observed diets and modeled diets.



Conclusions

This new individual diet modeling approach offers the possibility of translating nutrient recommendations into realistic food choices for all individuals from a representative population. The results showed that nutrient needs can be fulfilled in many different ways, depending on initial individual food patterns. However, the priority dietary changes need to be focused on fruits, vegetables, nuts and fatty fish.

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