



The healthy choice an easy choice

Unilever Health Institute symposium series

Scientific & communication
issues relevant to
consumer health and vitality

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Foreword

The fifth Unilever Health Institute Symposium, held in Vlaardingen, the Netherlands in April 2004, was a special and important meeting for Unilever. The subject: 'The healthy choice an easy choice - from nutrition science to consumer action', enabled Unilever to explain the background and the implications of the recently formulated Vitality Mission. The symposium has brought together experts, health organisations and interest groups with Unilever management, scientists, technologists and consumer experts to discuss how the healthy choice can be turned into an easy choice for consumers. We were particularly proud to welcome representatives of the World Health Organization (WHO) and UNICEF.

The objective of the Unilever Health Institute Symposium series is to discuss health-related scientific and communication issues with experts in the field. Previous topics were Cardiovascular Health, Child Health and Nutrition, Weight Management and Wellbeing and Performance.

Many experts and interest groups play an important role in promoting people's health: scientists, (non)governmental organisations, health care professionals, the food industry, professional media, mass media and regulators. There is a growing awareness that strategies aimed at improving people's diet and lifestyle will be more effective if all these stakeholders agree with each other. WHO has formulated a population-wide, prevention-based strategy, the Global Strategy on Diet, Physical Activity and Health, requiring multi-stakeholder collaborative actions. Unilever is committed to take its responsibility and to actively contribute to making the healthy choice an easy choice.

Raising awareness and interest in the health benefits of foods and drinks requires great tasting products, convincing evidence and effective communication to all groups interested. In particular communication to the consumer calls for simplified messages. However, the relation of such a message to the scientific basis should remain clear to the scientific world. It is the task of the industry to provide answers to scientists with critical questions about the composition or the claims of our products. In this process, there should be room for expert endorsement of messages.

Unilever, as one of the largest global food companies with experts on food technology, consumer understanding and marketing is obviously one key player in influencing people's health and vitality. Unilever has an R&D community of two hundred 'nutrition, health and vitality' experts, working in the Unilever Health Institute in Vlaardingen, its regional centres in Africa, Asia and Latin America, or as company nutritionists in Unilever's operating companies. The Unilever Vitality Mission and Nutrition Policy show our commitment to work together with other stakeholders in improving people's health and vitality.

We hope this symposium monograph will, like a lighthouse, guide you and your partners on the journey ahead of us, and will inspire you to think about what you can contribute to make the healthy choice an easy choice.

With pride I look back at my last symposium as director of the Unilever Health Institute. I am confident to hand the responsibility for future symposia over to my successor, Dr. Gert Meijer.

*Dr. Jan Weststrate,
former Director of the Unilever Health Institute*





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Sharing Unilever's Mission on Vitality

Antony Burgmans

Chairman Unilever N.V. and vice chairman Unilever PLC

Unilever's mission is to add Vitality to life – for our consumers, our employees, and for the communities and the environment in which we operate. Vitality will be key to how we shape our portfolio and set priorities for the business as we move forward. From this basis we will look for new opportunities for consumers.

Consumer evolution: feeding and cleaning

Unilever has always been in close contact with the consumer (Figure 1). The company was created in 1930 by a merger between a Dutch food company and a British soap company. In the beginning - from 1930 to 1960 - the majority of Unilever's business was in North Western Europe: Scandinavia, Germany, the Netherlands, the United Kingdom and Ireland. Survival was the greatest concern for the consumer in those days, and this concern was driven by poverty. During the depression in the 1930s, and during and after the Second World War, people had very little money to spend, even on basic requirements such as good food and hygiene.

Undernourishment undermines the immune system, and an unhygienic environment jeopardises the health of people with a low resistance to diseases. The mission of Unilever in those days was therefore very simple: 'feeding and cleaning the nation'. We offered margarine - which is cheaper than butter - and tea - which is a better choice than water under unhygienic circumstances. In addition, and at the request of the British government, Unilever came up with a solution to feed undernourished children after the Second World War. In those days, there was ample fish, but

	Driver	Consumer concern	Unilever response
1930-1960	poverty	survival	feeding & cleaning
1960-2000	wealth	adaptation of lifestyle	convenience & efficacy
>2000	technology	healthy longer life	vitality

Figure 1. Consumer drivers that have steered Unilever's focus over time.

as all parents know, it is quite a challenge to get children to eat fish. We created fish fingers, and children loved them.

Convenience and efficacy

During the 1960s, the increased wealth of the population triggered adaptations in lifestyle. The focus of Unilever shifted from offering the basics for feeding and cleaning to adding convenience and efficacy to our brands. For example, we improved the way people could do their laundry. In the old days, washing involved an overnight soak, a pre-wash, and a main wash: a labour intensive and cumbersome process. Unilever, amongst other companies, introduced enzymes in washing powders. By using these powders in automatic washing machines, the whole pre-treatment phase could be skipped. Since people had a bit more money to spend, they could afford washing powder with these precious enzymes. Another example was the introduction of margarines that were spreadable directly from the fridge.

The lifestyle adaptations were linked to the upcoming emancipation of women. In addition to its home care business, Unilever began to invest in a personal care business. In those days, personal care was only 1% or 2% of our total turnover, but now we are one of the leading personal care businesses in the world, illustrating how Unilever's business is evolving with the consumer.



Unilever's Vitality Mission

Around 2000, things started to change again. A healthy, long life is now the greatest concern of consumers, driven by the unprecedented developments in technology over the last decades. Around the world, be it in a small village in rural India, or in sophisticated Manhattan, we find that people's aspirations are universal. They come down to six 'life goals', described as follows: people want to feel good every day, they want to achieve more, they want to look better, be healthy for longer, be free from health problems, and they want to give their children a good start in life. For Unilever this 'worldwide daily quest for vitality' is a unique opportunity. Every day, 150 million people in more than hundred countries buy one of our 400 brands. We offer nutrition, personal care and hygiene, which are essential ingredients for a life of vitality. As a result, we have redefined the company's mission as *'Unilever's mission is to add Vitality to life. We meet everyday needs for nutrition, hygiene and personal care with brands that help people feel good, look good, and get more out of life.'*

Sustainability

The Unilever Vitality Mission extends further than our brands. It extends to the environment and the communities in which we live. It is our firm belief that, as a large, multinational company, we have to take our responsibility. Therefore, Unilever has defined three key environmental areas: sustainable agriculture, sustainable fisheries and water. Making real progress in these areas often calls for close working relationships with global organisations, but it can also require working together with local communities.

We have developed and validated protocols for sustainable agriculture for our five key crops, which are palm oil, tea, tomatoes, spinach and peas. Furthermore, we have created the London-based Marine Stewardship Council (MSC) in a partnership with the World Wildlife Fund (WWF), to ensure that we can continue producing fish fingers in the future.

The MSC is currently the most prominent organisation in the world capable of judging whether fisheries are run in a sustainable way. It creates economic incentives for sustainable fishing by certifying and labelling products from sustainable fisheries.

Every single product from Unilever is connected with water, be it cooking, showering, or laundry. Water is vital for life. In line with Unilever's Vitality Mission, we, for example, ran a project to clean up the Brantas river in Eastern Java (Indonesia), which was heavily polluted. We have a large factory on the riverbank. The project aims to improve the quality of life for the local population by reducing river pollution. Four key areas are covered: clean environment management, involving waste management, sanitation, and clean water; health education; planting of trees, and the development of small, local industries such as fish farming. During the project, we have seen a remarkable change in the community. Normally in countries like this, the houses at the river have their back facing the river. Here, the villagers are turning their houses around to have the front of their house face the river.

Examples of Unilever projects that sustain vitality in the communities in which we live vary from raising awareness of the dangers of HIV infections in Africa, to an educational campaign promoting oral health in Nigeria and to a 'washing hands' campaign in India. In Tanzania and in Ghana, together with The World Conservation Union (IUCN), Netherlands Development Organisation (SNV) and The World Agroforestry Centre (ICRAF), we work with local communities and small businesses helping people to collect the seeds of the indigenous Allantropa tree. The edible oil pressed out of these seeds can be used to make soap and margarine.

Concerted effort

There are many Vitality issues in the world: obesity, malnutrition, cardiovascular disease, and physical

inactivity, to name a few. One billion people in this world are overweight or obese. There is a tendency to blame this mainly on the food companies. In my view, the food industry certainly has a responsibility in this, but it is primarily the dramatic changes in lifestyle over the last thirty years that are the major causes for the obesity epidemic.

Nothing is more difficult than changing people's habits. Nevertheless, Unilever marketeers, time after time, have understood when consumers were interested in new products and when they were prepared to change their cooking, washing or grooming habits. Unilever is fully committed to mobilising its capabilities and to be a partner in the multi-stakeholder approach proposed by the World Health Organization (WHO) in the Global Strategy on Diet, Physical Activity and Health. Focusing on just one aspect of the obesity epidemic will not solve the problem. Only a concerted effort by all parties involved, coordinated by local governments, will have a significant impact on worldwide public health.

Scientific underpinning

Without a thorough science base, the Unilever Vitality Mission would lack integrity, credibility and sustainable success. Unilever's commitment to research on the interrelationships between diet and health goes back more than fifty years. Back then, we were the first to discover that certain foods could lower cholesterol. We later discovered that this cholesterol lowering effect could be further enhanced through plant sterols. Our heart health business has become a successful part of our total portfolio.

Unilever fully supports the recent proposals from the European Commission aimed to make sure that health claims are underpinned by solid available scientific evidence. Since science continuously evolves, regulations should consider this. Interestingly, the Food and Drug

Administration (FDA) in the United States of America has recently relaxed the standards for making health claims on foods by ranking scientific evidence for a health claim.


Currently, we spend around 2% of our budget on Research and Development. More than half of this is spent in the area of health and vitality, which received a boost when, several years ago, we created the Unilever Health Institute. This is based in Vlaardingen (The Netherlands), and it has regional centres in Accra (Ghana), Bangkok (Thailand), and Santiago (Chile). Last year we registered about one hundred patents, of which forty were in the area of vitality.



Figure 2. Actions taken within Unilever to achieve the goals of the Vitality Mission.

Actions to Vitality

Within Unilever, a wide range of actions is taken to make the Vitality Mission come to life (Figure 2). One of them is: Proactive engagement. We realise that we can be far more successful in the world together with organisations like the World Heart Foundation or UNICEF. Such partnerships increase the level of competence, but also the level of credibility of all parties involved.



A second example is: Marketing and advertising principles. Some people in society would like us to stop advertising altogether. I would like to turn this around and suggest that they take advantage of the advertising money of large food companies. Make sure that their commercials talk about healthy lifestyles and challenge them to convince people in a creative way that healthy lifestyles are critical. Information from governments is often presented in a boring way. Our marketeers and advertising agencies have a better chance of penetrating the hearts and minds of consumers.

A third example of an area in which we need to make progress is: Packaging, labelling and consumer education. We are currently screening all our recipes throughout the world and checking these critically against sugar levels, salt levels, and different types of fats. We do not advertise this, but we believe that this is the right way forward, to be part of the solution rather than be part of the problem. With partners we can search for solutions and debate as to what we can do together in order to improve the vitality of the citizens of this planet.

Conclusion

Unilever for long has had significant consumer insight, a track record of coherent and responsible communication, strong scientific and technological capabilities, and brands that are trusted widely. Unilever is fully committed to take responsibility and put its capabilities to work with other stakeholders to improve health and vitality and to tackle nutrition problems worldwide. Only by agreeing common approaches, can lasting changes be achieved.

A white lighthouse with a red lantern room and a white railing, set against a clear blue sky. The lighthouse is the central focus of the image, with the text overlaid on its right side.

Part 1.

Global Health Challenges



Lifestyle and Noncommunicable Diseases

Dr. Derek Yach

Representative of the Director General

World Health Organization, Geneva, Switzerland

World health is in turmoil, being thrown around on the ocean by many public health crises that leave behind 'medical shipwrecks'. In addition to the looming HIV/AIDS epidemic there is a staggering rise in the incidence of chronic noncommunicable diseases (NCDs). The impact of NCDs is particularly growing in the developing countries. Their burden is enormous, not only in terms of direct health consequences, but also in terms of cost.

The four most important NCDs are cardiovascular disease, cancer, diabetes and chronic respiratory disease. Together, these are accountable for half of all deaths worldwide. Cardiovascular disease alone is causing more than two and a half million deaths in China and India each year. Even in South Africa, with the world's highest percentage of HIV/AIDS, chronic diseases are now the leading cause of mortality in people over 40 years of age. But despite its enormous scope, the NCD problem is only getting minor attention. From the official development aid budget in 2002, US\$ 2.9 billion dollar was spent on the health sector, but only 0.1% of this amount went into NCDs.

What is driving this epidemic?

There are three major sets of causes for the NCD epidemic. These all relate to lifestyle and diet: tobacco use, unhealthy diets and insufficient physical exercise (Figure 1). They exert their impact from early in life, and after decades of cumulative exposure they lead to disease and disability and to premature death. The changes in our diet and physical activity patterns have not only led to a higher incidence of chronic diseases, these diseases are often also occurring at

an earlier age than before. For example, a condition formerly known as maturity-onset diabetes is now seen in teenagers.

The current increase in NCDs is exacerbated by recent demographic changes, urbanisation and globalisation. The last fifteen years have brought a dramatic rise in life expectancy. While we are getting older, our chances of acquiring a chronic condition increase. Nevertheless, in the affluent communities people are generally aging healthier. This is not true for many of the developing countries. The rapidly increasing longevity in combination with a lack of adequate social support and pension systems in these communities is going to be an additional cause for concern.

We are now at a point in history where the world's urban population for the first time is outnumbering its rural population. This irreversible process of urbanisation is associated with better access to products and services that previously were unattainable for many people. This may imply ample access to all kinds of unhealthy food products and reduced levels of physical activity, which in turn may increase the risk of chronic disease.

Globalisation is generally accepted as bringing new ideas, new knowledge and new opportunities, but there are also downsides. Market globalisation, for example, is introducing appealing consumptive images in settings that are not equipped to deal with the negative aspects of excessive fatty food consumption. Foreign direct investment fuels growth, job creation and economic prosperity. At the same time, it may induce major health problems, as investments are often primarily made in the tobacco and alcohol industry.

What can we do to stop it?

In halting the global NCD epidemic we face many challenges. Generally, there is a close association between a country's rapid change in disposable income on one side,

and unhealthy consumer behaviour on the other. The massive increase in appliance use and electrification offers the opportunity to work together with manufacturers and retailers in communicating messages on healthy consumption to first-time users.

A healthier economic development may be reached by investing in developing closer interaction between the food and beverage industry and the global and local public health authorities. This may lead to enhanced economic growth, while at the same time guaranteeing attention for health aspects. If we focus only on economic improvement without any attempt to achieve it along healthier paths, we may end up with a situation that is now seen in certain parts of Eastern and Central Europe, where children today have a worse life expectancy than their parents.

The second challenge in prevention is selecting the proper health interventions. To tackle the problem of hypertension, for example, successfully shifting the entire distribution of blood pressure in the general population to a lower level will have a much broader impact, and

ultimately will result in a lower number of people requiring treatment. WHO therefore advocates public health measures with a population-wide effect. While on a population level the gain of such interventions can be huge, the individual reward is small. This is called the prevention paradox. Public support for this kind of approach is often limited. Yet economic and public health data clearly show that, in the long run, population-based strategies are the best way to protect everybody's health.

Impediments to progress

In the development of an effective health policy, many myths stand in the way (Figure 2). One of these is that chronic diseases result from freely adopted risks. However, as long as there is insufficient support from our environment and the healthy choice is not made easier to live by, people will not be ready to adopt a healthier life style. Governments will have to come on board and support health education and physical activity programmes that will facilitate a healthier way of living. As long as supportive action is not in place, blaming people for their health condition is not only inappropriate, but is counter-productive.

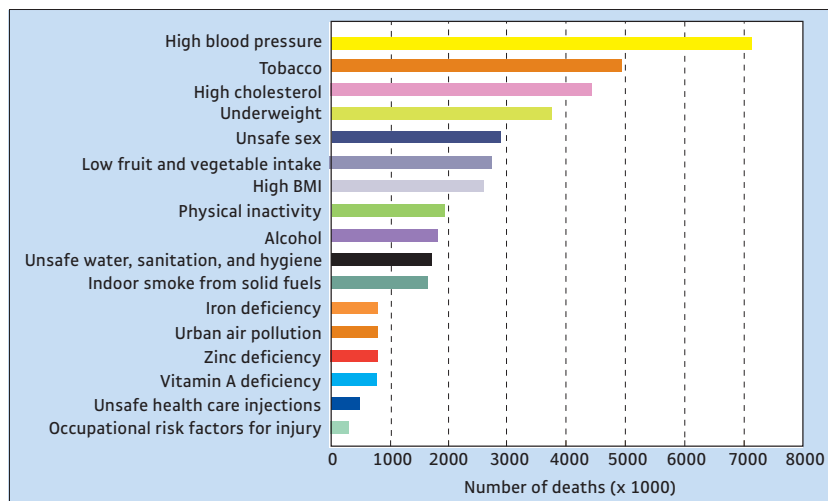


Figure 1. Worldwide deaths in 2000 attributable to selected leading risk factors. Source: WHR 2002.

Chronic diseases are not limited to elderly people; nor can they be considered diseases of affluence. Neither can we afford to wait until infectious diseases are controlled. Fortunately, many of the preventive measures that are needed to address the chronic disease epidemic can be taken at low cost and have multiple benefits.

In trying to move health policy ahead, WHO has encountered serious opposition from the tobacco industry. Over

decades, multimillion-dollar campaigns were run in order to contain, neutralise and reorient WHO. In 2003, WHO's first international treaty, the Framework Convention on Tobacco Control, was adopted by all its 192 member states, containing a key paragraph that puts emphasis on corporate accountability. Still, there appears to be very limited potential to coordinate health improvement efforts with the tobacco industry. In contrast, the food industry offers broad and largely untapped opportunities for partnership. Regular contact between WHO and the directors of global food companies has recently been established, and there is now room for joint action to tackle the chronic disease problem.

Global economic development will improve all health conditions
Chronic diseases result from freely adopted risks
Chronic diseases are diseases of the elderly
Chronic diseases are diseases of affluence
Benefits of chronic disease control accrue only to the individual
Infectious disease models are applicable to chronic diseases
We can wait till infectious diseases are controlled
Screening and treating patients in the health sector is a cost effective prevention strategy

Figure 2. Eight myths dominate policy development.

A role for the industry

The British government has looked for ways to maximise health outcomes over the next twenty years, at the lowest possible cost. The UK banker Derek Wanless has calculated three different investment scenarios, called 'solid progress', 'slow uptake', and 'fully engaged'. The 'fully engaged' scenario gave the best results: a healthier lifestyle was most rapidly adopted, and the best life expectancy outcomes at the lowest costs were achieved. This scenario requires going beyond the current public health targets, focusing more on health promotion and

prevention of disease. Not only the government, but also non-governmental organisations, consumers and the private sector should become fully engaged in this process to make it successful in practice.

Industry could play a major role in supporting and complementing the necessary government action. It could put pressure on the government to invest in public marketing projects related to healthy diet and physical activity. Successful marketing campaigns can create rapid changes in consumer behaviour and direct consumers towards a healthier choice. Industry could also expand its research and development activities in the field of healthier food options. In doing so, there is the opportunity for cooperating with developing countries, building on knowledge and capabilities that thus far has remained largely unused. This could not only result in better products and services, but also provide better means for getting innovations implemented in these countries.

Conclusion

Reducing the risk factors for NCDs and improving public health will require concerted action from all stakeholders. These not only include government and public health organisations, but also consumer organisations and, last but not least, the industry. Sustained joint initiatives are necessary to get the health message across, in particular to those groups of consumers that are most vulnerable and the least easy to reach. Only by combining all efforts we may be able to put a halt to the growing NCD epidemic.

Reference

World Health Report 2002; <http://www.who.int/whr/2002/en/>

Children's Health and Nutrition – a Global Overview

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Every year in the developing countries close to twelve million children die. Approximately 70% of these deaths are associated with conditions that could have been prevented or treated. In low-income countries, malnutrition plays a role in every other death below the age of five years. The high infant and childhood mortality rate is a reflection of the vicious circle of malnutrition and infection that keeps these countries in its grip. Poor feeding and frequent infections synergistically result in growth failure and underweight, making children vulnerable to new infections. This continuing process will eventually lead to serious malnutrition disorders and in the end spiral down towards death.

Not much has changed since 1800

In 1776, the Swedish physician Nicholas Rosen von Rosenstein, considered one of the founders of modern paediatrics, published a book called 'The diseases of children and their remedies'. The book describes respiratory infections, measles and diarrhoea as the main causes of childhood morbidity and death at that time. Despite all medical progress over the last centuries, from a global point of view the children's health situation has not changed much since then.

This is clearly demonstrated by the Global Burden of Disease study from 1996, a landmark study that outlines the world's most important causes of illness, disability and

poor quality-of-life across different age and socio-economical status groups (Murray *et al.*, 1996). In 1990, the two leading causes of so-called Disability Adjusted Life Years (DALYs) in the world were lower respiratory tract infections and diarrhoeal diseases. In both, children were hugely overrepresented. DALY is a quantitative indicator of burden of disease. It reflects the total amount of healthy life years lost to some form of disease or disability or to premature death. The third most frequent causes of illness were conditions arising around birth. Even a preventable childhood disease - such as measles - remains an important cause of death worldwide today.

A key role for the mother

The key determinants for a child's health and nutrition are depicted in Figure 1. The child's surroundings, in particular the mother, have a strong influence. First, the pregnant woman's nutritional condition and energy status has a major influence on foetal growth. Birth weight correlates to maternal weight gain in the last months of pregnancy. More importantly, a study from rural Tanzania demonstrated that low birth weight was associated with increased perinatal mortality (Moller *et al.*, 1989). Thus, giving a child a good start in this world begins with caring for the needs of the mother. It specifically requires an investment in women's education, as problems with a

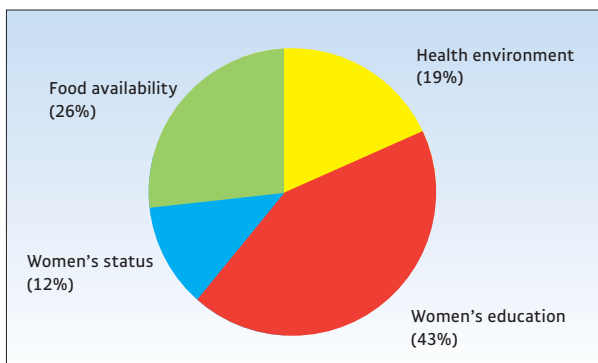


Figure 1. Determinants of a child's health and nutrition.

child's health and nutrition can be largely explained by its mother's educational situation.

The highest childhood mortality is seen during the first three to five years. This is the time when children repeatedly incur banal infections. The average number of infections during the first 36 months of life appears to be the same everywhere in the world - irrespective of where a child lives. There is, however, a dramatic difference in outcome between the affluent and the low-income societies. Mostly, this is due to the continuous interaction between malnutrition and infection in the developing countries (Figure 2).

Failure of follow-up and health care systems

From a nutritional and physiological point of view, there are two different roads to serious malnutrition. Sustained breastfeeding is important to provide children with a good

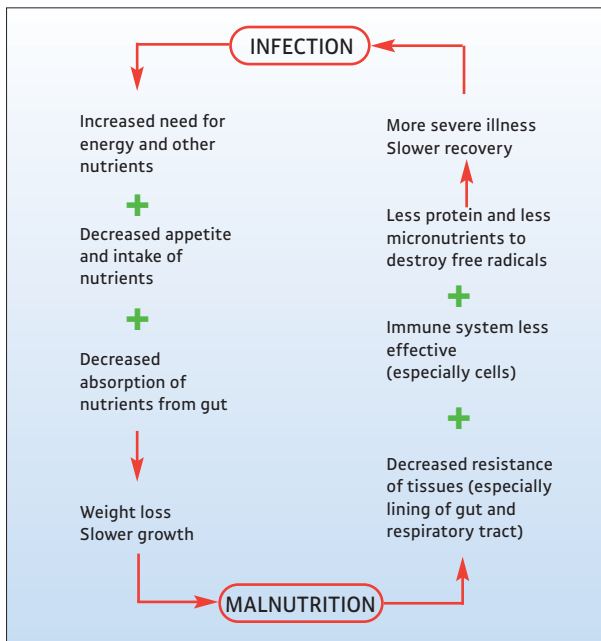


Figure 2. The vicious circle of malnutrition and infection. Adapted from: Waterlow, 1992.

nutritional basis in life. Early abrupt weaning followed by formula feeding that is prepared under unhygienic conditions may lead to repeated gastroenteritis. Subsequent starvation will eventually result in a severe form of protein-energy malnutrition called marasmus - the most common form of malnutrition and seen in 85% of undernourished children. Late and graduate weaning is preferable, but breastfeeding in this case is often followed by the introduction of a starchy, nutritionally inadequate family diet. In combination with acute infections, this can lead to malnutrition: kwashiorkor, seen in 5% of undernourished children. The overlap between both forms of malnutrition is called marasmic kwashiorkor, and occurs in 10% of cases.

Important factors in the outcome of malnutrition and infection are health care systems and follow-up systems that prevent and treat illnesses. Occurrence of kwashiorkor and marasmus is particularly due to the failure of these two systems. Children do not have access to appropriate treatment during phases of acute infection, there is a lack of treatment facilities, but more importantly, there is insufficient support for the mother and a lack of follow-up of the child.

Commitment and partnerships

Efforts to improve the current situation in the developing countries should address five partly interrelated issues (Figure 3): protein-energy malnutrition, infectious diseases, and deficiency of the micronutrients iron, vitamin A and iodine.

Because of the essential role of the mother, the first priority should be to select stakeholders and form partnerships aimed at improving the situation of women in these countries. This calls for education and communication. Breastfeeding is very important and should be promoted and supported. This should be accompanied by education on the importance of the

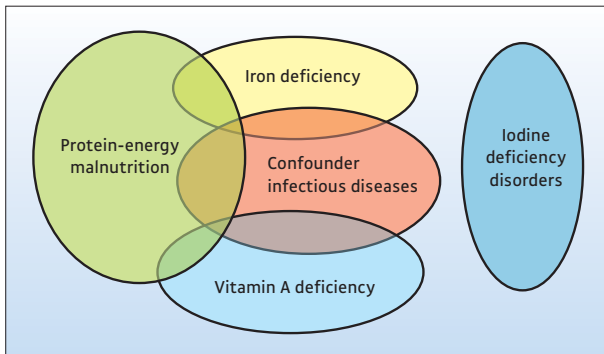


Figure 3. The five challenges in child health and nutrition: protein-energy malnutrition, infectious diseases, and selected micronutrient deficiencies.

transition to an adequate family diet after weaning. Basic to child health and nutrition is, of course, the availability of enough healthy food. Strategies to avoid protein-energy malnutrition should be aimed at both mother and child, to cover the period before birth and the first three critical years of a child's life.

Partnerships are also essential to establish better general health care systems in the developing countries, thus ensuring better maternal and child care with specific attention to the follow-up system. In attacking infectious diseases vaccination programmes are essential.

We have the knowledge, means and resources to set up proper vaccination programmes in all countries of the world but, again, there is a need for commitment and partnership. The world will not be a decent planet until this problem has been solved. Separate programmes should address the problems related to vitamin A and iron deficiency. With regard to iodine deficiency - which may lead to mental retardation in children - the World Health Organization (WHO) has done much work in co-operation with UNICEF and the International Council for the Control of Iodine Deficiency Disorders. The eradication of this condition

nevertheless remains a big challenge, in which industry can play an important role.

A new problem with regard to children's health and nutrition is the obesity epidemic that is now also affecting the young. This is not only seen in affluent societies, but also in developing countries with some regions now facing both a rising prevalence of overweight and stunting - growth retardation due to chronic malnutrition - among children and adults. Both problems will need their own specific approaches.

Conclusion

The ability to cater to the needs of a child is one of the 'criteria for a decent society' that are currently being defined by our research group at Uppsala University. If we want to improve children's health on a global scale, we will have to break the evil circle of malnutrition and infection that is responsible for the high childhood mortality in the developing countries. Prerequisite to this is improvement of women's situations. Education is a key factor, and should be complemented by better health care support for both mother and child. Targeted interventions, specifically designed to attack the leading causes of morbidity and premature death, could further reduce childhood mortality. These are all areas for partnerships between health care authorities, regulatory agencies, academia and industry.

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Dietary Advice and Practice

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A healthy food choice is the key to prevention of many chronic diseases. Dietary recommendations are made to provide guidance to consumers and health care professionals about choosing and planning a healthy diet. Their primary goal is to decrease risk factors for chronic disease. However, the growing problems of obesity, diabetes and cardiovascular disease clearly demonstrate that there is a gap between dietary guidelines and food behaviours. Many governmental organisations and scientific societies have released dietary recommendations. Although they share many similarities, there are some notable differences.

Similar macronutrient recommendations

Important population guidelines with regard to diet macronutrient content were recently issued by the United States (US) National Academies (Figure 1), the World Health Organization (WHO) (Figure 2), and the European Commission (Eurodiet; Figure 3). The recommendations for total fat are quite consistent. Although the values for daily total fat intake differ somewhat, the range between the upper and lower limits is comparable for the US and the WHO guidelines (20-35 and 15-30% of energy, respectively). This range was selected to offer flexibility in implementation of many different dietary patterns that meet the guidelines. Eurodiet recommends a daily fat intake of less than 30% of energy. A key element of all these recommendations is reduction of the daily intake of saturated fatty acids, *trans* fatty acids and cholesterol. All guidelines agree on reduction of *trans* fatty acids to 1 or 2 energy%. Evidence from the Danish Nutrition Council on the declining intake of *trans* fat in fourteen European

countries reflects industry's efforts to reduce the percentage of *trans* fat in processed food products.

For the intake of polyunsaturated fatty acids (PUFAs), the recommendations vary. The US National Academies recommend a daily n-6 PUFA (linoleic acid) intake of 5-10% of total calories, Eurodiet 4-8%, and WHO 5-8%. This differs from recent Japanese guidelines, which recommend a relatively low n-6 PUFA intake of 3-4% of calories. The recommendations for n-3 fatty acids are comparable among many groups: 1-2% of daily energy. A notable exception is that Japan recommends that half of the n-3 PUFA comes from EPA (eicosapentaenoic acid) and DHA (docosahexaenoic acid), while the US guidelines recommend only 10% of the n-3 PUFA comes from these longer-chain n-3 fatty acids.

Macronutrient	Range (% of energy)
Fat	20-35
n-6 linoleic acid	5-10
n-3 α -linolenic acid*	0.6-1.2
Carbohydrate	45-65
Protein	10-35
* Approximately 10% of the total can come from longer chain n-3 fatty acids	

Figure 1. Acceptable macronutrient distribution ranges for adults. US National Academies Recommendations, 2002.

A relatively wide range also is seen for daily carbohydrate intake, with the US National Academies recommending 45-65% of energy and WHO 55-75%. The European recommendation for carbohydrate is a minimum of 55% of calories. Protein intake according to the US National Academies can be 10-35%, whereas WHO recommends 10-15%. A new trend in all guidelines is an increase in recommended fibre intake to more than 25 grams per day.

Dietary Factor	Goals
Total Fat	15-30% energy
Saturated Fatty Acids	<10 % energy
Polyunsaturated Fatty Acids (PUFAs)	6-10 % energy
n-6 PUFA	5-8 % energy
n-3 PUFA	1-2 % energy
Trans Fatty Acids	<1% energy
Monounsaturated Fatty Acids (MUFAs)	By difference
Total Carbohydrate	55-75 % energy
Free Sugars	<10 % energy
Protein	10-15 % energy
Cholesterol	<300 mg/day
Sodium Chloride	<5 g/day (<2 g/day)
Fruits and Vegetables	≥400 g/day
Total Dietary Fibre	From foods recommended >25 g/day
Non-Starch Polysaccharides	From foods recommended >20 g/day

Figure 2. Ranges of population dietary intake goals. *Diet, Nutrition and the Prevention of Chronic Diseases, WHO Report, 2003.*

Sugar and sodium controversies

The added sugar recommendations vary. The US National Academies conclude that there is insufficient evidence to set an upper limit for total or added sugar, but suggest a maximum intake of 25% of total energy from added sugars. The South African Department of Health, on the other hand, recommends that added sugar should comprise no more than 6-10 energy% of total dietary intake. This recommendation is based on data concerning the relationship of added sugar to dental caries and obesity. The specific guideline states that: ‘food and drinks containing sugar should be taken sparingly, and not between meals.’

Recommendations for sodium intake differ among countries. The US National Academies recommended in 2002 that the adequate intake for sodium was 1500 mg per day. This is considered by some to be a therapeutic amount of

sodium for the management of high blood pressure. The tolerable upper intake level was set at 2400 mg per day. However, a coalition of six Canadian medical groups rejected a recommendation for universal salt restriction, based on insufficient evidence for the health benefits of lower sodium diets. For blood pressure reduction, they recommend lifestyle measures such as exercise, a balanced diet and stress management. In addition to a nutritionally adequate diet, all guidelines recommend a moderate level of daily physical activity.

Food-based dietary guidance

Macronutrient recommendations are made quantitatively, often in percentages, and consequently are not easy for consumers to implement in daily life. Food-based dietary guidelines have been developed to facilitate the adoption of these recommendations by the general public.

Component	Population Goals
Physical Activity Levels (PAL)	PAL > 1.75
Adult Body Weight as BMI	BMI 21-22
Dietary Fat (% energy)	<30
Saturated Fatty Acids (% energy)	<10
Trans Fatty Acids (% energy)	<2
Polyunsaturated Fatty Acids n-6 (% energy)	4-8
Polyunsaturated Fatty Acids n-3	2 g linolenic+200 mg very long chain
Carbohydrates (% energy)	>55
Sugary food consumption, occasions per day	≤4
Fruit and vegetables (g/d)	>400
Folate from food (µg/d)	>400
Dietary fibre (g/d)	>25 (or 3 g/MJ)
Sodium (as sodium chloride) (g/d)	<6
Iodine (µg/d)	150 (infants-50) (pregnancy-200)
Exclusive Breast Feeding	about 6 months

Figure 3. Population goals for nutrients and features of lifestyle consistent with the prevention of major public health problems in Europe. *Nutrition & Diet for Healthy Lifestyles in Europe, Eurodiet, 2002.*

The American Heart Association (AHA) recently issued dietary guidelines that target four important goals:

- 1) *Maintaining an overall healthy eating pattern.*
A healthy diet should include a variety of fruits and vegetables (5 or more per day), grain products (especially whole grains, 6 per day), fat-free and low-fat dairy products, legumes, poultry, lean meats and fatty fish (twice per week).
- 2) *Maintaining an appropriate body weight, with emphasis on prevention of overweight.*
This should be achieved by matching energy intake to overall energy needs, and by sufficient physical activity.
- 3) *Maintaining a desirable cholesterol and lipoprotein level.*
The intake of foods high in cholesterol or with a high content of cholesterol-raising fatty acids should be limited. These foods can be substituted with grains (especially with soluble fibre) and unsaturated fatty acids from fish, vegetables, legumes and nuts.
- 4) *Maintaining a normal blood pressure.*
The recommendation is to limit the intake of salt (< 6 g NaCl/day) and alcohol (2 drinks per day for men, and one drink per day for women). In addition, individuals should maintain a healthy body weight, as well as a dietary pattern with reduced fat content and emphasis on fruits, vegetables and low-fat dairy products. An example is the Dietary Approaches to Stop Hypertension (DASH) diet (Appel *et al.*, 1997).

The AHA in 2002 issued a scientific statement on the consumption of fish, fish-oil and n-3 (or: omega-3) fatty acids in relation to cardiovascular disease (Kris-Etherton *et al.*, 2002). This includes the recommendation to eat a variety of - preferably fatty - fish at least two times a week and to include oils and foods rich in alpha-linolenic acid. This is consistent with guidelines made by the European Society of Cardiology, that also recommend oily fish and n-3 fatty acids for the prevention of cardiovascular disease. Patients with documented coronary heart disease (CHD) are advised to consume 1 gram of n-3 fatty acids from fish oil per day.

Food-based dietary guidelines are often translated into food pyramids, such as the USDA Food Guide Pyramid, or the Mediterranean Food Guide Pyramid. Both pyramids emphasise vegetables, fruits, and whole grains. The USDA Pyramid differs from the Mediterranean Pyramid in that more animal products are allowed, but it is implicit they be lean, low-fat and non-fat food choices. A 'Western' dietary pattern, with high intake of red and processed meat, refined grains, sweets and desserts, French fries and high-fat dairy products, has been shown to increase CHD risk by 64% (Hu *et al.*, 2000).

Achieving healthy diets worldwide

Despite all this guidance and knowledge about risk factors, the incidence of chronic diseases is rising. Targeted interventions are needed to close the gap between recommendations and an individual's actual dietary habits. Several successful projects demonstrate that this is feasible.

The North Karelia Project in Finland was started in 1972 with the aim of preventing noncommunicable diseases and particularly to curb the high mortality from cardiovascular disease. In collaboration with the community, the health sector, the food industry and mass media, initiatives were started to promote a healthy diet and physical activity and

to reduce smoking. After 25 years, the project achieved a 17% reduction in serum cholesterol levels in the population and a 73% reduction in CHD mortality among men of 25-64 years of age (Puska and Keller, 2002).

Since the launch of the National Cholesterol Education Program (NCEP) in the US, an overall decrease of serum cholesterol from 5.39 mmol/L to 5.30 mmol/L (208 to 204 mg/dL) has been achieved. The AHA plays a key role in the publication of cookbooks and educational materials that can help people change their diet. AHA also introduced the Heart-Check mark on food labels; all products displaying this mark meet the criteria for saturated fat and cholesterol. Food labelling is a useful tool to help people implement dietary recommendations. However, current labels can be difficult to understand for consumers, and food pyramids are generally based on food categories rather than on specific food products consumers are considering when they are shopping.

By recognising the importance of a healthier diet, the private sector can make a significant contribution to improving health. Efforts from the food industry have already resulted in the development of healthier food products, such as special margarines and other products with added plant sterols and stanols for lowering blood cholesterol. In the United Kingdom, insurance companies recently raised their premiums for life insurance policies in relation to the increasing Body Mass Index (BMI) in the population. Moreover, some companies are promoting physical activity among their employees, for example by providing access to fitness centres and allowing time to use them. To achieve a global healthy diet, large-scale effective strategies for the public will have to be developed that go beyond the nutritional recommendations.





Conclusion

Worldwide, many dietary recommendations have been made for improving public health and reducing the risk factors for chronic disease. These recommendations are based on scientific evidence and are generally consistent, although some differences exist among countries. Dietary changes that are necessary to meet the current guidelines will require major intervention efforts by government, professional, local, and industry groups.

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Part 2.
*Developing Science and
Technology*

Milestones in Nutrition Science

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For a long time nutritional research has mainly focused on micronutrient deficiency. Scientific developments in the field provided insights into the mode of action of micronutrients and their essential role in our diet. This helped to establish nutrient-based recommendations for adequate nutrition. However, gradually the understanding grew that malnutrition is a multidimensional problem that may affect different physiological functions. Particularly research on the immunomodulating effect and the therapeutic use of nutritional factors has drawn attention to the health-promoting potential of food. This has resulted in a significant change in the traditional concept of nutrition. The focus in nutritional science has shifted from adequate nutrition to optimal nutrition that may promote health, improve wellbeing and reduce the risk of chronic disease.

Coping with nutrient deficiency

The most important micronutrient-related public health problems worldwide are deficiencies of iron, iodine and vitamin A. Emerging problems in some parts of the world are related to shortages of folate, zinc and calcium. Low intake and storage of micronutrients initially result in biochemical deficiencies, which may remain subclinical for a long time (Figure 1). However, they will eventually lead to overt deficiency symptoms and disease. Severe iron deficiency, for example, will affect cognitive development, productivity, immunocompetence and reproductivity resulting in increased mortality.

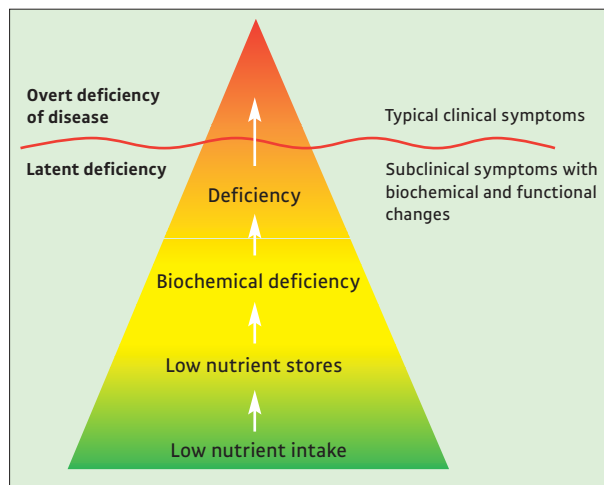


Figure 1. Overt nutrient deficiency: the 'tip of the iceberg'.

Micronutrient deficiency in man can have different causes. The most obvious one is malnutrition. However, even if the consumption of nutrients is adequate, their bioavailability may be low and their utilisation insufficient. Uptake may be reduced by health problems related to the gastrointestinal tract. Furthermore, requirements are often increased in such vulnerable groups as children, pregnant women and the elderly.

There are several ways to cope with micronutrient deficiency. When food is available abundantly, deficiency can be prevented or corrected by diversification within the diet or by changing eating habits. Health and nutrition education plays an important role in the promotion of such dietary measures. Another option is food fortification. This was defined in 1994 by the World Health Organization (WHO) and the Food and Agriculture Organization of the United Nations (FAO) as: 'adding one or more nutrients with the aim of preventing or correcting nutrient deficiency in the whole population or in subpopulation groups at risk'. Where there is a limited food supply or an insufficient variation of food products, supplements can be useful.

Malnutrition has a suppressive effect on the immune system, leading to increased susceptibility to infection. Suppressed cell immunity was initially related to protein deficiency, but recent research has shown that other factors also play a role. Immunonutrition is now discussed in a wider context, involving proteins, micronutrients, and lipids. In particular, n-3 polyunsaturated fatty acids are well documented as natural suppressants of the immune system. They may reduce inflammation by intervening in the arachidonic acid metabolism. Research has also demonstrated the importance of sufficient supplies of nutritional anti-oxidants, which are involved in the defence against free radical formation.

Nutrition to improve health

Not only adequate macro- and micronutrient supply, but also lifestyle factors such as smoking, physical activity and use of alcohol, as well as environmental factors and genetic predispositions influence morbidity and mortality of many diseases. There is a growing consumer awareness of the importance of a healthy diet and lifestyle. Attention has shifted from food purely as a means of survival and satisfying hunger, to something that may substantially reduce the risk of disease.

In 1998, the US health authorities decided to fortify all enriched grain products - such as flour - with synthetic folic acid. An additional intake of 0.4 to 0.5 mg per day may prevent up to 70% of such common and serious birth defects as neural tube defect. The food fortification programme has resulted in a population-wide increase in the concentration of serum folate, and a reduction in the concentration of plasma homocysteine. It has eradicated anaemia caused by folate deficiency, and it has reduced mortality from stroke and heart attack by 3.4% one year after implementation of the programme (Oakley, 2002).

Nutrients can also be added to food with the aim of adding a specific property or health benefit. An example is the

enrichment of margarines with plant sterols or stanols, which lower total cholesterol and LDL-cholesterol levels and improve the LDL:HDL ratio.

Nutritional risk assessment

Addition of ingredients may have unexpected and undesirable side effects, as there can be interaction with other dietary components or drugs, or an overload of nutrients after excessive exposure. An example is the reduction of serum beta-carotene that was seen with the fat-replacing compound olestra (sucrose polyester). In particular, in vulnerable subpopulations caution is warranted. These insights have prompted further research into the safety aspects of food.

Risk assessment of added nutrients can take place at different levels of observation. It should not only address the effect on whole body parameters, such as body weight or body composition, but also the effect on organs, tissues, and effects at the cellular and molecular level. Many tests have been developed including teratogenicity, morphological, histochemical and histopathological tests.

The background to risk assessment is provided by information on the type of hazard, dose-response relationship, information on intake and exposure, and risk characterisation (Figure 2). A valuable parameter is the

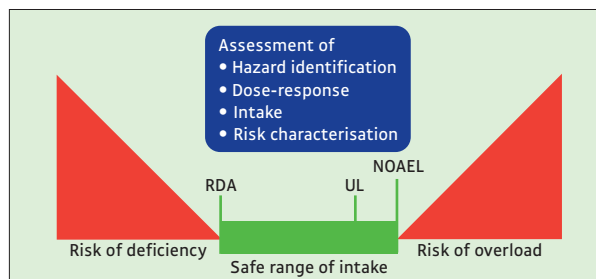



Figure 2. Risk assessment of nutrients for food fortification. RDA: Recommended Daily Allowance; UL: Upper Safe Level of Intake; NOAEL: No Observed Adverse Effect Level.



tolerable upper intake level (UL). This is defined as the maximum level of total chronic daily intake of a nutrient from all sources (either naturally occurring or added as a supplement) that is unlikely to have adverse health effects for humans. This level applies to all groups of the general population, including the most sensitive individuals. It excludes identifiable subpopulations with extremely high sensitivity or those who receive the nutrient under medical supervision.

For food fortification, micronutrients can be categorised into three groups. The first are micronutrients with a high safety index - meaning a very wide range between the Recommended Daily Allowance (RDA) and the lowest toxic dose. Examples are vitamin B1, B2, B6, E, pantothenic acid (vitamin B5), biotin, phyloquinone (vitamin K1), and the minerals potassium (K) and magnesium (Mg). The second group consists of micronutrients with a moderate safety index. Their bioavailability is affected by interaction with other nutrients, and their risk is always considered pair-wise: calcium (Ca) and phosphorus (P); iron (Fe) and vitamin C; folate and vitamin B12. Finally, there is the group of micronutrients with a very narrow safety margin, including vitamin A as retinol, vitamin D, iodine (I), iron (Fe), selenium (Se), copper (Cu), zinc (Zn) and vitamin K3. For this type of nutrient, restriction is mandatory.

Conclusion

Milestones in nutrition science include:

- Unravelling the function of micronutrients, establishing nutrient-based recommendations and fortification programmes;
- Insight into the biological mechanisms of nutrients in health and disease, and their effects on the immune system;
- A focus on optimal nutrition in order to promote health and reduce the risk of noncommunicable diseases;
- The addition of nutrients to food at physiological doses or higher for specific functional benefits;

- Improved analytical methods to facilitate nutritional assessment and risk evaluation.

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Consensus and Controversies in Developing Science

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Worldwide, independent experts on nutrition generally produce similar recommendations for a healthy diet. Years of research have resulted in consensus on a broad range of nutritional issues. We should not take up more calories than we expend, our body needs fuel in the form of carbohydrate, fat, protein and/or alcohol, there are many nutrients (vitamins, minerals, amino acids, fatty acids) that are essential to body maintenance, and we need fibre for good gut function. In my view, consensus should be based on scientific evidence derived from hard data. In contrast, a lack of convincing and scientifically sound data gives rise to controversy. The current debate on the relationship between diet and health and the prevention of noncommunicable diseases includes a number of such controversies. On the other hand, some of the established scientific facts have never reached the consumer.

Consensus is often underused

Science is dynamic and ever-changing. That upon which we currently agree, may have been a controversy in the past. For example, initially people thought that beri-beri, (which ravaged the Far East one hundred years ago) was caused by bacterial toxins. This idea lasted even after the Dutch bacteriologist Christiaan Eijkman observed that it could be induced by a diet of white rice and cured by whole rice. The discussion only resolved after the isolation and synthesis of vitamin B1 and the discovery that beri-beri was, in fact, a vitamin deficiency disease.

In the affluent countries, real vitamin deficiencies have become infrequent. However, apart from their essential function, vitamins and other nutrients often have additional benefits that are largely recognised by the scientific community but which, in many cases, remain unknown to the public. For example, folic acid taken before conception can prevent 70% of all neural tube defects, yet many women who want to become pregnant fail to take it. Furthermore, research has unequivocally shown that additional vitamin D intake of 10-15 microgram per day decreases the risk of hip fracture in the elderly. However, many elderly do not take in extra vitamin D. Adoption of this recommendation is hampered by poor regulation of health claims, fortification limits and, most of all, by the ignorance of health care professionals and consumers.

Potassium and potassium-rich foods are known to lower blood pressure. Evidence for this comes from the Dietary Approaches to Stop Hypertension (DASH) trials that assessed the influence of dietary patterns on blood pressure (Appel *et al.*, 1997). The effect of spinach and other leafy vegetables on blood pressure is probably due to their potassium content. Lowering blood pressure lowers stroke risk, thus, potassium-rich foods could contribute to reducing the risk of stroke. Likewise, iron can prevent anaemia, extra wheat fibre can prevent constipation, and iodine can prevent mental retardation. The introduction in India of Unilever's Annapurna brand - salt fortified with iodine - has made a major contribution to the reduction of iodine deficiency, the biggest preventable cause of mental retardation. It has improved public health while at the same time has been commercially successful, thus illustrating that the food industry can have an important role in the large-scale implementation of knowledge from nutritional research.

The current controversies

Controversies come from a lack of data. They can be magnified through commercial interests, or through attempts to



exploit food safety scares for social causes, which, for example, happens with genetically modified organisms (GMOs). This can result in a controversy of much larger proportions than is justified by the actual data, a process in which the media may play an additional role although the media rarely create controversies all by themselves. Controversies are also magnified by over-interpretation of scientific results, including epidemiologic associations, animal studies and surrogate endpoints for clinical efficacy. Cholesterol, for example, is used as a surrogate marker for cardiovascular disease. However, the finding that a product lowers serum cholesterol levels does not automatically imply that it will reduce the incidence of heart disease.

Can we prevent and treat obesity?

When energy intake exceeds the amount of calories we spend, our weight increases. The message to lose weight therefore is simple: eat less and be more active. In practice, weight loss is difficult to achieve. Humans appear to be genetically programmed to store energy for times of famine. Ideas about the most appropriate weight loss diet have changed over the years: in the 1980s and 1990s, professionals advised a light low-fat high-carbohydrate diet, but currently the high-fat 'low-carb' diet is very popular among the public, although most professionals still do not advise this.

Thus far, none of these approaches has been validated in long-term trials. A recent study comparing body weight changes on a conventional low-fat diet versus a low-carbohydrate diet demonstrated that the latter - the so-called Atkins diet - caused substantial weight loss during the first 3-6 months, but this was followed by weight regain (Figure 1). This is an observation generally seen with weight loss diets. Suggestions that specific foods can help to control body weight only increase the obesity problem and delay the painful measures that are needed to solve it: less food, more sweat.

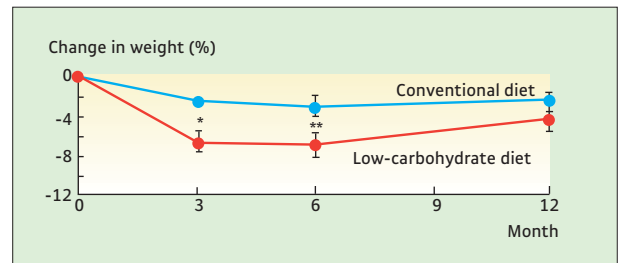


Figure 1. Body weight changes on a conventional low-fat diet versus a low-carbohydrate, high-protein, high-fat (Atkins) diet. *: Significant difference, $P=0.001$; **: $P=0.02$. Adapted from: Foster *et al.*, 2003.

Do extra B-vitamins protect the heart and the brain?

Epidemiological studies have suggested an association between elevated serum homocysteine and an increased risk of cardiovascular disease. About 20% of the general population has a moderately elevated homocysteine level that can be lowered easily by adding extra B-vitamins to the diet. However, an actual causal relationship between homocysteine and elevated heart disease risk can only be proven by controlled clinical studies. Hard data are expected in the next few years.

Vitamin B12 - easily administered as oral medication or through fortified food - might prevent anaemia and symptoms of fatigue, and even cognitive decline in the elderly (Malouf *et al.*, 2004). In view of the growing prevalence of dementia, this holds a promise for the future, but more studies are needed to confirm the suggested benefits of vitamin B12.

Do fatty acids from fish prevent cardiac death?

There was a growing body of evidence on the association between fish oil consumption and decreased risk of cardiac arrest. Initial epidemiological data were supported by results from animal studies and clinical trials, which gave rise to very optimistic expectations. However, recent clinical studies have provided conflicting results. An

American trial in 200 patients with cardiac arrhythmia who had a defibrillator implanted, could demonstrate no beneficial effect from fish oil. At present two studies in the same type of patients are being performed in the US and The Netherlands. The latter - the largest - will yield its first results in 2005. In addition, an ongoing Dutch trial in 4000 patients with prior myocardial infarction tests the effect of alpha-linolenic acid, an n-3 fatty acid from soybean or rapeseed oil, in comparison to fish oil and placebo. Hopefully these studies will provide solid answers.

Can antioxidants prevent heart disease?

The oxidation hypothesis appeared to answer the question how LDL, the carrier of 'bad cholesterol' in the blood, could lead to cholesterol plaque formation in arteries. Only oxidised LDL is easily taken up by macrophages, which then deposit it into the artery wall. Heavy plaque build-up narrows the vessel opening and restricts blood flow, thus increasing the risk of infarction. If this hypothesis is true, antioxidants that inhibit LDL oxidation might prevent plaque formation.

Several trials have tested whether antioxidants can prevent heart disease. A large randomised double-blind placebo-controlled trial in the United Kingdom, the Heart Protection Study, investigated the effect of an antioxidant cocktail of vitamin E, C and beta-carotene for 5.5 years. It demon-

strated no significant difference in mortality to placebo, neither for heart disease nor for cancer, lung disease, dementia, cataracts or fractures (Figure 2). The authors conclude that anti-oxidants do not prevent cardiovascular disease in high-risk patients. The question whether other antioxidants such as the polyphenols from fruits, vegetables, tea and red wine help prevent heart disease is at present controversial.

Can a certain diet prevent cancer?

Despite an ingrained perception, there is no evidence from long-term clinical trials for an anti-cancer effect from fruits and vegetables. The existence of an association between anti-oxidants and cancer remains doubtful. Only two minerals, calcium and selenium, have shown some potential in the prevention of colon cancer and prostate cancer, respectively, but trials studying their effect have still a long way to go.


Sterols lower cholesterol, but do they reduce heart disease?

The scientific observation that consumption of 2 grams of plant sterols per day lowers LDL levels by 10% has led to the introduction of functional foods like margarines with added plant sterols and stanols. Serum LDL is a surrogate endpoint for heart disease. While it is plausible that lowering LDL cholesterol levels will result in a decreased risk for cardiovascular disease, this has not yet been definitively proven (Katan *et al.*, 2003).

An increased dietary intake of plant sterols inhibits intestinal cholesterol absorption while modestly increasing plasma levels of plant sterols. From epidemiological studies, concern has risen that such small increases in blood sterol levels may be associated with atherosclerosis and higher risk of heart disease. However, a causal relationship is not established. To establish definitively that lowering blood cholesterol with plant sterols results in a reduced risk of coronary heart disease, a trial that studies the effect of plant sterols, for example measuring the

	Number of deaths	
	Anti-oxidant	Placebo
Heart	664	630
Other vascular	214	210
Cancer	359	345
Lungs	103	101
Other	106	103
Total	1446	1389

Figure 2. Effect of antioxidant vitamins on mortality. Adapted from: Heart Protection Study Collaborative Group, 2002.



arterial thickening by using non-invasive ultrasound techniques, would be highly valuable.

Conclusion

Despite consensus among investigators on many dietary recommendations, knowledge from nutritional research is still underused. Adequate public health education remains an important challenge for the future. Controversies can only be resolved by hard data from sufficiently large and long-term clinical studies. The question whether cancer could be prevented by choosing the right diet is one of the most important questions in nutritional research. Unfortunately, progress in this field is slow.

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From Breakthrough Science to Health Claims

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Within the food industry, Research and Development plays an important role in generating scientific ‘breakthroughs’ and innovations to rejuvenate products and brands. Such advances are typically communicated to consumers by making a certain claim for the new product or the improved property of an existing one. However, in many cases the process from breakthrough to claim is not as straightforward as it seems.

Different types of claims

Any statement or implication that a product has a particular property is called a claim. This can either be a functionality claim or a health claim. Functionality claims include, for example, statements about taste or convenience that can easily be judged by consumers themselves. In contrast, health claims stating that they have a certain impact on the body are much harder to judge. Nutrient content claims are the easiest to judge for consumers: by reading the label, people can compare the nutrient content of products. Health claims on the benefit of a particular nutrient, or on its effect on disease risk, are much more complicated, and often impossible to evaluate for consumers.

Requirements for claims vary between scientists, marketers and consumers. Scientists want claims to be supported by robust data. The process between science and claim should be transparent, and importantly, claims should be based on scientific consensus. For marketers, claims need to be unique and compelling to consumers, and they want to be able to use them immediately. Consumers want truthful, non-misleading claims that provide them

with adequate information for making healthy choices. First, however, consumers want ‘real food’. No matter what the health claim is, a product should taste good and preferably be convenient as well.

Breakthrough science in food industry

Early examples of property breakthroughs were the discovery of canning that enabled a longer ‘shelf life’ of food products, and pasteurisation. This had the additional advantage of keeping the taste of the product intact. Technology breakthroughs were made by Unilever in developing low-fat margarine and even zero-fat spreads. Nutritional breakthroughs usually take more time, primarily because of the slow process of building the necessary scientific consensus.

Nutritional science has gradually shifted its focus from research on the basic function of nutrients to the benefits of food products on risk reduction for chronic disease. Many advances have been made, and more can be expected. These may concern the discovery of new benefits from known or novel components. The promising new science of nutrigenomics - the study of the relationship between genes and nutrition - may eventually result in individualised advice on optimal diet and lifestyle.

New benefits

An example of a familiar nutrient for which new benefits were established is the n-6 polyunsaturated fatty acid (PUFA) linoleic acid. Linoleic acid was recognised as an essential fatty acid in 1929, and was initially called vitamin F. In the 1960s, researchers discovered that it acted as a precursor to prostaglandins, which play an important regulatory role in numerous bodily functions. Around the same time, it was observed that linoleic acid also actively lowers blood cholesterol. This knowledge contributed to a technology breakthrough: the production of spreads with a high PUFA content. Almost immediately, a health claim was made for the new spread - Becel (blood



cholesterol lowering) - claiming a beneficial effect on heart and blood vessel function. Due to full endorsement by the Dutch medical community, there was a minimum lag time between the breakthrough and making the claim.

Folate, which plays an essential role in cell formation and function, is another example of a nutrient with newly discovered benefits. Already around 1930, folate deficiency was recognised as a cause of anaemia. In the 1990s it became clear that an adequate intake of folate significantly reduced the risk of neural tube defects. Yet only in 1996 - three to five years after publication of the key studies substantiating this benefit - the US Food and Drug Administration (FDA) approved the health claim for folate and neural tube defects. Evidence is now emerging for a role of folate in reducing the risk of coronary heart disease.

New benefits may also come from non-nutrients. The cholesterol-lowering effect of plant sterols was already known in the 1950s. Some years later, it was discovered that fatty acid esters of plant sterols dissolve better in fat, which might improve their cholesterol-lowering efficacy. However, it was not until the late 1990s that researchers were able to prove that plant sterol and stanol esters in food actually reduced blood cholesterol levels (although efficacy may depend on the specific carrier). It was also demonstrated that plant sterols exerted their LDL and total cholesterol lowering effect even at very low doses in products such as Becel pro-activ spread (Figure 1). In 2000, the US Food and Drug Administration (FDA) granted an unprecedented early approval for a health claim on plant sterol or stanol containing food products. This was particularly due to the high public health importance of lowering cholesterol and the potential reduction of cardiovascular mortality in the population.

What makes claims effective?

If the food industry wants to make effective claims, it will have to understand what health areas consumers are

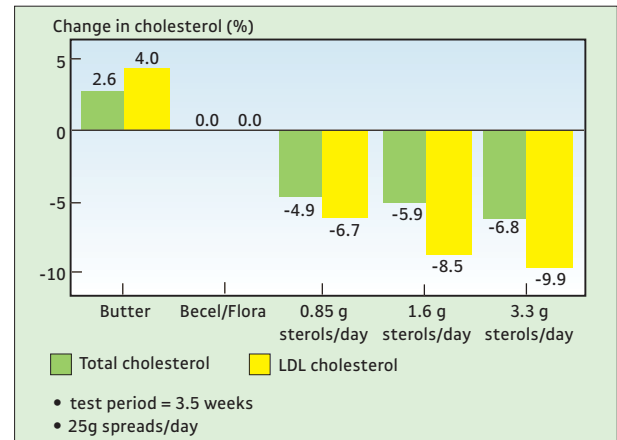


Figure 1. Dose-dependency effects of plant sterols. Adapted from: Hendriks et al., 1999.

interested in. The emphasis should shift from avoiding the negative, e.g., reduced salt, to claiming the positive, e.g., high calcium content. Content claims may be as effective as health claims. This is of particular interest as building scientific consensus is much easier with a content claim than with a health claim. Moreover, content claims are much easier to understand to consumers. The food industry will have to know whether consumers just want to be informed or if they want to be educated on health aspects as well. And most importantly, claims should be clear to consumers.

There are many regulatory hurdles on the road to claim approval. Yet, if a claim has clear public health relevance, if it is properly and scientifically substantiated, and if the consumer is interested in it, it should be permissible. A prerequisite is that the product's nutritional composition is eligible to carry the claim. The product should also be adequately labelled. The FDA has issued guidance on a process for evaluating and ranking scientific evidence for a qualified health claim, to be able to deal with emerging scientific evidence for health benefits. The ranking system categorises the quality and strength of the scientific

evidence into four different levels: high, moderate, low and extremely low scientific agreement. The FDA has announced that it will also conduct consumer research to make sure that the language used is easily and accurately understood by consumers.

In Europe, a debate is ongoing on whether certain types of claims should be prohibited. These include claims on products for children or alcoholic products, psychological and behavioural claims, and claims for weight management and satiety. Claims, however, are part of the process of making informed decisions. Unilever feels that claims should be permitted when they are based on sound scientific support. Regulation should take into account that science is continuously evolving. Whether regulatory authorities or expert communicators are in the best position to decide on the final wording of the claim and the supporting messages is open for debate.

It is essential that the lag time between nutritional breakthroughs and health claims is shortened. Nutrition is at the forefront of the war against noncommunicable diseases, a fight in which claims can play a key role. This needs a transparent and efficient approval system, based on scientific knowledge and without interference of political issues. There is a strong need for partnership between scientific experts, authorities, non-governmental organisations, consumer organisations and the food industry. Cooperation is particularly needed in view of the current lack of sufficiently long-term clinical dietary trials, which are very expensive and difficult to conduct. It may require agreement by consensus rather than decision based on proven science.

Conclusion

Over the years, nutritional science has resulted in many breakthroughs, and more are still to be expected. It is highly important to keep consumers informed on these

advances. New information is often communicated by a food claim. To encourage investments in research into the health benefits from nutrition, a transparent and efficient claims approval system is needed. Particularly, combined efforts are needed to shorten the lag time between scientific breakthrough and claim approval. Fast and adequate information to consumers on nutritional issues may help to make the healthy choice an easier choice.

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Part 3.
The Consumer's Taste for
Health

The Consumer Need for Health Information

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Health is one of the most important drivers for consumer food choices. However, it holds a special position, because it is hard to verify the health benefit of a food product for consumers. Consumers need to rely on information about the health properties; nutrition and health-related claims are important tools for this purpose. To have a long-term effect on consumers' food choices, these claims should be correct and credible, but also motivating. These two requirements do not always go hand in hand.

Maslow and food choice motivations

To understand the effect of health claims, it is important to understand consumer motivation. Consumer needs - the fundamental forces that create human behaviour - are multi-dimensional and hierarchically organised. This was already recognised by the American psychologist Abraham Maslow. Most fundamental are the physiological needs: our needs for water, sleep and food. Then come needs for safety, security and shelter, followed by needs for love, acceptance and belonging. Above those, esteem, and self-actualisation follow. Lower levels needs take priority over needs higher in the hierarchy: as long as a lower level need is not satisfied, people will not care too much about the higher order needs.

A similar hierarchy can be found in food choice motivations (Figure 1). Food security is most fundamental, then food safety, followed by taste, price and convenience. Still higher in the hierarchy, we find health, then sustainability and, last, moral. Consumers do not worry about taste when food safety is at stake, and health is not a strong issue when

taste, price and convenience are at stake. The hierarchy is largely determined by the time it takes for these motivations to materialise, and by the one who benefits from it: you as a person, or your close relatives versus the society. The shorter the term at which motivations materialise, and the more personally relevant they are, the higher the priority of the need.

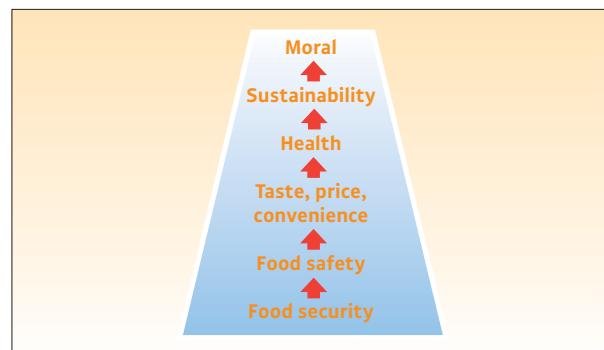


Figure 1. The hierarchy in food choice motivations.

The hierarchy helps us to understand today's 'no-compromise consumer' who wants it all and wants it now: taste, health and convenience. Across the globe, consumers do not want to sacrifice convenience and pleasure for the sake of health (Figure 2). Therefore, the only way to make the healthy choice the easy choice is to make sure that the healthy choice is the convenient and pleasant one.

Health is a special driver

The key difference between health and many of the other more urgent motivations is that consumers cannot personally verify the contribution that products make to their health. However, they do form perceptions, beliefs or convictions about how healthy the products are. These are either based on information from, for example, nutritional centres, food companies and the media, or by the consumer's own simple 'rule of thumb'. For instance, consumers may think they can judge the healthiness of a

soft drink by its colour. This strong reliance of consumers on such information to form their perceptions and beliefs explains why health claims are so heavily debated: it leaves room for claims that mislead and product cues that misinform.

Nutrition and health claims

Nutrition and health claims can only have a long-term public health effect if they are credible and scientifically substantiated as well as relevant and appealing. In addition, they should follow legal requirements. The Nutritional Label and Education Act (NLEA) states that claims may not be misleading and should assist consumers in maintaining healthy, dietary practices. The new European Union (EU) draft legislation says that health claims are only allowed if the average consumer can be expected to understand the beneficial effects as expressed in the claim. The average consumer is defined in the draft legislation as the consumer who is reasonably well informed and reasonably observant and circumspect. To date, legislation tends to focus much more on the scientific substantiation of a claim than on its motivating effect on consumers.

In the presence of nutrition and health claims, consumers pay less attention to the nutrition facts panel on the back of a pack. This has been demonstrated in a real-life study in a supermarket, initiated by the Food and Drug Administration (FDA) (Roe *et al.*, 1999). However, in experimental studies when consumers have been made aware of both the health claim and the nutrition facts panel, it has been consistently demonstrated that consumers use these as two independent sources of information to assess a product.

Consumers tend to over-generalise ingredient claims to non-featured nutrients and to the overall perceived healthiness of the product (Andrews *et al.*, 1998). For example, if the claim is 'low cholesterol', people will infer

that the product is also low in fat. Over-generalisations from nutrients to the disease risk reduction are not likely to occur. For instance, people do not over-generalise the claim 'high in calcium' to imply a reduced risk of osteoporosis.

Motivating or misleading?

An important dilemma exists between the extent to which claims that are scientifically and legally incorrect on the one hand, and motivating the consumer on the other. This is nicely shown in a study by Burke *et al.* (1997), in which they offered a choice in four brands of cooking oil, two of which were peanut oil. They formulated four claims, ranging from specific to more general, such as 'cholesterol free', 'a cholesterol free product' and 'all peanut oils are cholesterol free'. The test included the condition where there was no claim.

The question was if these claims would have an effect on how consumers perceive these products and how they chose them. Knowledgeable consumers, who knew that 'cholesterol free' is a hollow claim (as this is a typical characteristic of peanut oil) did not change their choice behaviour. However, less knowledgeable consumers were much more likely to choose the healthier peanut oils when any of the hollow health claims was attached to them. This shows that 'misleading' health claims can help consumers

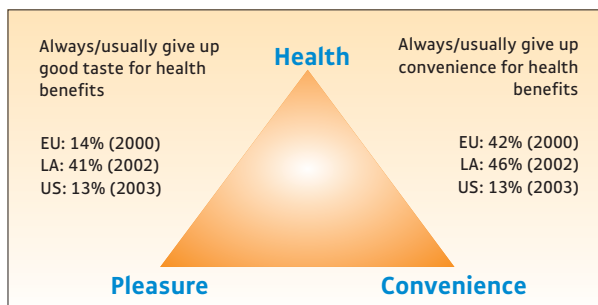


Figure 2. The no-compromise consumer wants it all: taste, health and convenience. EU=European Union; LA=Latin America; US=United States of America.

to make healthier choices, but at the same time it shows the dilemma: the trade-off between the correctness of the claim and its motivating aspects.

Claim strength and focus

Positive claims are not always more convincing and motivating to consumers than negative claims. This depends to a great extent on whether the consumer is promotion-focused or prevention-focused. In the first case, consumers look for new opportunities and the positive things in life, such as good health. In the second case, consumers have a personality that aims at avoiding such problems as diseases.

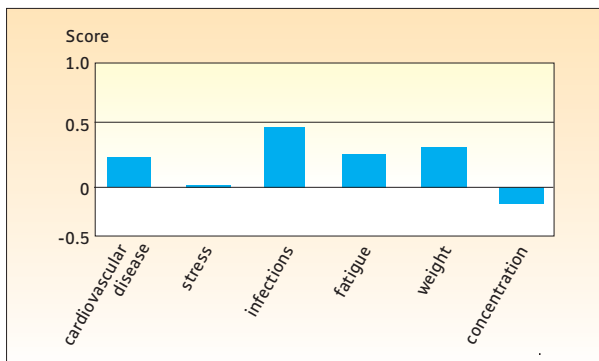


Figure 3. Consumer appeal of yoghurt health benefits.

How consumers appreciate different health claims on yoghurt has recently been studied in four countries: the United Kingdom (UK), the United States of America (USA), Germany and Italy. Unilever, Kraft, Nestlé and Kellogg's conducted this study together. Different sorts of benefits were claimed, involving, for example, cardiovascular benefits in relation to plant sterols, stress benefits in relation to Valerian, infections in relation to probiotics, and concentration in relation to caffeine. Claims ranged from psychological to physiological, and from content claims ('this yoghurt contains plant sterols') to structure function claims ('this yoghurt helps you reduce cholesterol level because it contains plant sterols'), health claims, and

consumer benefit claims. The control claim was a taste claim ('this yoghurt tastes delicious').

One of the main conclusions of the study is that the differences in consumer appeal between different claimed benefits are substantial. Psychological claims - i.e., claims that would help you to get more out of life by improving your concentration or by lowering stress levels - did not work well in the context of yoghurt. Yoghurts with such claims had a lower consumer appeal than yoghurts with a taste claim. Physiological health claims, such as those concerning infections, cardiovascular disease or weight, added value to the product (Figure 3).

Remarkably, out of the six claims in this study, only one would actually be allowed by the new EU draft legislation: this is the claim relating cardiovascular disease with plant sterols. All other claims, including the highly appreciated probiotics claim, will most likely be prohibited.

Conclusions

Health communication is crucial for educating consumers and in giving them trust and confidence in the foods we market. Health and nutrition claims play an important role. Thus far, the focus has predominantly been on claim substantiation and not on what consumers do with these claims. The new EU draft legislation does not necessarily line up with the consumer demand. This may hamper innovation and the public health effect because it leaves out the view of the consumer.

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Consumer Influences

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Cross-cultural marketing poses many challenges and many opportunities. The consumer determines whether products will be successful in the marketplace or not. Therefore, companies have to know to whom they are talking, so that they can develop meaningful communications that connect with the consumer on a personal level. HealthFocus International has carried out a multi-country quantitative survey in thirty countries. This answers many important questions that food companies need to know in order to market health brands successfully across the globe.

Consumer priorities worldwide

While there are very important differences among the markets, there are also a lot of commonalities. Cancer and heart disease are in the top three health concerns of consumers in all studied countries. Tiredness and stress are the most commonly reported health problems all over the world, and being overweight is becoming a big problem. Better taste, better nutrition, natural qualities, and price, are all very common brand influences for consumers. The HealthFocus Survey defines eight trends in consumer priorities:

- 1) Taste is king, and pleasure is queen. Healthy products are only as good as they taste. Shoppers are less willing to compromise taste for health benefits.
- 2) Positive nutrition. Consumers shift their focus from avoiding negatives to looking for nutritionally desirable foods and nutrients.
- 3) Nutritional individualisation. Consumers do not believe in one-size-fits-all nutrition advice. Most believe they have different nutritional needs from everyone else.
- 4) Age of entitlement. There is no either/or proposition, consumers think that they have earned it and want it all: great taste and nutrition, luxury and affordability, natural and convenient, fresh and fast, fat and fit.
- 5) Functional nutrition. From oats and oranges to fortified water and whole grains, consumers find nutritional solutions believable. They are looking for ways to help their body's natural systems to function better. Notably, when there is a link between a specific functional nutrient and a food that consumers already recognise to be good for them, they are much more likely to accept that ingredient. Examples are calcium and dairy, vitamin C and citrus, and omega-3 fatty acids and fish.
- 6) Look good to feel good. Looking good is about being at your best and the resulting sense of confidence and self-esteem. Two out of three shoppers agree healthy eating improves their appearance.
- 7) Extending the middle years. Boomers remain confident in their ability to manage their health as they move into their mature years. Their focus is on extending middle age and improving quality of life during these years. They feel that they need not settle for less, but that they are entitled to more.
- 8) Less to worry about. Consumers carry around a bucket of worries and do not need more of those in the form of increasingly complex health and nutrition choices. Natural and organic mean less to worry about for many consumers.



Know the target

Today, the pursuit of health is not about seeking the absence of disease, but about seeking wellness and feeling good emotionally, physically, mentally and spiritually. Most consumers make healthy choices, but they do so for different reasons. Future health, daily health, and family needs are most often in mind. Feeling good, extra energy, and treating a health problem are also motivations. This implies that, depending on who is addressed and what their motivation is for making healthy choices, the communication about health products will have to be quite different. Therefore, companies should know their target.

Shoppers differ greatly in their motivations and sense of control over their health. The HealthFocus consumer segmentation identifies six primary consumer target segments for health and nutrition products (Figure 1). On the proactive side, the segments are Disciples, Managers and Investors. Healers and Strugglers are reactive, and Unmotivateds are passive about making healthy choices.

When considering communications around a new product, food companies must be aware of whom they wish to target. Managers and Investors are key targets in all markets, but communications should include as many segments as possible. The Slim-Fast 'It's your life, feed it right' campaign was a very good example. It spoke powerfully to Managers, and at the same time, the dieting message talked to Strugglers. By going specifically after the Strugglers, the Managers would be lost.

A second good example is that of Gatorade, a sports drink initially targeted at professional athletes. That need-driven core target was not large enough to build a sustainable and successful business, so the company extended it to interest-driven people: recreational athletes and people who are just physically active (mowing their lawn for instance). It was a very effective campaign that brought together the idea that 'it is right for me' but at the same time it did not send a message saying 'it is wrong for somebody else'.

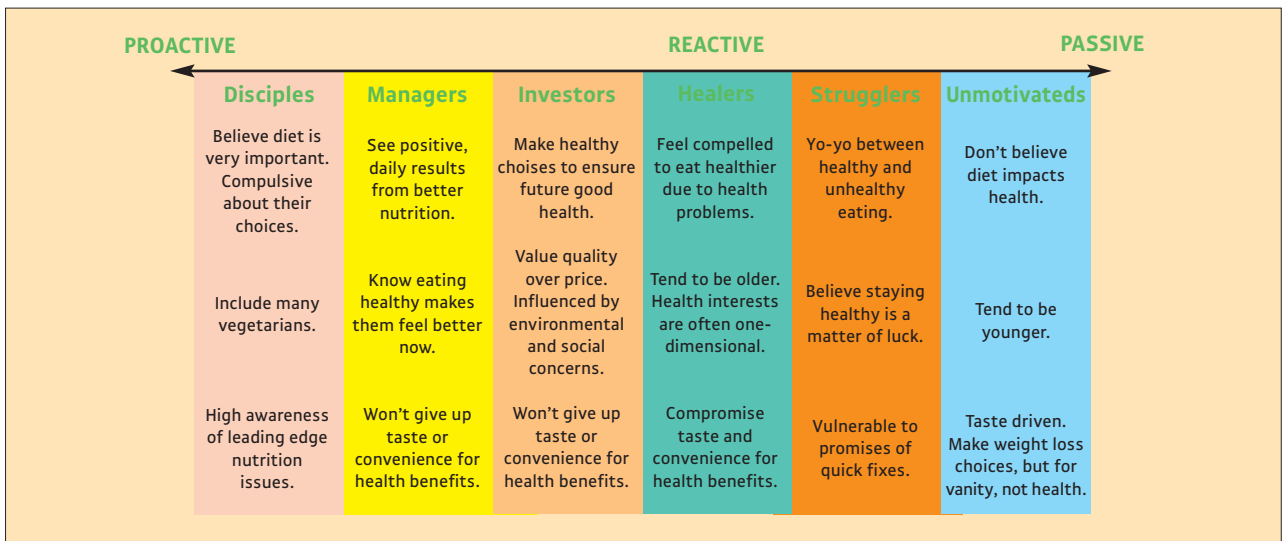


Figure 1. HealthFocus consumer segments and their characteristics.

Remove barriers

Calcium, vitamin C, vitamin E, n-3 (omega-3) fatty acids, iron, eating more vegetables and fruits, whole grains, fish, poultry, fibre, soy, olive oil, natural foods and bottled water are all on the nutritional 'to-do list' of consumers. They are trying to get more of these in their diet in order to improve the health-fulness of it. The main obstacles to achieving this are taste, price and time. If taste is missing so is the shopper. And, while better nutrition is a primary influence to try a new brand, most shoppers are unwilling to pay more for better nutrition alone. Companies should look for value, and find ways to create a new pricing frame of reference for consumers through enhanced packaging, shelf placement, and other qualities such as freshness and convenience. Shoppers will not easily give up convenience for health benefits.

Develop solutions

Companies should identify the obstacles that are getting in the way of desirable dietary and nutritional choices for consumers. They should remove those obstacles by providing meaningful solutions to help consumers improve the healthfulness of their own and their families' diets.

For example, most consumers believe that they can improve the healthfulness of their diet by eating more fruits and vegetables. The barrier of consumers eating leafy green salad was that they do not like to wash lettuce. Consumers consider pre-washed and pre-mixed lettuce offered in a bag to be a good solution, and they happily pay a higher price.

Give useful information

Companies need to bring good taste and good nutrition together for today's consumers. Consumers want to learn more about foods that boost the immune system, enhance health and reduce risk of disease. Also cancer-preventing chemicals in fruits, vegetables and grains, is a strong topic of interest.

In communications around the product, companies should speak of benefits. Most consumers find positive messages more compelling than negative or disease-based messages. 'One-Size Fits All' nutritional recommendations should be avoided. Communications should be in line with the phase of change the targeted consumers are in. Consumers move from attitudes to behaviour (Figure 2). They first have to recognise that there is a problem. Then they have to be aware of solutions to the problem. Then the solutions have to become available, and they have to be tasty, affordable, convenient, and familiar. Once there are widely available solutions, consumers start to perceive that they themselves are to blame for their behaviour. Eventually, they then change that behaviour.

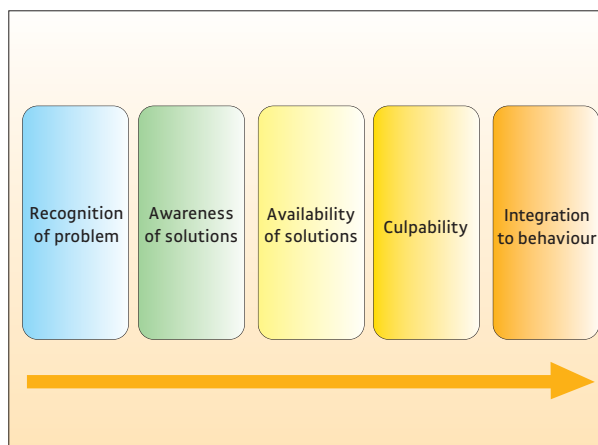


Figure 2. A framework of existing knowledge with the consumer. The continuum from attitude to behaviour.

Credit and Reinforcement

Most consumers -falsely- consider their diets to be healthy or very healthy. Communications should give them credit for the things they are already doing right and help them do more of it, more often. They often see room for improvement in their eating habits but are reluctant to make changes. Most often they prefer small, gradual changes.



Figure 3. Information sources surrounding the targeted consumer.

To surround targeted consumers with information and make them aware of a problem and possible solutions, companies should use knowledge-based marketing strategies (Figure 3). This means encircling the targets with a simple, consistent message which originates from their entire portfolio of information sources. It is best to present one piece of new information in a framework of two pieces of familiar information.

Conclusions

Understanding the consumer is key to successful marketing. Consumers are generally unwilling to make compromises for health benefits. They are more likely to make healthy choices because they want to than because they need to. Companies should remove barriers to healthy choices, know their target and speak to their motivations and personal needs.

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Changing Consumer Behaviour from a Health Promotion Perspective: Barriers and Triggers

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Dietary habits are associated with the most important burdens of disease worldwide: obesity, heart disease, different cancers and type 2 diabetes. Particularly, obesity is a major threat for the future - both in the Western world and in developing countries - as it is associated with an increased risk of chronic diseases, such as cardiovascular disease and type 2 diabetes. There is an urgent need for effective healthy diet and physical activity promotion interventions in order to implement structural dietary and lifestyle changes.

Diet, lifestyle and behaviour

People become overweight due to an imbalance between their energy intake and energy expenditure, e.g., food intake and exercise. In some cases genes play a role, but in essence, energy can only be stored when more is taken in than is being expended. The balance is quite delicate. An adult male weighing 80 kilos who takes in about twenty kilocalories a day extra, will have gained a kilogram of bodyweight after a year. Twenty kilocalories per day is 140 kilocalories per week, which equals just one bottle of beer, one chocolate cookie, or a handful of peanuts. To burn those 140 kilocalories, he would need to run for 14 minutes or walk for about 35 minutes at moderate speed.

Thus, two behaviours are important in keeping the balance: food intake and exercise. Both are the result of a very

complex interacting series of different behaviours. They are influenced by a person's intention and motivation, attitudes, social influences, and perceived behaviour control. Furthermore, personality traits are important, as are a variety of external determinants, such as cultural factors, and availability and accessibility of healthy food choices and physical activity opportunities. This makes it difficult structurally to change these behaviours.

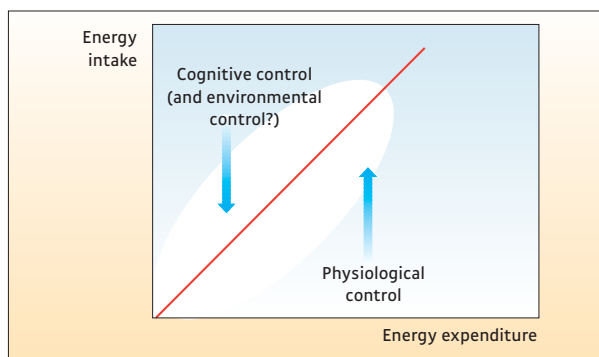


Figure 1. Energy intake, energy expenditure and energy balance. When energy expenditure is high, energy intake is physiologically controlled. When expenditure is low, cognitive control, and possibly environmental control, should restrain intake.

Over time, the demand for physical activity has changed, as has our dietary pattern. In olden times, energy expenditure was high. Work in agriculture, industry, transportation and housekeeping all required intensive physical activity. When energy expenditure is high, the energy intake is physiologically controlled (Figure 1). People can eat almost anything they like and not gain weight.

However, nowadays, most people have sedentary work; they take their car and the elevator, and mostly engage in more or less passive recreational activities. Therefore, their energy expenditure is low. In addition, people have changed their eating patterns over the past decades, including the

consumption of more snacks between meals, more food eaten outside the home environment, more 'fast food', and more soft drinks. These 'modern' eating patterns are associated with higher energy intakes and higher body weights.

A hierarchy of determinants

The lack of physical activity requires cognitive control of our energy intake in order to avoid weight gain (Figure 1). This is very difficult for most people. The recognition that eating too much is not good for one's health is not the same as being motivated to avoid certain foods, and it is not the same as being able to change one's diet. This relates to a hierarchy of determinants. In the least luxurious situations, biological and physical environmental factors such as hunger and availability determine dietary choices. In an affluent environment, psychological factors - such as taste preferences and health concerns - predominantly determine food choice and dietary intakes.

Health is an important but complicated determinant of food choice. Taste is a more fundamental determinant, and is the first and foremost driver of dietary choice. Although at birth people have a preference for sweet and salty tastes and a dislike for bitter and sour tastes, many people learn to like the bitter tastes of coffee, beer and even Brussels sprouts! This illustrates people's ability to learn to appreciate new tastes. Research shows that the more often people are exposed to a certain taste, the more likely that they will learn to like that taste.

Computer tailored health education

Changing behaviour is a process with different stages (Figure 2). People may be in pre-contemplation and not yet thinking about change, often because of lack of awareness of the need to change. This pre-contemplation stage is followed by the stages of contemplation, preparation, action and maintenance. All stages of change have different behaviour determinants.

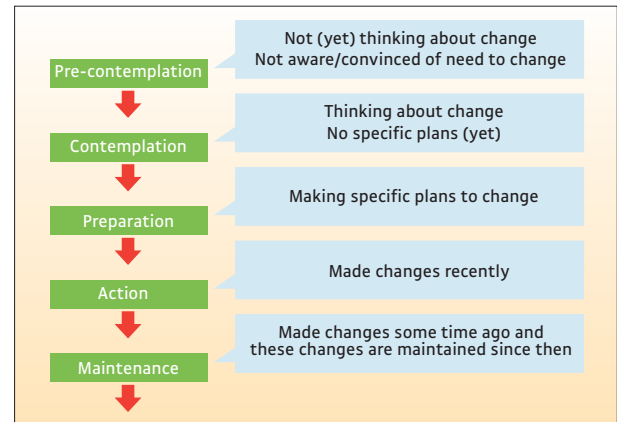


Figure 2. Stages of change consumers go through. Adapted from: Prochaska et al., 1992.

People need nutrition education information that is tailored to their stage of change. For example, people in the pre-contemplation stage should be provided with information to make them aware of their unhealthy dietary habits and to promote positive attitudes for dietary change in order to increase their motivation. They will not be interested in behaviour control information aimed at improving their abilities to change. Only motivated people, who are in the contemplation or preparation stages, are interested in such control information, because they already know about the benefits of dietary change and want to learn how they can change toward more healthy diets.

Computer-tailored health education provides people with individualised, personally relevant, motivational and dietary change information. It combines the characteristics of person-to-person diet counselling with the pooled expertise of nutrition counsellors, documented in a computer-tailored expert system.

In order for a computer to give tailored nutrition education, people have to complete a questionnaire. Their answers are

documented in a computerised data file. Based on the results, feedback, tailored to the individual's situation, is compiled from various texts, illustrations, and animations collected from a digital feedback library. People will recognise themselves in the feedback, since they get information about their own dietary choices and attitudes. A web-based questionnaire plus personal web pages for feedback can be a good way to present tailored nutrition education.

Several reviews of the literature have shown that computer tailored feedback is, in most cases, superior to generic health information. A study among 800 volunteers demonstrated that non-tailored advice did not result in a reduction in fat intake, whereas one session of tailored advice did; two tailored sessions were even more effective (Figure 3).

Environmental change

While individualisation is important for healthy diet promotion, environmental changes enabling people to make healthy dietary choices are also important. Behaviour, person and environment clearly interlink in the determination of dietary intakes. However, until recently, the environmental factor has been disregarded in most health promotion interventions. In addition to cognitive control, the environment might enable, or even 'force' people to eat less or to be more physically active (Figure 1).

It has been postulated that - especially for children - food choice and consumption is the result of taste preferences and availability. These factors interact since the availability of a particular food will lead to more exposure to that food and this might lead to higher preferences and higher intakes. Serving size has been shown to predict intake levels of people over five years of age, independent of their hunger levels. Indeed, serving sizes - for example, of soft drinks or French fries - have increased dramatically over the years. In some cases, they have more than tripled.

Environmental changes are an important aspect of the health promotion interventions of the EU-funded project called Pro Children. This project runs from 2002 to 2006 in nine European countries, and promotes adequate fruit and vegetable intake among school children. Children receive education about healthy diets and fruits and vegetables are provided at the schools. Effective healthy diet promotion in schools should focus on behaviour. It should employ education strategies and should intervene in the school environment by increasing the availability and accessibility of healthy choices. In a pilot study that preceded the Pro Children project, a free subscription of fruit and vegetables led to a higher fruit and vegetable intake. However, when the subscription was paid for, there was no intake difference. In the control group, which only received dietary advice, there was a slight decline (Bere, 2004).

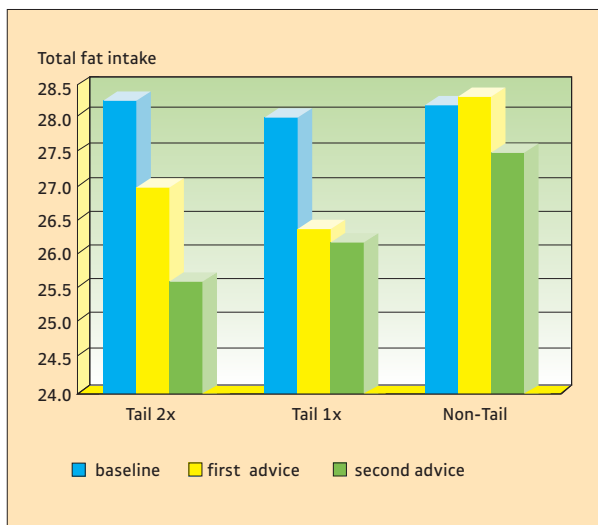



Figure 3. Changes in fat intake between baseline, first advice and second advice in people receiving individually computer-tailored diet advice twice (Tail 2X), once (Tail 1X), or non-tailored advice (Non-Tail). Total fat intake is expressed in fat points, with 1 fat point representing approximately 3 grams of fat. Adapted from: Brug et al., 1998.



The Pro Children project shows that environmental changes making the healthy choice the easy choice may be crucial in health promotion interventions. The ban on vending machines in primary schools in California and the tight restrictions on television food advertising aimed at children in Sweden are good examples of this. Such changes make an unhealthy choice a difficult choice.

Conclusion

Effective healthy diet promotion includes changing the environment, the availability and the accessibility of foods. Individualisation is important, and tailored nutrition education is a helpful and effective tool for this. Schools, parents, governments, health authorities and the food industry should act together to change the environment, to encourage healthy behaviour, and to make the unhealthy choice a difficult choice, and the healthy choice an easy one.

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Part 4.
From Public Health to Consumer
Action

Experience from the Public Health Level - Finland

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In the late 1960s, Finland had the highest coronary heart disease (CHD) mortality in the world. An exceptionally high CHD mortality rate - 700 per 100,000 men - was found in the most Eastern province, North Karelia. In this rural, poor area, there are about 200,000 people. For comparison, in the United States of America, this number was around 380, and in most European countries, it ranged between 200 and 300 in 1973 (Figure 1).

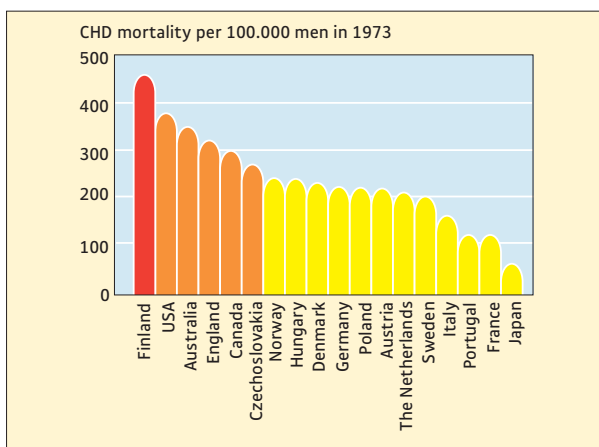


Figure 1. Mortality rates of coronary heart disease (CHD) among men in selected countries in 1973. Sources: National Public Health Institute, World Health Organization (WHO).

The North Karelia Project was started in 1972 in response to growing public concerns about the high mortality. The main objective was to lower the mortality and morbidity of CHD by reducing the main risk factors: high blood pressure, high cholesterol and smoking, through lifestyle changes. Over

the years, the scope of the project has been broadened to include the prevention of other major chronic disease mortality, to promote health, and the prevention of risk-related lifestyles in children and young adults. From the beginning, the idea was to pool medical and epidemiological information and knowledge about social behaviour. The project started as a pilot, to learn lessons for the rest of Finland, but later on became a model programme. Population surveys were conducted at five-year intervals, from 1982 to 1992 in connection with the WHO MONICA project, and from 1997 to 2002 as the National FINRISK Study (Vartiainen *et al.*, 2000).

With regard to an average risk factor distribution, few people have low risk factor levels, most people have average risk factor levels, and a low number of people have a clinically high risk factor level. As people with average risk factor levels are the highest in number, most cases of death or of disease, therefore, come from this population. For example, about 70% of the cases of CHD are amongst people with average cholesterol risk factor levels. Therefore, a diet and lifestyle change in the whole population will contribute significantly in lowering CHD risk. However, health services only treat the small number of people in the high risk group.

Dietary habits in North Karelia were deeply rooted in the agriculture, culture and economy of the community. This called for a community-based approach. In practice, the main emphasis in the intervention was on educating and motivating people, and on social and environmental support for changing behaviour. The media played an important role in the beginning of the intervention. Also vital were such preventive services as primary health care, the training of professional workers, environmental changes (such as no-smoking areas), agricultural reforms, collaboration with the food industry and supermarkets, and research, monitoring and feedback.

A long change process

The idea that risk factors were involved in CHD risk was novel in the 1970s. Until then, many doctors had thought that atherosclerosis was a normal process of ageing; it has taken about 10 years to get consensus amongst the medical community that dietary changes were essential. After that, it was possible to get political consensus and public attention. Local political leaders and other community leaders asked the Finnish government to help them to cope with this problem. This led to the health policy statement by the Finnish Government, stating that the health promotion disease prevention campaign should be taken seriously.

This policy statement had a major effect on legislation and policies in the country. For example, national antismoking legislation was launched in 1977. Nutritional guidelines and recommendations for the general population were implemented in the 1980s. A cholesterol screening was started to ensure that everyone knew their cholesterol levels. Nutrition education programmes were developed and implemented, and the food industry became interested.

Over the last years, the project has focused to a greater extent on diabetes, genetic influences, social class differences and the obesity epidemic. It appears that with relatively small changes in physical activity levels and body weight, 50% of the cases of type 2 diabetes in people at high risk can be prevented. In Finland, we are trying to change health service programmes according to these findings. It will take a further five or ten years to get the results of this action, and of the other subjects.

Risk factors and public health have improved

The North Karelia Project has been very successful in lowering risk factors and CHD mortality on a population level. Serum total cholesterol levels in men aged 30 to 59 years decreased between 1972 and 1997 from about 7 to

about 5,5 mmol/L in North Karelia. There was a similar decline in other Finnish provinces. However, 5,5 mmol/L (which equals 213 mg/dL) is still quite high, and over the last five years, the decline in Finland has halted. This raises new concerns.

When analysed by age group, it appears that the decline in serum total cholesterol level continues in the middle-aged but increases slightly in people aged 25 to 35. This may indicate that the messages used are effective for middle-aged people but not for the younger. For this group the saturated fats do not come from butter and milk, but from cheese, pizza, hamburgers, ice cream and chocolate.

The percentage of people in North Karelia who used butter for cooking decreased from 80% in 1972 to 20% in 2002. The use of butter on bread declined even further, from 80% to 10%. Instead, people used more soft margarine, plant stanol margarine, a low-fat spread, or no fat at all (Figure 2) and the percentage of those using vegetable oil rose from 0% to 40%. Concomitantly, there has been a decline in the intake of saturated fats from 20% of energy intake to 15%.

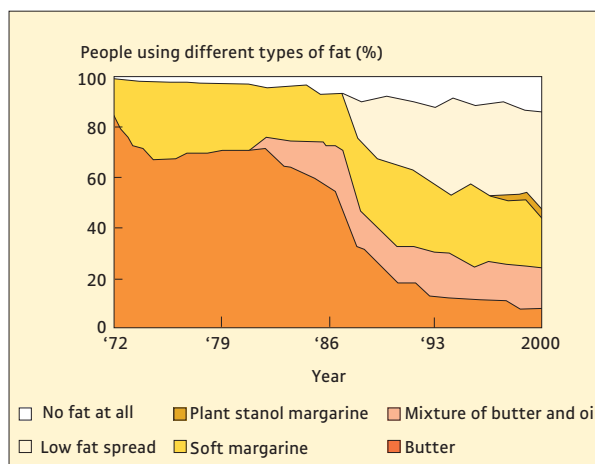


Figure 2. Type of fat consumed on bread in North Karelia from 1972 to 2000. Source: National Public Health Institute.

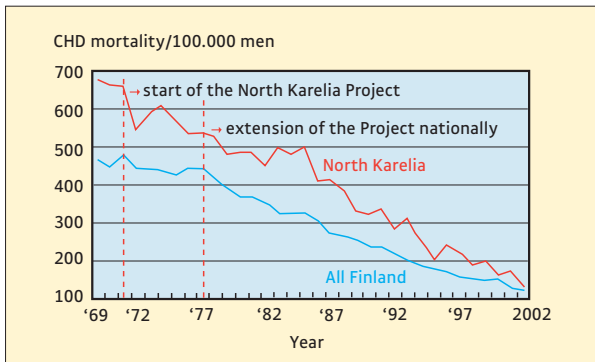


Figure 3. CHD mortality in all Finland and in North Karelia, 35-64 year old men. Source: National Public Health Institute.

There has been a significant decline in smoking habits from 1972 to 1997 among men. From 1997 to 2002, smoking rates have slightly increased, in particular among women, but this tendency now seems to have ended. Blood pressure levels have decreased significantly both among men and women over the whole period. CHD mortality went down with 82% in North Karelia; from 683 in 1973 to about 123 per 100.000 men now. A similar effect is seen for the whole of Finland after the project was implemented at a national level (Figure 3). Most importantly, the project has resulted in a profound improvement in the quality of life: people feel a lot better about their health.

The cardiovascular disease mortality changes cannot be just explained by improved risk factors. After 1985, a gap formed between predicted and observed changes in risk factors. The observed changes in blood pressure, total serum cholesterol, and smoking in the population could predict only half of the observed fall in mortality from stroke in men (Vartiainen *et al.*, 1994). It appears that one quarter of the reduction in mortality results from new treatments and drugs for CHD, developed in the 1980s and 1990s. For the remaining observed reduction in mortality, there is, as yet, no explanation.

Conclusion

A national programme with partnerships can be a strong tool for chronic disease prevention and public health promotion. The North Karelia Project, a comprehensive community-based programme, demonstrated a positive effect on diet and lifestyle, and dramatically reduced risk factors for chronic diseases, thus improving public health.

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Experience with the Food Pyramid

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The Food Guide Pyramid is a nutrition education tool, developed by the US Department of Agriculture (USDA) to help Americans select an adequate, varied, balanced and moderate eating pattern that meets their health needs. Despite the availability of this tool and other guidelines, Americans do not necessarily eat according to it. The Pyramid is currently being updated and revised in order to make it more understandable, practical, flexible and acceptable to consumers.

History of the Food Guide Pyramid

In the United States, Federal food guidance began about one hundred years ago. The early graphic representations or icons focused mainly on the avoidance of dietary deficiencies. In the 1950s and 1960s, guidance changed and was simplified. The original seven food groups were reduced to four: milk, meat, fruit and vegetables, and breads and cereals. In the late 1970s, when the importance of obesity and dietary excess became more apparent as health problems, a fifth group was added, consisting of fats and sweets to take in moderation.

By the early 1980s, dietary guidelines on decreasing risks of chronic degenerative diseases were available. However, an appropriate way to

incorporate dietary guidance that focused on these issues was lacking. The goals for guidance were to promote overall health, to incorporate up-to-date research on what was known about chronic degenerative diseases, and to focus not only on preventing dietary deficiency disease but also on total diet and on avoiding the risks of chronic degenerative diseases that had been linked to diet. To communicate this in an attractive way, something usable, realistic, flexible, and practical was necessary.

A number of graphics that reflected the concepts of adequacy, variety, balance and proportionality, and moderation, were considered, for example a wheel, a plate, a bowl, and several other shapes. The best icon turned out to be the Pyramid. The USDA Food Guide Pyramid was first issued in 1992, together with a booklet and other consumer materials developed by the government (Figure 1).

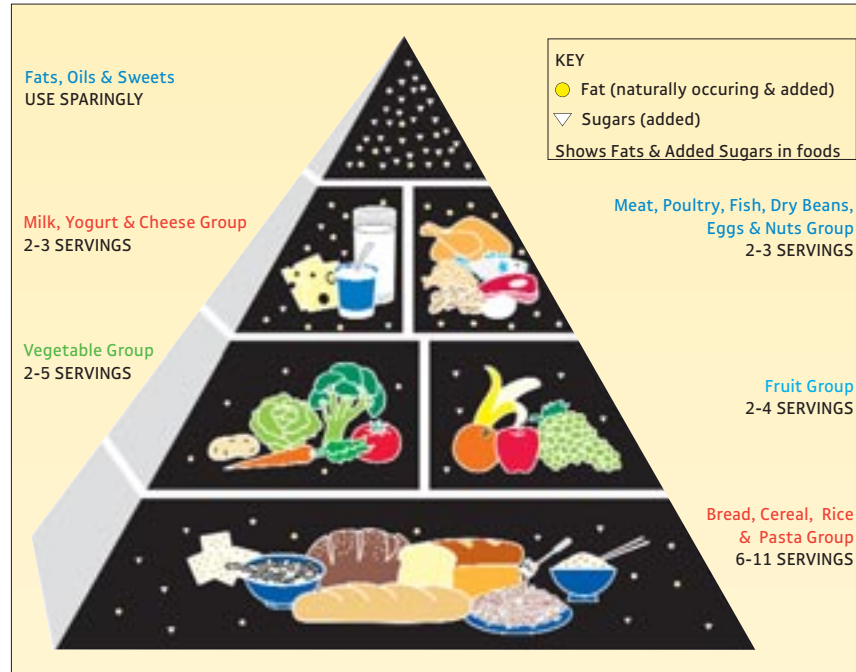


Figure 1. The USDA Food Guide Pyramid.

The USDA Food Guide Pyramid

The Pyramid has two messages to communicate: getting enough, and avoiding too much. It is widely used in the United States in nutrition and education; for example on cereal boxes and in consumer education materials. Unfortunately, however, only some people follow the pyramid. About 33% of Americans eat from all the Pyramid food groups every day or most days, but only 3% eat the recommended number of servings. Yet, dietary excess is common; 65% of adult Americans are overweight or obese.

Many people seem to be able to identify the key messages of the Pyramid, but they have trouble implementing them. Placing foods within the proper food groups is not generally a problem: people can even fit the ingredients of mixed dishes - such as pizza - into the right groups. However, the portions sizes and number of servings, and the proportionality and moderation messages are difficult to understand. Most people live by an inverse pyramid and eat too much from the tip, from the high caloric density foods, and too little from the bottom, where the foods with a higher nutrient density are located. And instead of the recommended balance of food intake with physical activity, people lead sedentary lives.

Rebuilding the Pyramid

The key problems for guidance are proportionality and balance. Over the past three years, many efforts have been made to present dietary information in a more comprehensible and attractive way. The four pillars of US dietary guidance are the Dietary Reference Intakes (DRI, still better known as Recommended Daily Allowances; RDA), the Dietary Guidelines, the Food Guide Pyramid, and the Nutrition Facts Label (Figure 2).

The DRI have been updated recently, and the other three pillars are currently under revision. For example, on the Nutrition Facts Label, it is proposed that *trans* fats will be labelled, and calories will be highlighted. The Dietary

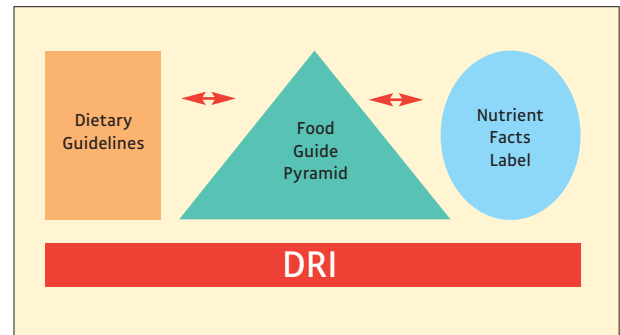


Figure 2. The four pillars of US dietary guidance promoting nutritional adequacy, moderation, balance and proportionality: Dietary Reference Intakes (DRI), the Dietary Guidelines, the Food Guide Pyramid, and the Nutrition Facts Label.

Guidelines for Americans are revised every five years. In 2000, the guideline 'let the Pyramid guide your food choices' was included to try to highlight the variety message. Further, more emphasis was put on plant foods as the foundation, on low saturated fat, low fat foods and soy products, and on the notion that many healthy eating patterns exist. In 2005, the latest revision of the Dietary Guidelines will be completed.

The four pillars are currently being synchronised and used to revise the Pyramid in an attempt to close the gap between awareness and use of this nutrition education tool. For the revision of the Pyramid, after a request for public comment, many parties submitted recommendations. Focus group discussions were utilised to get an idea of the user's view on dietary guidance. The Pyramid revision will be completed after the 2005 Dietary Guidelines committee is finished with its work.

Adequate diet

In order to guide users in an adequate diet, the Pyramid 2005 has to reflect the Dietary Reference Intakes (DRI) and Recommended Daily Allowances (RDA) of protein, vitamins,

minerals, essential fatty acids and total fibre. It should stress likely nutrient shortfalls such as that of vitamin E, D, iodine, potassium and fibre. Furthermore, it should communicate to people that they need to meet but not exceed energy requirements.

It is a challenge to fit the energy message into the Pyramid. One idea is to make different pyramids for people with different energy levels but this may be confusing. Another possibility is to present pyramids that are typical for sedentary adults. Currently, there is an attempt to convey individualised tailored advice about appropriate, well-specified energy levels in graphics.

The difference between energy supplies needed by a sedentary person and an active person amounts to several hundred kilocalories per day. Most Americans are in the sedentary range. The Pyramid 2005 should help people to cope with low energy intakes not only by advising them to become more physically active - for example by doing 10,000 steps a day - but also by emphasising high nutrient density, lower energy-dense choices.

Moderation

The DRI should be translated into the Pyramid and must be met for essential nutrients at both high and low energy intake levels. The amount of "extra" or discretionary food choices that can be made varies according to the energy intakes. For example, the upper end of the recommended range for added sugars is less than 25% of calories. But for sedentary people, if added sugars are included at all, only about 10% of calories can come from these sources. If sedentary people derived 25% of their calories from sugars, they would not have enough calories left to 'spend' on nutrient-dense food choices, and their diets would fall short in these respects.

The Pyramid 2005 should give information about some of the nutrients of which people are getting too much: sodium, fats and trans fats, and sugars (in particular added

sugars). It is likely to emphasise the use of unsaturated fats and oils rather than saturated fats, to shift recommendations toward the use of wholegrain products for 50% of all grains used, and to emphasise the consumption of more legumes and dark green vegetables. The Pyramid is being reconstructed to show the lowest fat and added sugar choices of each food, and only foods that require fortification by law.

From Pyramid to Practice

How can we translate the nutrient goals into realistic food patterns? Figure 3 shows the changes that are needed to meet the recommendations, based on actual consumption figures. To make these recommended dietary patterns a reality, considerable intake increases in fruits and in vegetables will be needed, as will slight increases in whole grains and protein. In particular women may need to increase their intake of low-fat milk and milk products. And as expected, discretionary fats and added sugars need to go down. Using such household measures like 'teaspoon', 'tablespoon' and 'cup' to indicate amounts may reduce some of the confusion about portion sizes and servings. Many people in the US are still unfamiliar with metric system measurements and more easily understand such household measures.

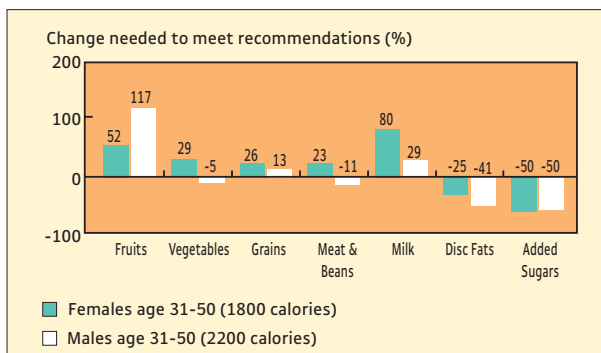


Figure 3. Proposed recommendations versus consumption. Intake of fruits, vegetables, grains should be increased, and intake of discretionary fats and added sugars decreased.



Alternative pyramids

About seven years ago, the USDA developed a food guide pyramid for young children. On this pyramid, physical activity is emphasised and products are emphasised more specifically than in the big Pyramid. The Jean Mayer USDA Human Nutrition Research Centre at Tufts University made a pyramid for people over 70 years of age. This pyramid includes recommendations for water and dietary supplements. There are many other alternative pyramids, including the Mediterranean Diet Pyramid from the 'food issues think tank' and Oldways, the Healthy Eating Pyramid from the Harvard School of Public Health.

All the alternative pyramids mentioned have useful information for consumers, and all of them promote healthy eating patterns. Some emphasise age and condition-specific issues, some stress physical activity or the use of fluids, and some are derived from health outcome studies. Physical activity is the key to raising the amount of choice that one can have in terms of diet. The alternative pyramids are, however, not necessarily linked to present food consumption or availability or costs of food in the United States, and that may have consequences for practical implementation. Furthermore, some are not entirely food based.

Conclusion

People know the USDA Food Guide Pyramid but do not eat by it. The current Pyramid is being revised and synchronised with the updated Dietary Guidelines, DRI, and Nutrition Facts Label in order to make it actually work for people. Most importantly, people should be encouraged to be more physically active, and then they can eat more while maintaining their health.

Introduction to Unilever Examples: the Annapurna Example

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Iodine deficiency disorders (IDD) are caused by a lack of iodine in the diet, and form a significant global public health issue. About two billion people in the world are at risk, 50 million children are suffering from them and most of them live in the developing world.

The extreme effects of IDD are goitre, cretinism and severe mental retardation. However, that is just the tip of the iceberg (Figure 1). It is the single most common cause of preventable mental retardation and brain damage. The Intelligence Quotient (IQ) of a child who does not get enough iodine from the daily diet will be ten to fifteen points lower than that of a child who has the right intake level.

It has been estimated that 1.1% of Ghana's Gross Domestic Product (GDP) is lost due to micronutrient deficiencies. A recent report from UNICEF Ghana showed that every five years, Ghana loses US\$ 108 million because of iodine deficiency (UNICEF, 2000). And in Ghana, US\$ 108 million is a large sum of money.

In 1999, nearly everyone in Ghana bought salt at the open market. This was loose, unrefined sea salt, obtained by solar evaporation. It was usually not iodised, although the legislation for iodising salt in Ghana had been established for years. Consumers could not see the difference between iodised and non-iodised salt, and above all, were not aware of the importance of iodised salt for mental development. They did not have either a functional or an emotional reason to try and use a different type of salt.

In the same year, the Unilever Africa Regional Group created a separate business unit, called Popular Foods Africa. Popular Foods targets the mass-market consumer with nutritious and popular foods and snacks at affordable prices.

Key factors for success

The Popular Foods team in Ghana worked in a partnership with UNICEF and the Ghana Health Service to launch its first product in September 2000: Annapurna Refined Iodised Salt. Four key factors have contributed to its success: an Appealing product, Awareness, Availability and Affordability. Annapurna is sold in an attractive package that can be clearly distinguished. The package signals reliability: people can be sure that this salt contained the right amount of iodine. It is iodised at 50 parts per million, according to the legislation in Ghana.

Unilever, with the help of UNICEF and the Ghana Health Service, two credible sources in Ghana, produced an 'infomercial' to raise awareness and educate people, and to give them a functional reason to use iodised salt. The campaign showed parents with a kid dreaming to be a doctor, or a judge, how they could help him or her to pursue that dream by providing enough iodine in the diet. A

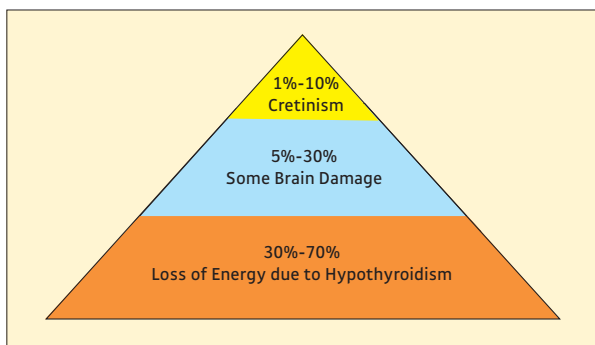


Figure 1. Effects of iodine deficiency disorders (IDD). The visible effects of IDD account for only as much as 10% of the ramifications. 90% of IDD consequences remain hidden. Source: ICCIDD 2003, WHO 2002.

member of UNICEF's nutrition team was the spokesperson in the 'infomercial' and provided consumers with facts about salt.

Unilever then produced a branded commercial, which gave people an emotional reason for wanting to use the product. It showed the dreams of a little boy and his sister to become airline pilots, and how their mother would be proud of them if they did so. This commercial focused to a greater extent on the proud feelings a mother would have when her children succeeded in life.

Education was and is crucial in this whole campaign. Unilever educates constantly, on TV, radio and on posters throughout the schools. People are not told to use more salt, they are educated to use iodised salt. For example, in 2004, UNICEF, the Ghana Health Service and Unilever will visit 3,200 schools in rural areas where the use of iodised salt is low. They educate the kids, because the kids will educate their - mostly illiterate - parents. A second

example is the demonstration sessions that the Ghana Health Service organises with a test-kit at the open market and in schools, in order to give people the opportunity to test whether the salt they use is iodised or not.

Throughout the country, Annapurna salt is available in shops, with street vendors, and at the market. It is sold to the consumer in 100 gram sachets for three to four US dollarcent and in 250 gram sachets for about nine cents. To be able to deliver such products to consumers at the lowest possible price, the Popular Foods team in Ghana scrutinised and re-engineered the whole supply chain, taking all costs out that did not add value. The team worked with third parties in the manufacturing of the salt. Not only did this develop new businesses in Ghana, it also allowed Unilever to focus on its core competencies: product development, communication to consumers, sales and marketing, and talking to leading health experts in Ghana.

A win-win situation

The Annapurna business has been a profitable one for Unilever. In some circles, profit is a dirty word. However, profit is good because it allows Unilever to pay taxes in Ghana, and thus help fund the work of the Ghana Health Service. It allows Unilever to put money into large education programmes for schools. And it allows the company to sustain their business and to continue these activities.

UNICEF and the Ghana Health Service can report significant progress on one of their key indicators. But the overall winner is Ghana. The project has had a substantial impact on employment: three new businesses have been created with over 200 jobs in Ghana. The in-home penetration of iodised salt has increased from 28% in 1998, to 50% in 2002 (Figure 2). That equals four million new people using iodised salt.

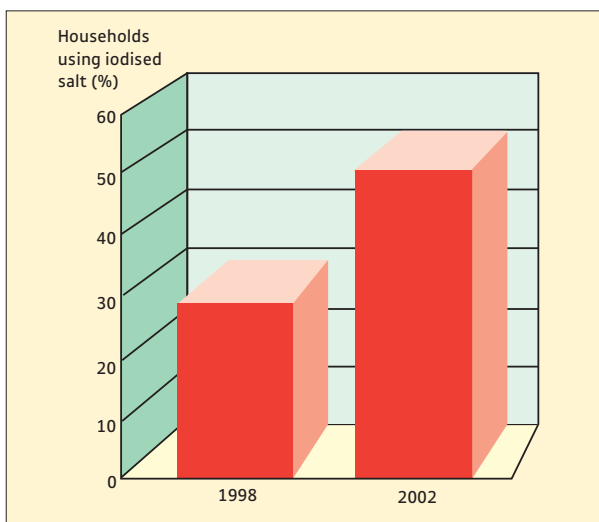


Figure 2. Percentage of households using iodised salt in 1998 and in 2002. Unilever's Annapurna iodised salt was introduced in 2000.

Unilever and its partners are working hard towards the only acceptable figure for penetration rate: 100%. Hopefully this project has helped to lower the US\$ 108 million that Ghana was losing every five years. The real impact however is not in statistics, but in people - people who had goitre and who have recovered from it by using Annapurna salt, and children, who develop better and achieve more.

Following the success of Annapurna iodised salt, Unilever used the same business model to launch Annapurna Krrunchy. These biscuits are fortified with vitamin A and zinc (at 25% of the daily required dose) to boost children's immune system. Sales are running at between six to ten million packages a month - quite a success story.

Conclusion

The launch of Annapurna iodised salt in Ghana has been successful. Unilever could not have accomplished this without the strong collaboration with UNICEF and the Ghana Health Service. Unilever want to set an example for other companies in taking the step to partnerships. Unless health organisations, non-governmental organisations and industry are ready to work together, the malnutrition problem will not be solved.

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Weight Control in the Real World - the Slim-Fast Example

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Weight control in the real world stands far away from the obesity epidemic and the way most of the industry thinks about weight loss. Consumers who are overweight and who are struggling with their weight, do not see themselves as being part of an obesity epidemic that is going to bankrupt the health services across the world and affect their health later in life. And a large part of the diet industry suggests that there are quick and easy solutions for overweight and obesity.

A constant desire to lose weight

For decades, the desire to have an ideal body shape has hounded women from a very young age. It has created a diet industry with big and often fraudulent claims suggesting that weight loss is easy, and that it can happen effortlessly, speedily and without dieting. Women are set up to fail again and again.

Not surprisingly, the weight loss industry is loathed and held in disregard, primarily by consumers, but also by regulators, health professionals, and the anti-diet lobby. Regulators get frustrated as numerous small fraudulent outlets push pills and potions that do not work. Health professionals do not believe in an industry that bombards consumers with nonsense, and they see no evidence of long-term success in their patients. And the anti-diet lobby - not being able to pin down the small fraudulent companies with PO Box addresses - challenges the most respectable companies, such as Weight Watchers.

Diets can succeed

There is a growing body of evidence that suggests failure is not an automatic option for people who are dieting. Data are emerging on people who have actually lost weight and who have kept it off for a long time. Dieting can be successful, but it requires a set of behavioural changes that are anything but easy. And that is in complete contrast to the communication codes of the industry.

A number of weight loss studies show promising results. The best evidence at the moment comes from the National Weight Control Registry in the United States (US). This study has followed a group of over 3,200 dieters who have done a variety of diets. The dieters have all lost about 27 kilos and have kept those off for over five years. A number of scientists in the US have identified factors that those dieters had in common, and have found a clear consistency in their behavioural changes.

The six keys to success

From this and other work, six important ingredients for success emerge. These ingredients were not optional: all successful dieters used all of them.

- 1) The right mental attitude. People should not just stumble into diets. They need to be educated to ask themselves: 'Am I really up to this now?' They need to prepare well, and then be ready for the challenge.
- 2) A good diet. Different diets suit different people, as people differ in food preferences, lifestyles and habits. Finding the right diet - a lower calorie regime to which people can stick - will increase the chance of success.
- 3) Committed support. The chances of success increase with the right type of support. Depending on the person, the support can come from family, friends, a slimming club, or e-counselling.

- 4) Regular self-monitoring. Only by keeping daily food records of what they ate, and only by weighing themselves every single day, were the successful dieters able to accomplish their goal. People have to monitor their performance and have to be educated to do so.
- 5) Regular exercise. Exercise is key - not only for weight loss, but also for weight maintenance. This can be just moderate intensity physical activity such as walking; however, 90% of the successful dieters exercise daily.
- 6) The ability to manage stress. When people get bored, hungry or frustrated, one of the first things they do is reach for food. People who learnt how to manage their stress were successful.

The ambition of Slim-Fast

The six keys to success form a clear framework. We should give consumers this full set of advice. Currently, good diets cover two ingredients and some advice on the others, but they do not give the entire range. The ambition of Slim-Fast is to build on our track record as a highly nutritious structured food programme that suits busy people because it takes out the calorie and nutrient calculation work. We want to play a leading role by offering a package of products and information that is broad enough to give our consumers of the future the best chance of success.

The Slim-Fast programme can work for some people. This is, for example, shown in a large, community-based, ten-year study with a group of people in Pound, Wisconsin (Blackburn, 2003). These people were unsupervised and independent. They received advice on weight loss and maintenance with the Slim-Fast Plan at the beginning, and they had access to Slim-Fast products. They then just got on and used it. The matched control group lost weight initially on a calorie controlled diet and then just lived on a normal American diet.

The results show that understanding the Slim-Fast Plan and having access to the products enabled the entire group to go against the American ten-year trend of weight gain (Figure 1). The trend of the control group was in line with US trends - they ended up 15 kilograms heavier than at their starting weight. This study validated the role that a structured meal replacement programme can play. The trial covered one other crucial ingredient of success. The people who were dieting in Pound using Slim-Fast knew each other and provided support to each other.

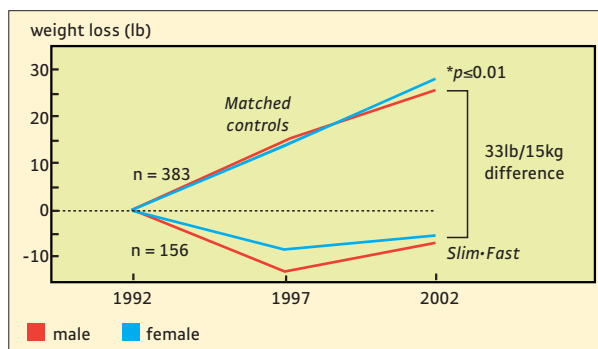



Figure 1. Weight loss and maintenance over ten years. The self-help Slim-Fast Plan has good results in the long term. Sources: Blackburn, 2003; Rothacker, 2000.

A call for partnership

How will Slim-Fast incorporate the other key success factors? First, by not communicating that it is easy to lose weight. That is a challenge, because consumers do not want to hear that it is going to be difficult - they 'want the dream'. Second, by providing education materials, such as a behavioural check-list before people start, and by offering tracking tools to help self monitoring, or pedometers to measure exercise. We can make our website, which attracts two million consumers each year, work harder for us by giving tougher advice than we offer now.

Third, we should encourage dieters to set more realistic goals. People who start diets often start by thinking that



they would like to lose 20% or 30%. However, most successful dieters only ever manage to lose about 10% of their body weight. This is enough to obtain significant improvements in health.

And finally, partnerships are crucial in challenging the communication codes around an industry. To date, departments of health and health professionals have treated the industry with understandable suspicion. However, the industry has much to offer in this fight against obesity. In three areas, partnerships would be of great value. One is to formulate legislation - such as the draft European Health Claims Regulation - to put an end to unrealistic product promises. At the same time, we should, together, identify worthwhile approaches, and develop a system to accredit them. In this way, we help consumers recognise good diet plans and approaches and make the right choice. And finally, we want to work with partners to provide some of the practical tools and expertise on the ingredients of success, such as exercise and stress management, which are outside our area of expertise.

Conclusion

It is time to look at weight management through the eyes of those who have been successful at it. There are six keys to successful behavioural change to lose weight and keep it off. There is a need for partnership between regulators, industry, consumers and health experts to set the parameters for communications that inform the consumer without alarming them, and motivates realistically without making false promises.

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From Public Health to Consumer Action: the Becel/Flora pro-active Example

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The launch of the Flora/Becel pro-active spread was a major development in the dietary management of cholesterol for health conscious consumers and for health professionals. From this project, Unilever has learned much about making positive nutritional changes easy for people and about taking an integrated approach. Unilever has worked together with non-governmental organisations (NGOs), policy formers and health professionals to give consumers a consistent and credible message.

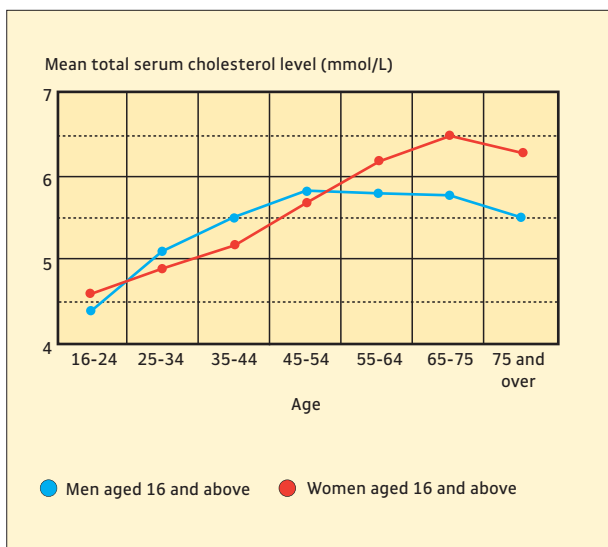


Figure 1. Total blood cholesterol levels by sex and age, 1998, England. Source: Health Survey for England, 1998.

The silent epidemic

Coronary heart disease (CHD) is a silent epidemic. It is the number one cause of premature death in adults worldwide. Blood cholesterol is a major modifiable risk factor for heart disease. About 70% of adults over forty years of age in Europe have a higher total cholesterol level than the 5 mmol/L that is advised by the European Society of Cardiology. However, only about 15% are aware of it.

Many consumers only find out their cholesterol is high after they have had a heart attack, often when they are over forty years old. However, the total cholesterol level increases over the years, and the advised total cholesterol level of 5 mmol/L is often passed long before the age of forty (Figure 1). Therefore, the earlier in life that people start doing something about their increasing cholesterol, the better. High cholesterol is not just a problem of older men; in fact, women overtake the cholesterol levels of men later in life due to hormonal changes. The average cholesterol levels drop after 65 to 75 years of age: the people who remain alive tend to have lower cholesterol.

Consumers need simple, practical and positive messages to become motivated to make changes to their lifestyle, for example: 'a 10% reduction in cholesterol through dietary change is associated with a 20% reduction in CHD risk'. Knowing this makes people realise that heart disease is something they can control to a certain extent. Another way of looking at this is that: 'on average a 10% reduction in your cholesterol level gives you the typical cholesterol level of a person who is ten years younger'.

Unilevers history in heart health

Pro-active is part of the Becel/Flora brand, which has been around since the early 1960s. Becel/Flora has been the heart healthiest choice in spreads for many years and has made a significant contribution to the diet in many markets by reducing saturated fat intake and increasing polyunsaturated fat intake. The spread offered consumers an easy way to

change from butter to a low fat polyunsaturated spread and to make a big difference in their diets.

Unilever invests in science and technology to keep the brand up to date. The Becel/Flora formula has been evolving with new findings in the scientific community. The ratio of essential 'good fats' (linoleic acid and alpha-linolenic acid) has been optimised, and trans fatty acids were removed a decade ago. Fat levels have been reduced to make low fat spreads and very low fat spreads, to offer people opportunities to have a lower calorie intake as well. Heart healthy vitamins, including antioxidants and homocysteine lowering B vitamins, were also included.

To have an active dialogue with the health community, the Becel Institute (or the Becel Heart Health Information Bureau in Canada, or the Flora Project for Heart Disease Prevention in the UK) was set up thirty years ago. It takes a multi-factorial approach to promoting heart health and a heart healthy lifestyle. The Becel Institute funds heart health awareness and risk factor education in partnership with National Heart Associations and the World Heart

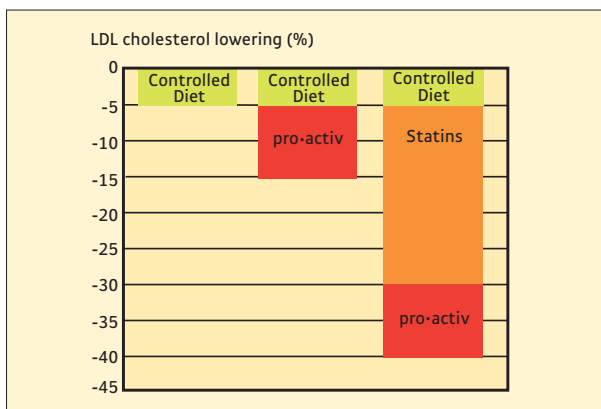


Figure 2. Percentage of LDL cholesterol lowering with a controlled diet alone, compared to combinations of a controlled diet with the plant sterol containing spread pro-activ, and a controlled diet, statins and pro-activ. Based on Katan et al., 2003; Edwards and Moore, 2003.

Federation. Such partnerships potentially offer the 'win-win' of corporate funding for public health education, with business benefit through building brand credibility.

Plant sterols

Plant sterols are naturally occurring cholesterol-lowering compounds. They can be found in vegetables, nuts and seeds. Their effectiveness has been proven in over 600 trials since the 1950s. Plant sterols lower the 'bad' LDL cholesterol in the blood by reducing absorption of cholesterol in the gut. Levels of 'good' HDL cholesterol are unchanged.

Becel/Flora pro-activ is a low fat spread enriched with around 8% plant sterols. It is clinically proven that normal daily use of around 20 grams of this spread as part of a healthy diet reduces LDL cholesterol levels by an average of 10 to 15% within three weeks. Spreads offer an easy way to incorporate this cholesterol-lowering ingredient into the diet, as it requires no behavioural changes to switch from butter or margarine to pro-activ.

When used in combination with a healthy diet, or with cholesterol-lowering drugs such as statins, pro-activ adds to their effectiveness. For example, by changing an individual's diet into a healthy, cholesterol-lowering diet, a reduction in LDL cholesterol of around 5 to 7% can be achieved. Pro-activ adds an additional 10% to that (Figure 2).

Regulatory challenges

There are legal restrictions on claims and communication regarding health and disease reduction for food products. If the food industry cannot get a competitive edge through substantiated claims, it will be less inclined to invest in health related products. This in turn will lead to less spending on consumer communication and education on health by food industry. As a result, a significant societal benefit that could be gained by taking advantage of advertising budgets to give motivating diet and lifestyle

information will be lost. The current restrictions leave little scope to differentiate between the proven efficacy of for example pro-activ, and claims that are also allowable on foods with no or low efficacy. Furthermore, the health claims regulation between different markets is inconsistent. Thorough and transparent regulation of food health claims is important for consumer confidence.

Shaping the communication strategy

People want to reduce their cholesterol, improve their heart health and go on enjoying their life. They want freedom from worry - that is the real emotional benefit of heart healthy living. Consumers want to be in control of their cholesterol levels themselves. They seek clear and consistent information to form their own consensus. They get their information from: friends, family, magazines, radio, TV, retailers, books, the internet, and health professionals such as dietitians, nutritionists, doctors, and

cardiologists. In particular the ‘word of mouth’ is a powerful medium.

These consumer insights have shaped the communication strategy for pro-activ (Figure 3). The target audience for pro-activ is people of 45 year or older who are concerned about their cholesterol. This audience is reached directly through traditional marketing mix elements such as advertising, relationship marketing, promotions, and packaging. But indirect communication channels are at least as important. The media and health professionals have a big influence and encourage that experiences are shared (word of mouth). Retailers are also a powerful influence by giving independent in-store information. Policy formers in turn have a big influence on the public opinion through their communication with retailers, media and health professionals. These policy formers are the governments, non-governmental organisations (NGOs) such as Heart Associations, and the top clinicians.

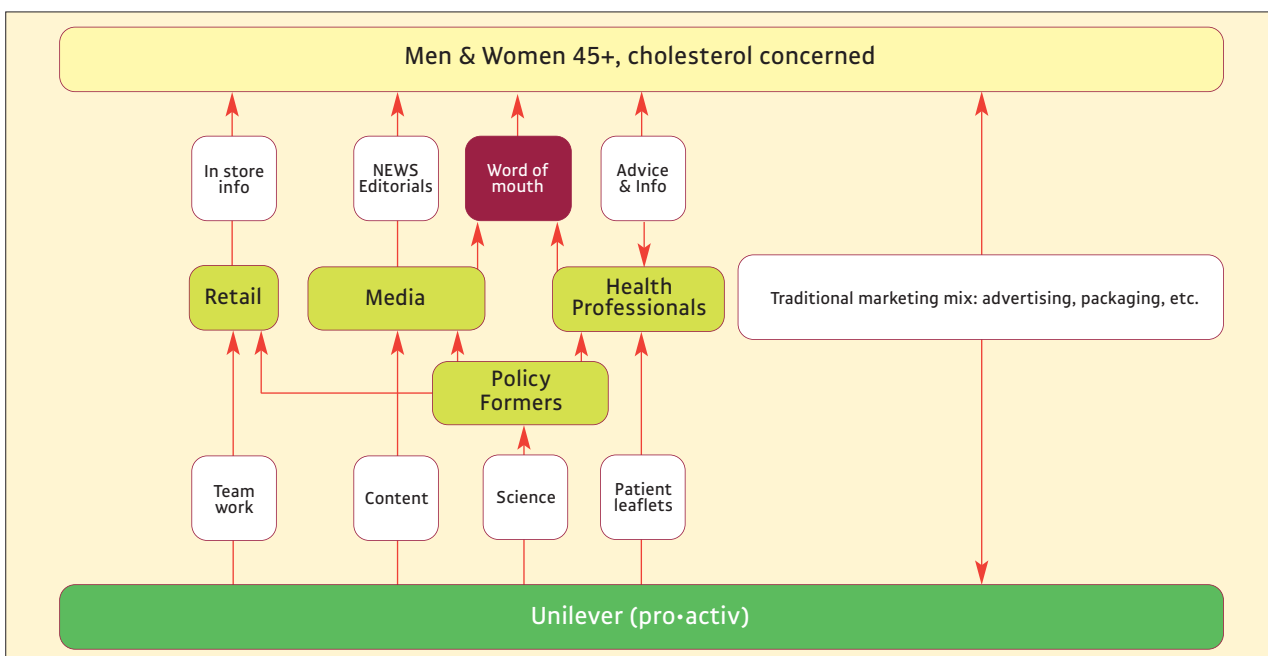


Figure 3. Direct and indirect communication channels.



Supportive climate

To create a supportive climate in advance of the launch, a programme of briefings, conferences, and clinical trial publications ensured a rich dialogue with key opinion formers and consumer influencers for over a year. Unilever won the support of many influential groups by showing results of over forty clinical trials demonstrating the product efficacy and safety, by publishing own scientific work in peer-reviewed journals, and by sharing scientific insights with these groups at national and international conferences. The feedback received helped to optimise the product formulation. Consumer influencers were informed by advertisements in medical media, monographs and Becel Institute lifestyle counselling materials for patients, and health journalist briefings. Pre-launch regulatory approval for plant sterol containing food products was gained in 24 markets worldwide including the United States, the European Union, Australia, New-Zealand, and Japan. This level of independent expert review was unprecedented for a food product.

At launch, this climate of expert support was extended through media and health professionals, along with traditional marketing media to raise consumer awareness. The information need was high, so 'information media' were used to educate the consumer: newspapers, magazines, internet, in-store leaflets, on pack, by direct mail and by the carelines. For advertising, testimonials were used.

Becel/Flora pro-activ costs three times more than normal margarines. This comes down to US\$ 0.28 a day, or € 0.24. In developed Western markets, this is affordable. Unilever is actively looking for heart health nutrition solutions that are applicable to developing countries, where affordability is key.

Over twelve million households now use pro-activ to lower their cholesterol levels, and the brand Flora/Becel has grown by 30% over 4 years. Funding for the Becel Institute and health education partnerships has increased. Becel/Flora is a highly trusted brand. The pro-activ brand has been extended now to yoghurt and milk with added plant sterols, to offer greater choice and make it even easier for consumers to get the cholesterol lowering benefit.

Conclusion

There is a big need for education and screening in order to make people aware of the silent epidemic of heart disease and of their own risk factors. Brands that consumers trust to provide heart healthy foods are an important part of making the healthy choice an easy choice. Supporting statements from policy formers and consumer influencers are crucial for building consumers trust. Partnerships between NGOs and industry offer the potential to create a 'win-win' situation in driving health education.

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***Part 5.
Shared Goals and
Complementary Strategies***

Noncommunicable Diseases: the WHO Response to a Global Epidemic

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Noncommunicable diseases (NCDs) are the leading causes of disability, disease and death in all regions where the World Health Organization (WHO) is active, except for Africa. Unfortunately, some of the key policy makers and stakeholders remain unconvinced and the current investment globally is way short of what is needed. Close to 59% of all deaths worldwide, and 47% of the global burden of disease are attributable to noncommunicable diseases (Figure 1). This is projected to increase to 73% of deaths and 60% of the disease burden in 2020. To date, the focus of WHO has, rightly, been on infectious diseases. Now the time has come to refocus and review the priorities, particularly for investment in the future.

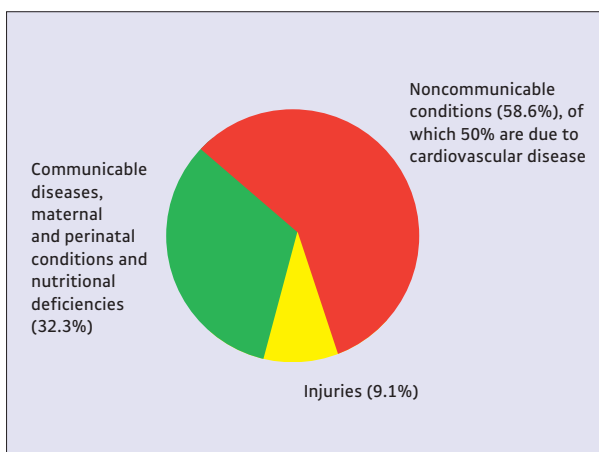


Figure 1. Deaths by broad cause group. Estimates for 2002.

Source: WHO, WHR 2003.

Two-thirds of NCD related deaths occur in developing countries, and most of them at younger ages. Infectious diseases - in particular HIV and AIDS - also pose a big burden on these countries and so they are left with a double burden of disease. Even in Africa - the only continent where communicable diseases cause a much larger proportion of deaths than NCDs - the prevalence and the trends of important NCD risk factors are rising. WHO hopes to encourage people to take action and prevent Africa from following all other continents.

For a long time, undernutrition has been the most urgent health problem in the world. However, the number of people in the world suffering from overweight or obesity is now as large as that of people suffering from undernutrition (Figure 2). The world has changed, and the global agenda needs to change accordingly. The percentage of obese and overweight children is a good barometer of what is going to happen. In developing countries, the prevalence of childhood obesity is not dramatic yet, but is increasing consistently.

Reducing the risk of NCDs

The seven most important risk factors for NCDs are related to lifestyle, in particular to an inappropriate diet and physical inactivity. The risk factors are high blood pressure, tobacco use, high cholesterol, low fruit and vegetable intake, alcohol abuse, high Body Mass Index (a measure of obesity), and low levels of physical activity.

For example, the North Karelia Project (which has been discussed during this symposium) provides good evidence that NCDs are preventable. The project shows that a positive change on a population level can be achieved in a relatively short period. WHO advocates population based prevention strategies, because these are the most cost-effective, and often the only affordable option for major public health improvement in NCD prevalence.

WHO is charged with providing technical advice based on the best evidence, and providing advocacy and training. The organisation assists countries with national programmes and policies, and encourages regional networks. As yet, partnerships are not well developed for NCDs, and WHO is trying to facilitate those. Countries can request an active surveillance and monitoring programme.

The Global Strategy on Diet, Physical Activity and Health

In recognition of the escalation of global health problems caused by these diseases, member states requested WHO in 2002 to develop a Global Strategy on Diet, Physical Activity and Health. Over the last two years, WHO has consulted widely with member states, private sector, civil society, the United Nations (UN) and Intergovernmental Agencies, and convened an expert Reference Group to assist in developing this strategy (Figure 3).

Phase 1 was the preparation for the consultation process and the finalisation of an expert report. Phase 2 comprised a comprehensive consultation of member states, civil society, the private sector, and other UN Agencies - the Food and Agriculture Organization (FAO) in particular.

The private sector is an important stakeholder in the Strategy, as it relies largely on multisectorial action. In the discussion with governments and in the development of the strategy, NGOs have been very powerful allies in addressing difficult and contentious issues. For example, governments often have a conflict. On the one hand, they have to promote trade, commerce and business, but on the other hand, they need to protect public health.

For Phase 3, the Executive Board met in the beginning of 2004 and discussed the strategy that has been developed by the organisation. WHO believed that it had produced a reasonable approach that met most of the requirements of most of the member states. However, a selected group

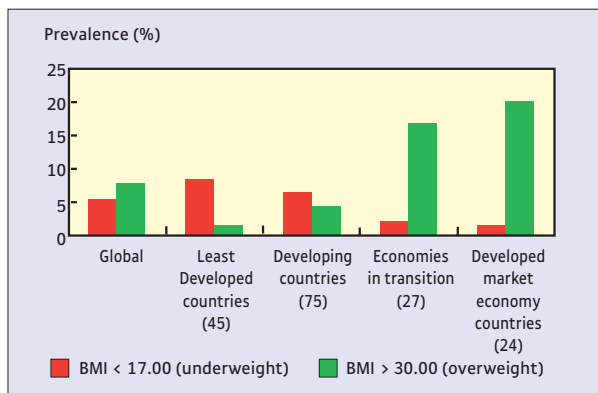


Figure 2. Global prevalence of underweight and obesity in adults for year 2000 by level of development. BMI = Body Mass Index. Source: WHO, NHD 2000.

of member states were concerned with elements of the strategy and requested a month of further consultation.

One of the concerns of member states relates to the implications for their economies, in particular, the agricultural sector. The mandate of WHO is public health, promotion of public health and prevention of disease but it is important to take due regard of those concerns. Therefore, WHO will continue to work with FAO and other UN agencies.

The Strategy has been discussed and adopted at the World Health Assembly in May 2004. The revised version is now available publicly on the internet (see reference below). The next step will be to help countries implement the strategy at country level. This will not be new to most of the countries: many of them already have programmes or policies in place.

The foundations of the Strategy

The Strategy is a vision, a set of policy options for member states. WHO recommends that member states would

implement aspects of the Strategy to suit their local circumstances. It is not a convention. WHO strategies often provide a helpful and powerful advocacy tool for internal use. The foundation of the Strategy is addressing the risk factors; it is not addressing any one disease. Hopefully, it will have impact on a multitude of NCDs, but this requires multisectorial action from a variety of stakeholders, such as governments, civil society, and the private sector.

The private sector can have many important roles in the Strategy:

- to promote healthy diets and physical activity;
- to provide healthy affordable choices;
- to improve product content;
- to consider new products with better nutritional value;
- to provide usable information for consumers;
- to practise responsible marketing, especially to children;
- to improve food labelling;
- to provide accurate information on food composition to national authorities;
- to assist in the development of physical activity programmes;
- to improve or develop healthy workplaces.

It is important that somebody shows leadership in taking up this challenge. In this context, the leadership provided by Unilever is to be commended. One of the important roles is to set the tone and benchmark for the sector. If, indeed, the healthy choice is to be the easy choice, then first of all the healthy choice should be made available.

Controversies

One of the key controversies that have surfaced repeatedly during the development of the Global Strategy is the role of the individual versus the role of society. Certain member states have insisted that individual responsibility is highlighted. However, experience from other public health actions shows that the ability of the individual to do the right thing is severely limited by the environment. This

means there is a need to change the environment around the individual. Therefore, WHO remains convinced that the Global Strategy is directed at governments. They need to improve the environment in which their citizens live.

Another contentious issue is the suggestion that the Strategy is not based on good science. This is not correct: a wide variety of information sources has been used for the development of the Strategy, both scientific and non-scientific. However, the Strategy is above all a policy document, directed at governments and other stakeholders such as the private sector. It is not WHO policy to reference every scientific contribution to a policy document like the Global Strategy.

A third concern is that the Global Strategy on Diet, Physical Activity and Health is the new convention on tobacco. This is not the case; WHO has developed the Strategy as a set of policy options for member states to consider.

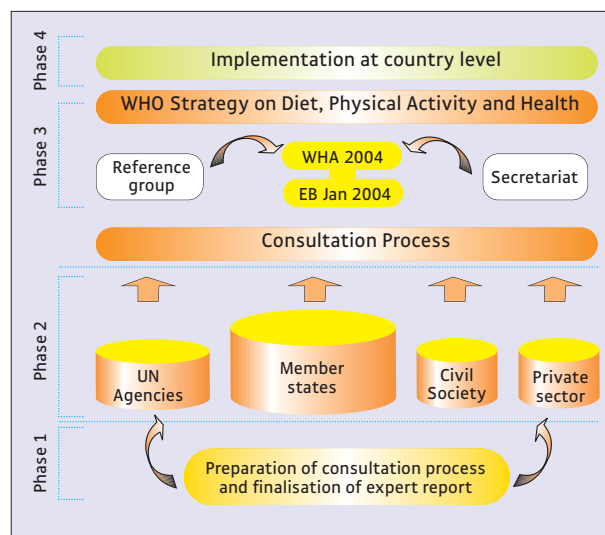


Figure 3. Phases in the development of the WHO Global Strategy on Diet, Physical Activity and Health. WHA: World Health Assembly; EB: Executive Board; UN: United Nations.

Furthermore, the issue of marketing to children comes up regularly. The Strategy asks that companies follow responsible practices, particularly with regard to the promotion and marketing of foods high in saturated fats, sugars or salt, and especially to children. However, specific recommendations or limits were not made.

A fifth controversy concerns fiscal policies and taxes. The Strategy does not mention the introduction of a 'fat tax', which seems to be a popular phrase in the media. It suggests that, when appropriate, member states could consider taxation as a policy option to promote access to various foods, and to increase or decrease consumption of certain types of food.

Finally, the main concern from developing countries is that adoption of the recommendations of the Strategy will have disastrous consequences on their economies. However, work undertaken by the World Bank suggests that, for example, even if countries complied with the recommendation of a maximum of 10% of the total energy intake from sugar, the impact on economies would be minimal: people do not change all that quickly, and the continuing growth in population would require a continuing production.

Conclusion

The Global Strategy on Diet, Physical Activity and Health is the response of WHO to NCD prevention. It is a set of policy options for member states to consider. Multisectorial action from governments, civil society and the private sector is crucial to turn the tide of the NCD epidemic.

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How to Utilize Partnerships in Advancing the Health Status of Children

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UNICEF has thirty years experience with corporate partnerships, but these mainly provide funds for UNICEF programmes. Recently, the attitude towards the mobilisation of other types of resources has evolved. UNICEF has now started to work with partners in the private sector on programmes which will benefit children directly and thus make a difference on the spot.

Humanity for every child

UNICEF is an intra-governmental organisation with a unique children's mandate on behalf of the United Nations. The organisation is entirely voluntarily funded, receiving money from governments and from the private sector. Founded in 1946, in 1989 UNICEF received an additional mandate from the United Nations: to protect and advance the Convention on the Rights of the Child, which only the United States of America and Somalia have not yet ratified. About 7,000 people work for UNICEF, delivering programmes in 158 countries and raising funds in 37 developed countries. Its operating budget is just under US\$ 1.5 billion. Two thirds of this comes from governments and one third from the private sector and the general public.

The mandate and priority programme themes of UNICEF are women and children: providing fundamental needs and services, clean water, sanitation, immunisation, nutritional services, and education. UNICEF protects, promotes and advances the Child Rights Convention and is active in emergency operations.

The goals from UNICEF are derived from the UN millennium Development Goals. They are expressed around four themes:

- 1) Giving children the best start in life;
- 2) Helping children survive and thrive as individuals;
- 3) Getting kids in school;
- 4) Creating a protective environment - especially in emergency conditions.

In short: for every child, health, education, equality and protection.

Obesity and malnutrition

Obesity and malnutrition are related as a public health, a socio-economic and an ethical dilemma. For UNICEF, obesity some day may become an issue, but underweight and malnutrition will remain a predominant structural and pressing issue. Malnutrition is a root cause or corollary of extreme poverty and social economic instability, and it creates vulnerability for lethal diseases. Progress in improving the situation has not been sufficient, neither by UNICEF nor by other partners and non-governmental organisations (NGOs) involved. The reasons for this are many, ranging from civil unrest in the targeted countries, to shifted priorities within organisations.

Underweight and underheight (stunting)

As the world food production increases, so does the number of hungry. The number of chronically hungry crept up again to 800 million after decreasing in the early 1990s. It is prevalent in Asia, Latin America and Eastern Europe; and in sub-Saharan Africa, one third of the population is undernourished. Stunting is a term describing a lower height than appropriate for a child's age and is a measure of undernutrition. Except for North America, Australia and Europe, stunting is prevalent everywhere, with percentages up to 50% of children under five - especially in sub-Saharan Africa and South Asia.

Vitamin and mineral deficiency

Vitamin and mineral deficiencies cause impairment in brain development and result in lower IQs. They cause damage to the immune system, and death in excess of one million children a year. Every year, 250,000 serious birth defects and death of 50,000 women during pregnancy or childbirth occur as a result of these deficiencies. In addition, they cause a large-scale loss in national energies, intellect, productivity and growth (2004 Global Progress Report). In the industrialised nations, vitamin and mineral deficiencies were largely controlled decades ago. They could be controlled worldwide now, by means that are tried, tested, available and affordable.

'Silently, invisibly, micronutrient deficiencies trap people, communities and entire countries in a cycle of poor health, poor educatability, poor productivity and consequent poverty, often without the victims ever knowing the cause.'

Kul Gautam, Deputy Executive Director UNICEF.

A call for action from the food industry

Obesity is a phenomenal marketing challenge, and a good reason for making a living in the food industry. But the recent emphasis on obesity and the call for action in developed markets, is not sustainable unless the other side of the coin is also addressed: under-nourishment and malnutrition.

The arguments for this are many. First, it is the right thing to do. Furthermore, stakeholders, ethical investors, media, NGOs, and Human Rights Watchdogs all appeal for more responsible corporate behaviour. Most importantly, employees want to have the conviction that their company is doing something to put its stake out. They want to be working for the world's premier company that insists on receiving the credibility and the reputation of a true industry leader. True leadership will come forward because

in the long term it is the only way to differentiate at a company and at a brand level. The Annapurna project in Ghana is an example of the good things that are already happening in the field.

Partner with the private sector

There are several good reasons why UNICEF should partner with the private sector. One is the call for collective action from United Nation Secretary-General Kofi Annan in 1999 in the Global Compact. A second one is that nowadays neither governments nor social development agencies can muster enough resources, outreach and energies. Third, the Official Development Assistance (ODA) - the funds from donor countries for developing countries - stagnates at about US\$ 57 billion. Even more worrying is the fact that, from those US\$ 57 billion, only US\$ 18 billion ends up in local genuine programmes. The rest is for partial debt relief, or for administrative assistance. Fourth, the ODA tends to benefit a smaller group of 'interesting' countries.

Other important reasons why partnering with the private sector makes sense for UNICEF, are the access to human, financial and other resources. If leveraged with the right partners, the patents, the know-how, the logistical outreach, and the research and development (R&D) capacities of large trans-national companies can generate added value and direct support to where it can make the biggest difference. Furthermore, their media budgets and expertise in creating motivating health messages are phenomenal to use in a joint effort - as indeed are management systems, reporting and evaluation processes, and training facilities.

For the private sector there are at least as many good grounds for structural engagement with organisations like UNICEF. Partnerships can be established to:

- 1) Ensure long-term market development. However, companies should be aware that this is disproportionately long-term in terms of revenues. They

genuinely have to feel committed to a cause that is not just driven by market shares and market penetration;

- 2) Show corporate social responsibility;
- 3) Counteract the anti-globalisation pressures;
- 4) Create unique cause-related marketing opportunities. These link consumers and stakeholders in developed and developing countries, and could help overcome traditional hurdles of high upfront investments and low returns of investment;
- 5) Establish industry leadership and brand differentiation;
- 6) Increase the capacity to recruit, motivate and retain key staff;
- 7) Create transparency, validate the business model, and provide leverage by getting access to the right government circles and the right local parties.

A good example of how a company has made a worthwhile long-term commitment to a partnership comes from the petrochemical industry. ExxonMobil has a patent for a chemical that can be applied to mosquito nets in order to combat malaria. The net gains about ten times its efficiency in keeping mosquitoes away, because it works - not just for the person under the net, but in protecting everybody in the room during six to nine months. An NGO came up with the idea, ExxonMobil shared its breakthrough, and UNICEF organised the supply chain.

The Unilever and UNICEF partnership

Unilever and UNICEF have agreed a long-term commitment to work together to address a specific millennium development goal - that of reducing child mortality. This partnership has resulted in pilot projects on micronutrient food fortification in Africa, Asia and Latin America, and projects that will address hygiene - for example hand washing and sanitation. Child mortality is still hovering around 82 per 1,000 births. It has come down significantly already: in 1960, it was close to 200 per 1,000 births. In

2015, it should be down to 65. With solid partnerships such as the one between Unilever and UNICEF, this goal should be achieved.

Conclusion

The food industry should not just work on finding solutions for obesity, but also on contributing to strategies challenging malnutrition. The call for action to the world's leading multinational corporations is compelling. UNICEF is keen to stimulate, facilitate and leverage partnerships with industry, governments and other (UN) partners, from which children benefit directly. Corporate strategies driven by social responsibility offer unique industry leadership for the most courageous, determined and resourceful multinational corporations.

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Regulatory Challenges in the European Union

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The Confederation of the Food and Drink Industries in Europe (CIAA) is the voice of the food and drink industry in Europe. It represents the interests of the industry towards European and international institutions. It contributes to the development of a European and international regulatory and economic framework that addresses industry's competitiveness, food quality and safety, consumer protection and respect for the environment.

In Europe, the food industry is the largest industry, with around € 700 billion turnover and an annual export of about € 48 billion of goods. It is somewhat fragmented, comprising 26,000 businesses and three million jobs, but it has some of the largest food and drink companies in the world, and an excellent innovation track record.

The CIAA Mission

The mission of CIAA is to help proactively in developing an environment in which all European food and drink companies can compete effectively within and outside the European Union (EU) for sustainable growth, meeting the needs of the consumers and playing their part in making Europe the most competitive knowledge-based economy in the world in 2010 (Lisbon Declaration 2000, and Barcelona 2002).

The CIAA continuously seeks dialogue with stakeholders and partners. We strongly believe that coordinated, shared work results in better regulation, and that this regulation is well applied when there is a sense of shared ownership between the stakeholders.

The CIAA has developed a Roadmap with five key areas for action. Successful delivery of the CIAA Mission first requires building a greater level of consumer confidence following the food scares that Europe has experienced. Second, it requires the tools to compete effectively outside the EU. Third, a balance and productive management of the three pillars of sustainability is needed, and fourth, a satisfactory resolution of the diet, lifestyle and health issue is required.


The fifth and most important aspect of the Roadmap is the establishment of an improved and competitive regulatory framework that leaves more space for industry's self-responsibility. The framework should be soundly based on science, should stimulate research and development (R&D) investments, should be supportive of innovation, and should be capable of delivering a well functioning, enlarged internal market. Throughout the EU, there should be the same regulations.

The CIAA believes that the food and drink industry can play a role in the ambitious targets set by the Lisbon Declaration. There is a great potential for growth and scientific innovation in the area of nutrition and health. This underlines the need to stimulate the competitiveness of our industries. This can be partly achieved through a multi-stakeholder dialogue and mutual alignment.

Key principles for regulations

The competitive EU regulatory framework should promote self-regulation; this requires monitoring and reporting on its implementation. One example of self-regulation is the set of general advertising principles that the diet, lifestyle and health taskforce of the CIAA has developed. Rather than detailed 'one-size-fits-all' regulations, Europe needs a reasonable legislation structure giving room for local differences in the European markets. In addition, industry competitiveness should be stimulated, but never at the cost of consumer protection. The two interests do not conflict, since it is our business to serve consumers.





When developing new regulations, regulators should involve the industry (i.e., the CIAA) at the earliest possible stage. All regulation should be preceded by an assessment of the consequences on the cost of the products, on innovation, and on the competitiveness of the industry. Furthermore, new regulations need to be science based, clear, simple, and proportional. They should not go into endless details, but just set the principles and leave room for the regulator to implement them in a sensible way.

The CIAA wants to continue with a centralised decision-making process in developing regulations. There should be no room left for local interpretation in the 25 member states of the EU, and effective and uniform implementation in the enlarged single market. The developing processes should be streamlined, transparent, clear, speedy and predictable. This is very important for our competitiveness. If it takes six months to come up with a new product in the United States, we need the same conditions in Europe. And finally, old regulations should be eliminated when new ones have been developed.

Competing on the global stage

While its current position is strong, Europe may be in danger of losing relevance on the global stage. One cause for this is the proposed regulation on nutrition and health claims in Europe. The CIAA is currently discussing this proposal in line with the key principles for developing the new regulations as mentioned before. The proposed regulation, issued in Brussels in July 2003, includes a number of detailed prescriptions that will restrict our ability to make fair, honest, properly communicated health claims, and will inhibit innovation. At the same time, the Food and Drug Administration (FDA) in the United States has issued a ranking system for scientific evidence for health claims, so that products can come on the market with a health claim based on emerging scientific evidence. A second important cause is the debate on genetically modified organisms (GMOs). Due to Europe's attitude

towards this matter, it is unlikely that we will have a leading role in biotechnology. This is unfortunate, since biotechnology is an important scientific development.

Europe is going through many changes. By the end of 2004, Europe will have a new Parliament and a new Commission and, perhaps, a new Constitution. The CIAA would like to see a role for a Vice President for Economic Affairs in the Commission who would be closer to industry matters.

The way forward

The CIAA has the ambition to make Europe a role model on nutrition and health legislation. This requires integration and coordination of the interests of all stakeholders: consumer organisations, regulators, and the food industry. The commitment to be part of the solution is illustrated by our activities regarding diet, lifestyle and health. A number of partners - such as advertising agencies, vending machine proprietors and consumer organisations - are currently discussing how they can be part of the solution. The sense of shared ownership that this dialogue builds will ensure that together we will come up with sensible regulations.

Conclusion

The CIAA has developed a Roadmap with five key areas for action in order to achieve its mission. This Roadmap is essential if the largest manufacturing industry of the EU - the food and drink industry - is to play its full role in the delivery of the Lisbon and Barcelona targets. Partnerships play a crucial role in the ambition of the CIAA to make Europe a role model on nutrition and health legislation.

Public Health and Food Industry: A Balanced Approach

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The Global Strategy on Diet, Physical Activity and Health of the World Health Organization (WHO) has motivated the food sector to steer towards strategies compatible with public health needs. For Unilever, health and vitality are growth drivers for its business. Some people may say that the food industry 'talks the talk, but will not walk', because eating less is not in line with growth strategies in the food industry. However, one of the crucial points of Unilever's Vitality Mission is a focus on value rather than on volume.

Malnutrition is a major diet related public health issue, comprising both overnutrition and undernutrition. Overnutrition is caused by a combination of eating too many calories and physical inactivity, leading to overweight and obesity; undernutrition is due to a lack of essential nutrients such as vitamins and minerals. Malnourished children, in particular, are very vulnerable in both conditions. It is this group which deserves specific attention to allow them optimal growth and development, both physically and mentally. It is the Unilever mission to help consumers achieve the nutrition balance leading to a healthy vital life. We intend to do this through the marketing of great tasting food that will make the healthy choice an easy choice. To this end, Unilever has revised its Nutrition Policy.

Unilever Nutrition Policy

Nutrition is a key growth driver for our business. As a leader in the global food market, Unilever is committed to market great tasting foods that will make the healthy choice an easy choice. We will help our consumers everywhere to achieve nutritional balance leading to a vital and healthy life.

Our brand teams and operating divisions, supported by the Unilever Health Institute and our Global Nutrition and Health Network, are responsible for implementing this policy and for strengthening our continuing efforts to:

- Develop a deep understanding of consumers' nutrition and health needs and wants;
- Know the nutritional composition and dietary role of our products and label our products in a consumer-friendly and meaningful way;
- Optimise the nutritional composition of our products to meet consumer needs and wants;
- Undertake and support scientific research to provide evidence for benefit claims for our product;
- Ensure responsible communication about product benefits to health care professionals and consumers;
- Seek external partnerships to develop mutual understanding and agree common approaches in nutrition and health programmes.

Partners who can help

Many different parties can play an important role in improving malnutrition and changing public health. The food industry can develop foods and food formats responding to consumer health needs and wants. It can provide dietary information and education that is understandable, simple and relevant. Furthermore, it can exert its knowledge on effective marketing practices to promote a healthier lifestyle.



From nutrition science to consumer action.

Crucial in the whole process are creative partnerships with other organisations and stakeholders to combine skills and competencies. No party can solve these global public health issues on its own. For example, while the solution for combating obesity is simple - people should move around more and eat less -, consumer behaviour is very difficult to change. To be able to achieve this, governmental organisations should be made aware of the problem, so that health care systems are improved. Academia and nutrition institutes need to help unravel the effects of people's daily diet on their health and wellbeing. These and other stakeholders, such as health organisations, non-governmental organisations (NGOs), and the food and beverage industries all need to get a firm understanding of the challenges and opportunities before they will become motivated and committed.

What Unilever brings to the table

There are three principle drivers that allowed Unilever to adjust its course and develop the Vitality Mission: the solid external pressure from the WHO Global Strategy, the consequent commitment from our top leaders to be part of the solution and our capabilities in R&D, marketing and communication to deliver. Unilever's key science and technology capabilities that enable the company to make great tasting, more convenient and increasingly healthier products, include:

- Consumer behaviour. Before translating an idea into a product, it should first be tested with the consumer.

Unilever has consumer scientists with in-depth knowledge of consumer needs and wants. Only in this way, we can make sensible products that help consumers over a long time;

- Food product manufacturing technology. Unilever has the technology to make the best carrier for a bioactive compound and to create a product that makes sense to the consumer;
- Sensory perception. Unilever has the knowledge and technology to create good tasting products - a prerequisite, since a product that does not taste good, will simply not sell;
- Health and Nutrition research and knowledge. The health angle on our brands is becoming increasingly important, because health is a recognised consumer trend.

The Unilever Health Institute is Unilever's Global Centre of Excellence of Nutrition and Health. Its mission is to help consumers improve their health and wellbeing through the development of health promoting foods and beverages with evidence-based health benefits, which taste good, are convenient to use and tailored to individual needs, both in developed and in developing countries. The research and development in the Unilever Health Institute focuses on four key areas: overweight and obesity, cardiovascular health, growth and mental performance of children in developing and emerging countries, and resistance to disease.

The Unilever commitment

Currently, Unilever is reviewing its overall product portfolio to check which nutrition compositions should be optimised to meet consumer needs and wants. For example, in some products, the salt or sugar content, or the saturated fatty acid and *trans* fatty acid content may be reduced. Unilever has a long reputation of updating its products, and has agreed with WHO to do this systematically throughout the product portfolio. In addition, Unilever is doing scientific research to provide evidence for benefit claims that support new, healthier product options. Furthermore, the company invests in clear and understandable labelling of all products. Consumers must have all the information they need to make the healthy choice an easy choice. This implies meaningful labelling on our products, and clear communication and marketing practices.

Partnerships

By taking these steps, Unilever shows its commitment to help change the behaviour of consumers. However, we cannot do this alone. An integrated, coordinated, multi-stakeholder approach is necessary to improve public health issues globally. Effective partnerships are needed, built on trust, from which all parties can benefit.

There are many examples of such partnerships. For instance, Unilever is the only multi-national company that has developed a partnership with the World Heart Federation (WHF). Together with WHF we raise awareness of the risk factors of heart disease in many countries around the world. A second example is the World Food Programme. Chile has 30 years of experience with school-feeding programmes. Unilever is one of the founding members of a board that is involved in bringing this school-feeding programme to the rest of Latin America. Another example is our partnership with UNICEF. Amongst other projects, we are being successful in eradicating iodine deficiency in West-African countries through marketing Annapurna iodised salt. We learned that the skills and

capabilities of UNICEF and Unilever match, and we are now at the stage to bring this partnership to a global level.

In addition, Unilever works together with the International Life Science Institute (ILSI) to advance public health, and has a partnership with the European Nutrition Leadership Programme, where upcoming scientists in nutrition are educated to be leaders in the future.

Crucial for partnerships is a win-win situation that both partners lead and in which they are equally involved. In this respect, partners should be sincere in their approach and genuinely show that they can deliver. With these two factors in mind, partnerships have the potential to work.

Conclusion

The strategic options to combat pressing public health issues require genuine commitment of all stakeholders in solid partnerships. With the Vitality Mission, Unilever is responding to this challenge by combining health, convenience and pleasure into healthier options that are attractive for the consumer.



Round table discussion: How to make Partnerships Work?

To conclude the symposium, representatives of WHO, UNICEF, CIAA and Unilever discussed their attitude towards partnership, and the challenges that partnerships pose. Members of the audience actively participated in the discussion. The discussion is summarised in this chapter.

Participants:

- Chair: Patrick Cescau, Foods Director, Unilever Bestfoods (Chairman designate);
- Rudolf Deutekom, Director, Private Sector Division, UNICEF;
- Jean Martin, President of the Confederation of the Food and Drink Industries in the European Union (CIAA);
- Dr. Colin Tukuitonga, Programme Advisor of the Assistant Director General Noncommunicable Diseases and Mental Health, World Health Organization (WHO);
- Paulus Verschuren, Director, External Relations, Unilever Health Institute (UHI);
- The scientists, experts, nutritionists, marketers and health experts in the audience.

During this meeting, the WHO, UNICEF and the industry stressed the importance of partnerships. Are you convinced that this is the way forward? What are the challenges from your perspective?

Deutekom (UNICEF): I am convinced that partnerships are the way forward, but we should be realistic: it is a long and difficult road. At present, most of the commitment and action is at the top of the organisations. It is easy to make the commitment verbally, but very hard to carry it through. We will have to overcome many difficulties and setbacks, for example, by not expecting too optimistic results, or by other interest groups that feel left out or that have a grudge against one of the partners.

Tukuitonga (WHO): In creating the WHO Global Strategy on Diet, Physical Activity and Health, there has been a tremendous effort to involve and consult the key stakeholders: non-governmental organisations (NGOs), public sector, private sector, and international partners. With regard to this particular public health issue, partnerships are the way to proceed. However, there still are reluctant member states, and there are people who are not convinced. We have to recognise that some of the recommendations in this strategy will be diametrically opposite to the mission and purpose of some of the potential stakeholders.

Martin (CIAA): Partnerships are the way forward, simply because they are efficient and likely to produce better results than when each party works on its own. An example of a good partnership is one formed in Europe to implement food safety regulation. Consumer confidence has been shaken in Europe by a number of food scares in the last ten years. Therefore, food safety legislation has been produced. The CIAA realised two years ago, that the partners in the food supply chain should sit together and come up with the best way to implement the food legislation and avoid another food scare. The partners are the animal feed producers, the farmers, the organisation of farmers and cooperatives, the retail trade and consumer organisations. Together they form a powerful body, which combines forces and tries to come up with optimal solutions, for example, on GMO labelling.



The food industry is often accused for being opportunistic and not ensuring lasting results. Is the food industry committed to add substance behind the plan for partnerships, or do you just see it as a good business opportunity?

Verschuren (UHI): Unilever believes in long term commitment and results. The success of Annapurna - about which we heard during the symposium - is exemplary. Unilever has the ambition to play a leading role and set a best practice model of partnering in improving public health, both in developing and in developed countries. It will be a long road with many pitfalls along the way, but we will come to such a model.

But how does Unilever's product portfolio fit in the strategy of diet and health? It contains healthy products, but also products that are not directly health promoting.

Jan Weststrate (Director of Unilever Research and Development, Vlaardingen): Unilever is continuously updating and improving its products according to the latest scientific insights and consensus. The Unilever Health Institute plays a crucial role in carrying out research, in keeping up to date with the latest science, and in educating product developers and marketeers. The Vitality Mission of Unilever has just started, so some products in our portfolio may not yet be in line with our Mission. However, note that some products are not intended to take up the same place in the diet as for example broccoli, or a salad. Ice cream for instance is made for people to enjoy in moderation.

Verschuren (UHI): You can only 'walk the talk' if you know in which direction to walk. For some products, Unilever is trying to find out in which way we are going to walk. We will get there, but we need to explore the environment first.

Should partnerships also involve other parties, such as international agriculture research institutes, which are a key component of the food provision of the world, or the retail trade?


Tukuitorua (WHO): The WHO indeed relies on the Food and Agriculture Organization of the United Nations (FAO) in facilitating the partnerships and the relationships with agricultural institutions. This is important for the work WHO does on overweight and obesity, and - together with UNICEF and other organisations - on infant growth and malnutrition.

Cescau (Unilever): The retail industry is not hard to convince: it has understood the opportunity. Just enter a supermarket, such as Tesco in the UK, and you will see how much space is reserved for healthy eating.

How can we motivate other partners in the private sector - such as the health industry, the sporting goods industry, advertising agencies, the food service industry, and the pharmaceutical industry - to take up the challenge of partnership with health and agriculture organisations?

Deutekom (UNICEF): The best motivation is to have a common goal. An impressive example comes from the sporting goods industry. Whenever there is a big tournament, the soccer industry is in disarray because people are upset about the soccer balls sewn by typically child labour. About four years ago, the World Federation of Sporting Goods Manufacturers arranged a new initiative known as the 'Sialkat' agreement. It brings together multiple stakeholders: the International Labour Organisation (ILO), Fédération Internationale de Football Association (FIFA), UNICEF and local manufacturers of soccer balls through the services of the local Chamber of Commerce. This project covers the region in Pakistan where





about 80% of all the soccer balls are being sewn. They have not sent the children home, because they and their families needed the money, but they are now working on the soccer balls under well-controlled conditions. For example, they get a hot meal and a few hours of basic education every day. UNICEF is in the partnership to help monitor, and the local manufacturers are all represented.

What are the challenges on the road from theory to reality?

Tukuitonga (WHO): Partnerships are great in theory but the challenge now is to make them work in practice. To make partnerships work, firstly the key stakeholders should all be equally committed to partnership, and they should have a genuinely shared sense of purpose and mission. Secondly, while it seems attractive to include as many parties as you can, the effectiveness of a group is inversely proportional to the number of members. Therefore, we have to be selective about the core, invite the right people to start with, and gradually expand as results permit it.

Martin (CIAA): There is a good example showing the effectiveness of a selective core group. The Food and Drink Industry of Europe, the CIAA, works together with the Food and Drink Industry of the United States, the Grocery Manufacturers of America (GMA), to find a solution for the obesity epidemic. The core of this task force is composed of food manufacturing businesses and organisations, and this core directs the way forward. But in their meetings, they invite other parties, such as advertising agencies, vending machine businesses and food service organisations, to give their input.

Partnerships not only involve the public sector and the industry, but also citizens. How can we communicate clear and correct messages to the public?

Cescau (Unilever): The media can play an important role, both positive and negative, in a debate on the issue of education, awareness, and key messages. In order for them to communicate truthfully and consistently, we have to educate the media, the financial community, and schools.

Verschuren (UHI): Providing correct information to the consumer is important. When asked to list the biggest dangers in food, the choice of consumers is exactly the reverse of that of scientists. Scientists for example know that food additives are the best-controlled components in our food. We have to educate the consumer on this. At the same time, we have to make sure we use as little additive as possible in food, because the consumer does not want it.

Martin (CIAA): Information has to be useful and useable and it should come to the consumer at the right time and in the right amount. When consumers are in the shop, it is too late to try and educate them on nutrition. And there is not enough space on the pack to do that. Together with the European Union, the industry could start or promote school education programmes, in an honest, factual way. The industry has access to scientific information, and it has skills in communication.

One way to communicate to the consumer is by clear labelling, but this must be useful to the consumer. For example, we have chosen to label a food product if it contains one or more of the fourteen known allergenic substances. If we labelled the two hundred derivatives from these fourteen allergenic substances, every product in the store would be labelled. That would not be sensible and useful. As representatives of the industry, CIAA together with consumer organisations has decided to label all fourteen allergenic substances, and in the meantime

work with the regulatory organ - the European Food Safety Authority - to decide quickly which one of the 200 derivatives has to be on the list as well.

Many of the partnerships that we have been talking about today deliver benefits to industry in the medium to long-term. How can industry justify this to its shareholders, who are pushing the company to deliver growth and profit in the short-term?

Cescau (Unilever): The shareholders and the investors are aware of the impact of the obesity epidemic on the industry. Analyst reports evaluate the exposure, the quality of the portfolio, and the risk, because that translates to obesity and the current trends and the regulatory risks and opportunities for the food industry. Thus, what is right for the long-term is equally right for the short-term.


What are the possibilities of governments or big organisations subsidising the industry over a period of time to mobilise the vast majority of the world's population that do not have access to products?

Tukuitonga (WHO): WHO works to encourage member states, and provide guidance to them to do the right thing. Given the pressures that arise from that, this suggestion will probably not be embraced in the short-term. It is already quite difficult to encourage governments of the member states to understand step one of the Global Strategy, which is to do something about the immense burden of disease coming towards us. Asking them to subsidise would be asking too much at the moment.

Cescau (Unilever): The health industry is one of the fastest growing businesses. Consequently, many key players move automatically in the right direction: there is an economic reward. In the case of undernutrition it is more complicated. Combating this requires putting corporate social responsibility on the agenda. That is what Unilever has done by formulating its Vitality Mission. This Mission generates an extraordinary motivation and pride from our people. A company will not subsist if its only purpose is to improve total return. It has to attract and motivate the best people. The most rewarding is what we are doing, because it is not just intellectually or economically rewarding, it is talking to the heart of the people. That comes before any subsidy or tax.

Is it possible to negotiate a code of conduct for partnerships between the different stakeholders?

Cescau (Unilever): Unilever wants to set up a best practice model on how to establish innovative partnerships in developing countries. We have experience with partnerships for business purposes, so we have a good sense of what makes a partnership work, and what does not. The first prerequisite is sharing the same vision, to have a global agreed vision. The vision of both WHO and UNICEF is to establish sustained improvement in people's health. Secondly, you need a very clear framework for action. That is what we are trying to obtain now with WHO. It is a comprehensive procedure which requires a lot of consultation, and which causes tensions coming from different visions. The third element is to ensure that the key stakeholders understand and accept their role and their contribution. The companies, the private sector, and the NGOs should all understand that the sum of the individual effort will result in something bigger than that. And last but not least, there must be a clear way of monitoring the progress. You need to understand which steps you are



going to make, and which steps you have achieved. As long as these four are not there, the partnership is unlikely to be successful.

There will be different forms and shapes of partnerships. We think it is important to have a code of conduct, and to create a clear framework, because thousands of efforts going all in different directions would not make an impact. The Brantas clean river project in Indonesia is a good example. It shows that the only way to make progress is to involve the community, the people and the local industry, to develop the local economy. The sum of small partnerships heading towards the same goal will be very important in order to have a healthy community that is alive. Only in that way will our joint efforts make it a better world.



